Mohawk Valley
Regional Sustainability Plan

CLEANER, GREENER COMMUNITIES SUSTAINABILITY PLAN

FOR THE MOHAWK VALLEY

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Executive Summary

Mohawk Valley Sustainability Vision Statement

The people of the Mohawk Valley region envision a future where a vibrant and sustainable regional economy is balanced with the conservation, protection, and replenishment of the region's critical natural resources – a region that is environmentally sound with an efficient and sustainable economy for future generations.

Cleaner, Greener Communities Program:

Empowering Regions to Create More Sustainable Development and Encourage Smart Growth Practices

To meet the needs of residents both today and in the future, New York must find innovative ways for its residents and businesses to live, operate and grow while using fewer resources thereby reducing their impact on the environment. In 2011, Governor Andrew M. Cuomo announced the Cleaner, Greener Communities Program to address these needs and ensure a brighter future for all New Yorkers. The Program, which is administered by the New York State Energy Research and Development Authority (NYSERDA), empowers regions to lead the development of sustainability plans and implement projects and smart growth practices that will significantly improve the economic development and environmental well-being of their communities.

Green Infrastructure, Rome, Oneida County

NYSERDA provided Cleaner, Greener Communities funding to New York's 10 regions through a two-phase competitive grant process:

Phase I provided nearly $10 million (up to $1 million per region) in funding to regional planning teams to create comprehensive sustainability plans or to expand the scope of existing sustainability plans.

Phase II provides up to $90 million toward regional projects that support the regional sustainability goals identified during the planning process. Phase II is expected to launch in 2013.

The Mohawk Valley Regional Sustainability Plan (Plan) was developed with guidance from NYSERDA in conjunction with regional stakeholders over the course of an eight-month planning process. This planning effort:

- Assessed current greenhouse gas emissions and energy use, along with available natural resources and economic assets, liabilities, and opportunities
- Set sustainability targets for energy supplies, transportation, waste and water management, land use, housing, agriculture, economic development, and open space
- Developed a sustainability plan outlining the short- and long-term actions the region can undertake to achieve the targets and goals

Sustainability:

Improving Our Quality of Life with Smart Growth Practices

Sustainability is living, operating and growing more efficiently, while using fewer resources. In adopting sustainable practices, we can meet the needs of residents—both today and in the future. We can also foster communities that have lower costs, more businesses and jobs, and improved quality of life.

Every development decision we make—what land to build on, what street to pave, what energy to use, etc.—affects the economic and environmental health of our region. Sustainable communities adopt smart growth practices to:

- Use renewable energy to become more energy independent
- Control sprawl to reduce housing and transportation costs
- Invest in public transit systems to serve more people and minimize pollution
- Build stores, schools, and workplaces near neighborhoods to reduce vehicle miles traveled
- Attract businesses to neighborhoods to create jobs, and keep dollars local
- Make walking and bicycling easy to foster healthy lifestyles
- Reuse developed land to improve economic potential
- Adopt clean technologies to grow our 21st century economy
- Conserve resources to strengthen the natural environment
- Reduce greenhouse gases to improve and protect our environment[1].

[1] http://www.nyserda.ny.gov/Statewide-Initiatives/Cleaner-Greener-Communities/Defining-Sustainability.aspx

Mohawk Valley Planning Process

This Mohawk Valley Regional Sustainability Plan (Plan) was developed with the coordination of the Mohawk Valley Planning Consortium (Consortium), the Planning Team, and regional agency and public stakeholders throughout the region. This Plan identifies both broad goals and specific strategies to achieve a more sustainable future for the people of the Mohawk Valley region The Plan defines sustainability goals that were developed for the region; identifies the indicators to measure progress toward sustainability through implementation of the plan; establishes preliminary targets for the future that measure the region's progress toward sustainability; and provides realistic implementation actions based on the strategies and goals of the Plan that will help the Mohawk Valley region to achieve its sustainable future.

The Consortium was composed of planning professionals and representatives from the Mohawk Valley's six county government agencies and the communities of Utica, Rome, Cooperstown, and Oneonta. The Consortium then identified members of the Planning Team, which was composed of the primary contractor, Ecology and Environment, Inc. (E & E) and specialized local public outreach subcontractors, including The Genesis Group, the Mohawk Valley Economic Development District, and the Otsego County Conservation Association. The Planning Team members were a part of technical focus-area working groups that met three times over the course of the eight-month planning process.

Seven technical areas for the working groups to focus on were selected: **Economic Development, Transportation, Land Use and Livable Communities, Water Management, Materials Management, Energy, and Agriculture and Forestry.** Working group members included representatives of agencies, businesses, and members of the public with technical expertise in the focus areas. Organized by the Planning Team, the working groups' tasks were to gather critical data and knowledge from key stakeholders in the region and provide guidance to ensure that the Plan addresses regional differences and reflects the needs and interests of the entire region. Two additional overarching focal areas — **Governance** and **Climate Change Adaptation**— were integrated throughout the seven main focal areas.

Erie Canal Bike Trail

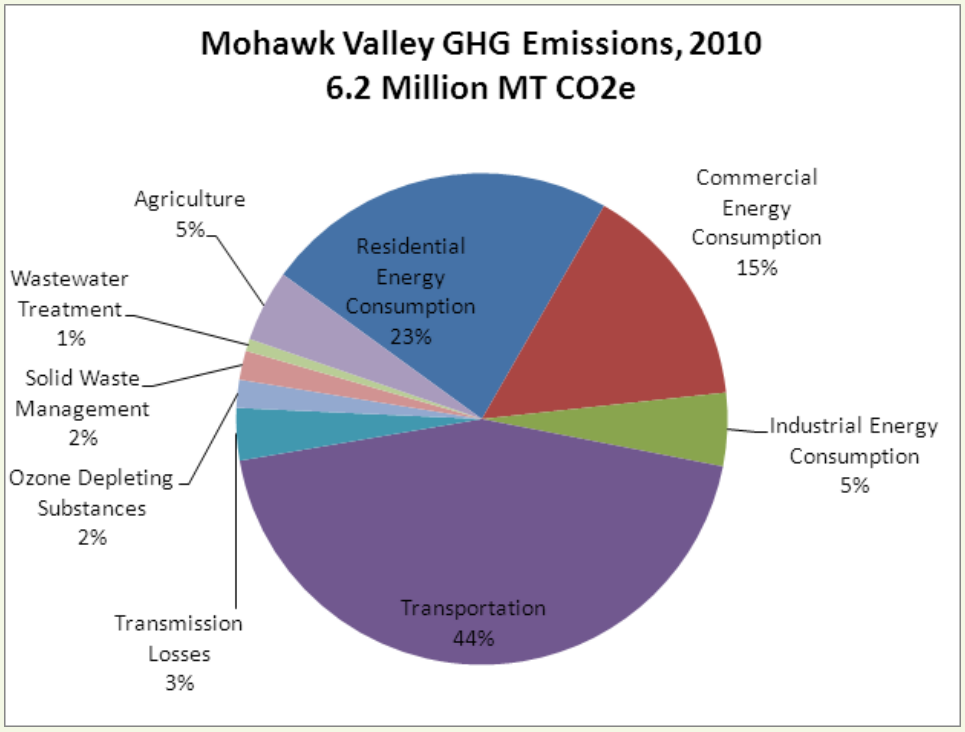
Public Outreach and Involvement

The Consortium held two organizational meetings, June 5, 2012 and July 9, 2012, and then met biweekly by teleconference. The Planning Team held two public stakeholder meetings at Herkimer County Community College in December 2012 and March 2013 to encourage public input from Mohawk Valley residents. The feedback from the public stakeholders was considered in the development of the final Sustainability Plan. Additionally, residents of Mohawk Valley were able to learn more about the Plan via a public website (www.sustainablemohawkvalley.com).

Greenhouse Gas (GHG) Inventory

As part of the baseline assessment for the Mohawk Valley region, two GHG inventories were completed: Tier I and Tier II. Tier I inventory was provided by NYSERDA and includes state-level data disaggregated to each region.

The Tier II GHG inventory was completed to estimate regional emissions information that could help identify and prioritize necessary sustainability goals and actions. The total GHG emissions for 2010 in the Mohawk Valley region were estimated at 6.2 million metric tons (MT) of carbon dioxide equivalents (million MT CO_2e), with transportation (44%), residential energy consumption (23%), and commercial energy consumption (15%) being the largest sectors contributing to that emissions total. While most of electricity generated in the region is from renewable sources (98%), much of the electricity consumed is imported from other areas of the state (86%). Part of the focus of this Plan is to identify goals and actions that will allow us to continue to grow our regional economy, improve our communities and support local industry while reducing this overall GHG emissions total for our region. The complete GHG Inventory for the Mohawk Valley Region is included in Appendix D.



Climate Change Adaptation

As part of the regional sustainability planning process, the goals of the seven technical working groups were reviewed to consider climate change adaptation and GHG emissions. Many of the sustainability goals and indicators included in the Plan demonstrate how the region will become more resilient in the face of climate change and reduce GHG emissions.

Climate change is already beginning to affect the people and resources of New York State, and these impacts are projected to increase in frequency and severity. Temperatures are increasing, precipitation patterns are changing, and sea levels are rising. These climatic changes are projected to occur at much faster than natural rates because of increased amounts of greenhouse gases in the atmosphere. At the same time, the state has the potential capacity to address many climate-related risks, thereby reducing negative impacts and taking advantage of possible opportunities.

Climate change may also create new opportunities in the region, related to a longer, warmer growing season for agriculture and the potential for abundant water resources. Changes that will have more significant and detrimental effects in other parts of the country will likely increase the value of our region's renewable energy, agricultural, and water resources.

Sustainability Goals, Indicators, and Targets

The Plan assesses the current status of the region with respect to the sustainable use of resources through the collection of baseline data. The knowledge gained from this baseline assessment was used to establish strategic sustainability goals and develop indicators to track progress toward the achievement of the established targets. In considering the baseline assessment, the overarching goals for each focal area were developed that were designed to meet the basic needs of the region and to achieve sustainability. These goals were used to identify targets, implementation strategies, and ideas for specific sustainability projects to be implemented in the region. The goals developed for economic development are aligned with the Mohawk Valley's REDC's goals for the region. The complete baseline assessment, which includes indicators and associated targets by focal area, is in Appendix B.

A summary of the sustainability goals for the Mohawk Valley is presented below:

Economic Development (ED)

- Goal ED-1: Enhance regional concentrations to retain and create business in key growth sectors (REDC Goal – GROW).
- Goal ED-2: Align the region's workforce with the appropriate education and training to increase the supply of skilled workers (REDC Goal – BUILD).
- Goal ED-3: Create innovation enabling infrastructure that will drive entrepreneurialism (REDC Goal – CREATE).
- Goal ED-4: Restore infrastructure and increase spatial efficiencies that will revitalize existing urban and town centers (REDC Goal – REVIVE).
- Goal ED-5: Strengthen government and civic effectiveness to produce a more vibrant economy (REDC Goal – FORGE).
- Goal ED-6: Promote unique regional assets through a unified identity and campaign.

Transportation (T)

- Goal T-1: Align transportation and land use planning and investment.
- Goal T-2: Improve efficiency in maintenance of transportation infrastructure.
- Goal T-3: Improve and connect regional multi-use trails.
- Goal T-4: Increase public transportation ridership.
- Goal T-5: Promote transportation alternatives.

Land Use and Livable Communities (LULC)

- Goal LULC-1: Redevelop main streets, waterfronts, and brownfields.
- Goal LULC-2: Provide technical assistance and collaboration opportunities.
- Goal LULC-3: Identify, Preserve, and Protect Lands suitable for viable agriculture.
- Goal LULC-4: Invest in existing infrastructure and housing stock.

Water Management (WM)

- Goal WM-1: Conserve water and related energy consumption.
- Goal WM-2: Maintain water quality.
- Goal WM-3: Improve existing infrastructure.
- Goal WM-4: Establish watershed planning.

Materials Management (MM)

- Goal MM-1: Reduce solid waste generation.
- Goal MM-2: Increase the regional market for recycled goods.
- Goal MM-3: Reduce energy costs associated with materials and solid waste management.
- Goal MM-4: Expand effective existing projects and promote new regional strategies.

Energy (E)

- Goal E-1: Reduce consumption of electricity and heat generated by fossil fuels.
- Goal E-2: Increase energy efficiency.
- Goal E-3: Increase renewable local energy generation and use for electricity and heat.
- Goal E-4: Evaluate life-cycle impacts of energy generation and use.

Agriculture and Forestry (A&F)

- Goal A&F-1: Promote education.
- Goal A&F-2: Enhance efficiencies.
- Goal A&F-3: Promote sustainable agricultural and forestry economic development for individuals, families, and the region to help sustain the current workforce and encourage others to join the workforce.

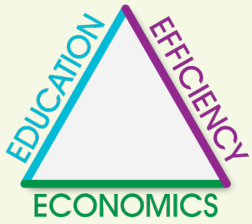
Implementation Actions:

The Sustainability Plan for the Mohawk Valley region involves *Implementation Strategies* associated with numerous actions, some small but conducted by many people in many places, and some large, supported by external funding. Some *Actions* involve construction of actual projects; others involve educational efforts that will empower people to implement additional *Actions*. Some *Actions* encourage people, agencies, or businesses to conserve resources and increase the efficiency with which natural resources are used. All the *Actions* recognize that projects must make economic sense to be viable. The Plan is the aggregate of these large and small actions.

The *Implementation Actions* are based on the public input and work of the Planning and Working Group Technical Committees. These initiatives are important in making the region more sustainable. They were selected based on the following:

- Potential for making progress toward the implementation goals and targets
- Economic viability
- Consistency with the REDC goals
- Potential availability of funding
- Availability of data
- Presence of project proponents.

The *Implementation Actions* included in this Plan fall in to three over-arching themes: **Education, Efficiency, and Economics**. The strategy for achieving sustainability is to complete these *Actions* and these *Actions* will lead the region toward achieving the long-term goals. Specific *Actions* and associated goals for the Mohawk Valley region are detailed in Chapter 3. Potential funding sources are provided in Appendix E.



These *Implementation Action*s are organized into two categories under each of the three sustainability themes, as follows:

FIRST: Actions that are ready to implement, based on resources and funding already being available, existing stakeholder support and ease and speed of implementation;

FUTURE: Actions that can be undertaken in the near future but will have a longer lead time due to a need to find a combination of resources, funding, or a project proponent. Some of these future actions may be more complex or require additional research.

THEME: EDUCATION

FIRST ACTIONS

3.1.1 Coordinate a regional "one-stop-shop" of existing technical assistance programs through the REDC.

3.1.2 Improve public awareness of effective energy conservation behavior by publicizing successful projects, implementing school education programs and sponsoring public workshops.

3.1.3 Promote, incentivize, and provide technical assistance for the development of small- scale composting facilities for institutions and businesses.

FUTURE ACTIONS

3.1.4 Enhance collaboration between training programs, economic development organizations and businesses throughout the region.

3.1.5 Train and equip municipal highway departments to better manage transportation assets.

3.1.6 Develop transportation-oriented land use planning technical assistance programs for municipalities.

3.1.7 Appointment of a non-point pollution-prevention Regional Trainer to extend provisions of erosion and sediment control training to small construction firms and minor construction and repair activities.

3.1.8 Integrate agricultural and forestry curricula into K-12 education.

THEME: EFFICIENCY

FIRST ACTIONS

3.2.1 Develop a regional transit marketing program to increase public awareness and use of rural transit services and rideshare programs.

3.2.2 Increase participation in residential, commercial, institutional, and municipal energy incentive programs.

3.2.3 Provide farm energy audits and implement efficiency measures.

3.2.4 Create a regional Geographic Information Systems (GIS) water infrastructure database.

3.2.5 Increase the development and use of anaerobic digesters to recover energy from biomass during wastewater treatment.

3.2.6 Develop a regional waste minimization and recycling audit program.

3.2.7 Install and increase availability of local renewable energy at the residential, commercial, institutional, and municipal level.

FUTURE ACTIONS

3.2.8 Develop low head and small hydropower.

3.2.9 Create a food hub for enhanced food production, distribution efficiency, and consumer education.

THEME: ECONOMICS

FIRST ACTIONS

3.3.1 Conduct building stock inventory to identify priorities for redevelopment and reinvestment of housing stock and promote home-ownership.

3.3.2 Conduct an inventory of the lands suitable for agricultural production.

3.3.3 Create an identity and branding for the region.

3.3.4 Support the development of a Mohawk Valley Brownfield Opportunity Area(BOA) Fund. Develop a regional revolving loan fund for private investment in the region's brownfields administered through the REDC; tie to NYS BOA, LWRP and Main Streets Programs or other pre-planning.

3.3.5 Implement development of a tree inventory along with tree planting and green infrastructure and best management practices region-wide (tree planting, bio retention, permeable pavers, etc.). A secondary action to be considered is the use of innovative/alternative green infrastructure systems for small rural community centers and business districts.

FUTURE ACTIONS

3.3.6 Reuse and revitalize existing sites and buildings located in or adjacent to population centers that have existing public infrastructure and services.

3.3.7 Enhance regional governmental and civic cooperation and communication systems.

3.3.8 Develop a feasibility study and an implementation plan for all municipal solid waste and recycling vehicle fleet that operates on compressed natural gas (CNG).

Sustainability Case Examples

In considering the *Implementation Actions* needed to move the region closer to the goals and targets identified in this plan, case examples of existing projects that actually demonstrate the *Actions* are presented below and described in more detail in Appendix C. The goal of the Plan is to give the communities of the region the tools to replicate case examples, develop new projects, and make sustainability integral to living, working, and doing business in the Mohawk Valley. The ideas are out there, the people are motivated, the leadership exists, the economic and environmental incentives are real; all we need is motivated people to take on an *Action* or two each and implement these ideas.

Case Examples

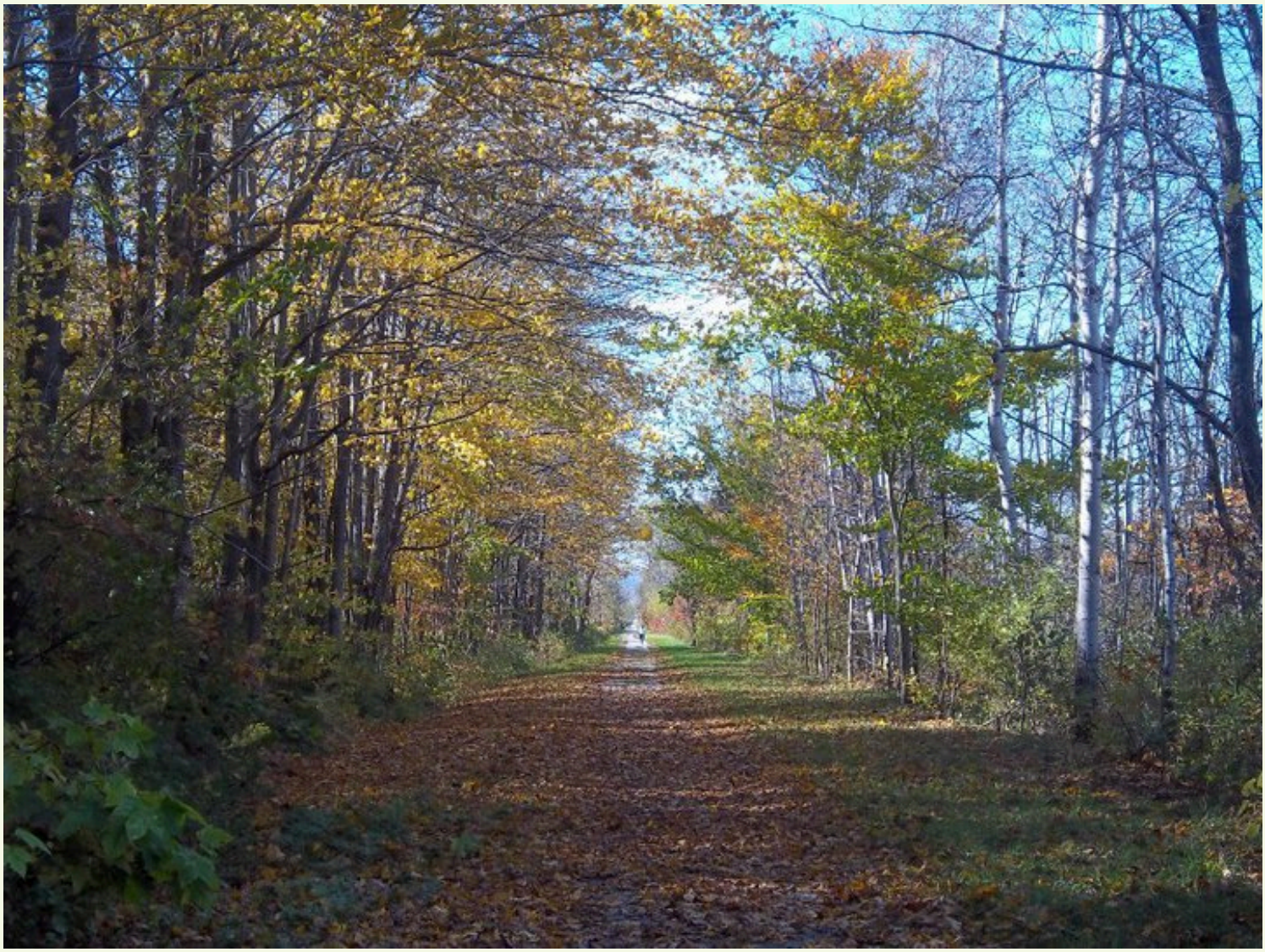
- Fulton-Montgomery Community Center Workforce Training Program
- Cooperstown Transit Center Linden Avenue Gateway, Otsego County
- Northern Oneida County Council of Governments (NOCCOG) Coalition
- Mohawk Valley Main Street Program, Otsego County
- City of Utica Harbor Point Project
- Mohican Farm Composting Facility
- The Syracuse City Schools Green Schools Program (Green SCSD) Team
- Hudson Valley Farm to School (HVFS) Program
- Project Learning Tree (PLT) Program
- Ecology and Environment, Inc Corporate Rideshare Program
- Gloversville Water Department Hydro Turbine Project
- Gloversville-Johnstown Joint Wastewater Treatment Facility: Energy User to Energy Source
- Oneida-Herkimer Solid Waste Authority

Hudson Valley Farm to School Program

- Canal Village Housing Rehabilitation, City of Rome, NY
- City of Rome Housing Rehabilitation and Redevelopment programs
- "Renew" Websites for energy efficiency and renewable energy local outreach and project support
- City of Rome Energy Management Plan, March 2012
- Energy Performance Contracting and Energy Service Providers
- Bassett Hospital Green Team
- Covington Private Home Retrofits
- Agricultural Energy Management Plans
- Central New York Regional Market Authority
- Regional Access Ithaca
- Delta Hardwoods Project, Boonville, NY
- Central New York Conservancy, Inc.
- East Rome Business Park, Rome, NY
- City of Amsterdam Brownfield Site, Montgomery County, NY
- Cities of Rome and Utica, NY – Green Infrastructure and Tree Inventory Project
- iTree Street Tree Analysis, Rome, NY
- Rust 2 Green (R2G) infrastructure projects, Utica, NY
- Keep America Beautiful – Herkimer/Oneida County Program
- Vacant Building Survey, University of Albany
- 47 Main Street Project, Fort Plain, NY

Bassett Hospital, Cooperstown, Otsego County

- Hartwick Hamlet Commercial Buildings, Otsego County, NY
- Rumpke RCNG Collection Fleet Pilot project
- Canajoharie 2000, Village of Canajoharie, NY
- Rust 2 Green (R2G) Mohawk Valley Food System
- For the Good Community Garden Initiative
- Altamount Landfill Gas Project, CA
- Ohio Bio-Energy Digester, Columbus, OH
- Mohawk Fabrics Photovoltaic Array, Montgomery County, NY
- Old Forge District Heating, Herkimer County, NY



Canalway Bike Path, Little Falls, NY

1.0 Introduction

Mohawk Valley Sustainability Vision Statement

The people of the Mohawk Valley region envision a future where a vibrant and sustainable regional economy is balanced with the conservation, protection, and replenishment of the region's critical natural resources – a region that is environmentally sound with an efficient and sustainable economy for future generations. This Mohawk Valley Regional Sustainability Plan identifies both broad goals and specific strategies to achieve a more sustainable future for the people of the Mohawk Valley region.

1.1 Cleaner, Greener Communities Program

Empowering Regions to Create More Sustainable Development and Encourage Smart Growth Practices

To meet the needs of residents both today and in the future, New York must find innovative ways for its residents and businesses to live, operate and grow while using fewer resources thereby reducing their impact on the environment. In 2011, Governor Andrew M. Cuomo announced the Cleaner, Greener Communities Program to address these needs and ensure a brighter future for all New Yorkers. The Program, which is administered by the New York State Energy Research and Development Authority (NYSERDA), empowers regions to lead the development of sustainability plans and implement projects and smart growth practices that will significantly improve the economic development and environmental well-being of their communities.

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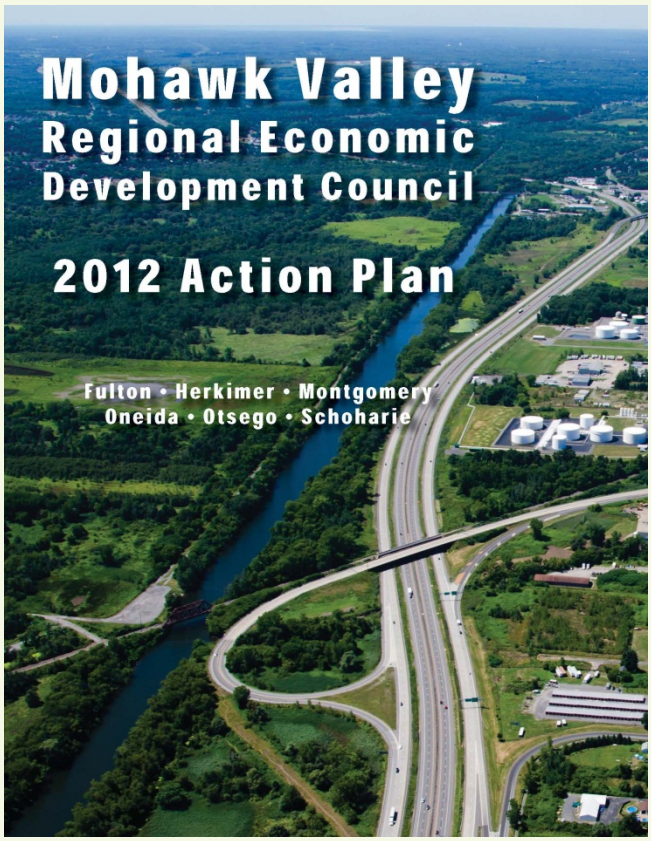

The Mohawk Valley Regional Economic Development Council Strategic Plan is a comprehensive plan that describes a transformative vision, that will guide, our region, as the Mohawk Valley once again plays a pivotal role in New York's economic success. This document is available along with additional information about the Mohawk Valley REDC at: http://regionalcouncils.ny.gov/content/mohawk-valley.

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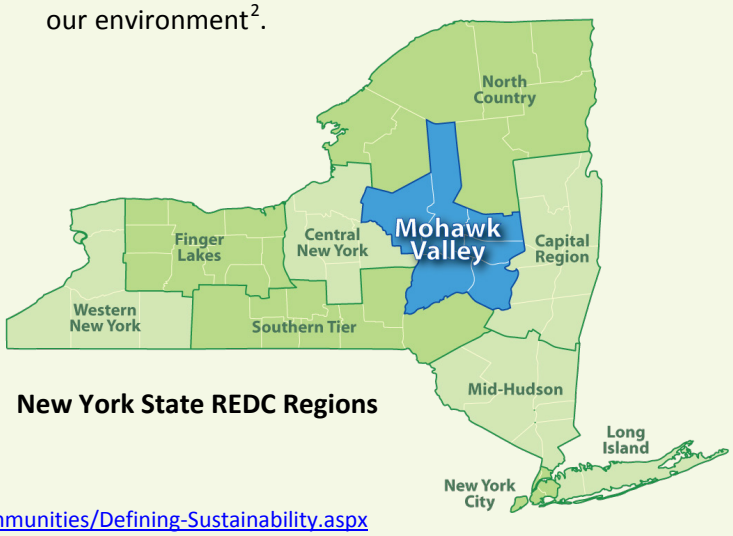
- Invest in public transit systems to serve more people and minimize pollution
- Build stores, schools, and workplaces near neighborhoods to reduce vehicle miles traveled
- Attract businesses to neighborhoods to create jobs, and keep dollars local
- Make walking and bicycling easy to foster healthy lifestyles
- Reuse developed land to improve economic potential
- Adopt clean technologies to grow our 21st century economy
- Conserve resources to strengthen the natural environment
- Reduce greenhouse gases to improve and protect our environment[2].

1.2 Mohawk Valley Region

The Mohawk Valley region includes Oneida, Herkimer, Fulton, Otsego, Montgomery, and Schoharie counties, as defined by the boundaries of the REDC. This region was first created by Governor Cuomo's establishment of the REDCs in 2011 and, as such, this region is only beginning to work as a coordinated planning region for economic and sustainability planning efforts.



New York State REDC Regions

[2] http://www.nyserda.ny.gov/Statewide-Initiatives/Cleaner-Greener-Communities/Defining-Sustainability.aspx

City of Rome in bloom, Oneida County

The Mohawk Valley region is the geographic epicenter of New York State, located along the Erie Canal corridor and within the Mohawk River watershed. The Mohawk Valley is central to New York's commerce, transportation, and exchange within the state. It is a vital and critical area of the state, with which almost all other areas of the state have connections.

The Mohawk Valley is a diverse region that includes 8 cities, 102 towns, and 58 villages and the historic urban centers of Utica, Rome, and Amsterdam. The Mohawk Valley has a population of 500,155, which remained relatively constant from 2000 to 2010. The region's geography is diverse, from the Catskill Mountains east of Oneonta and north to the foothills of the Adirondacks. A portion of the Adirondack State Park is located within the northern most part of the region. It is within 100 miles of major metropolitan centers in every direction, including Albany, Syracuse, and Binghamton, as well as the Canadian border.

Utica and Rome, both located in Oneida County, are the two largest cities in the region. Located less than 12 miles from each other, these two cities make up almost one-fifth of the region's population and are composed of urban cores that contain the most intensive land uses and densities in the region. Utica and Rome are the economic and political generators for the region, along with Gloversville, Johnstown, Amsterdam, Cooperstown, and Oneonta. These communities are faced with a shrinking manufacturing base and declining populations from the out-migration of the region's young. Although stagnant economic conditions continue to be an issue, these communities are seeing a growing interest in their downtowns and historic resources.

The region's towns and villages are the centers of the rural communities. They vary in geographic size and population and, while some have defined main streets containing compact development, others are centered on a single building or public space. Some of the rural community centers within the region lack infrastructure such as public water and sewer systems.

The region boasts a diverse economic base with health care and social assistance as the highest employment sector, followed by educational services. The region hosts six State University of New York (SUNY) campuses with an enrollment of more than 25,000 and an additional 10,000 students in eight private colleges.

Other major economic sectors include financial services, travel and tourism, distribution, information technology, and advanced manufacturing. Although manufacturing has seen declines in past decades, it remains among the region's largest employers. The Mohawk Valley REDC has identified the following economic sectors as providing opportunities for growth:

- Agriculture and food processing.
- Financial services.
- Insurance.
- Tourism.
- Health care.
- Cyber security/information technology (IT).
- Semiconductors/nanotechnology.
- Clean technology.
- Advanced manufacturing.
- Distribution.

Hartwick College located in Oneonta, in the northern foothills of the Catskills Mountains, Otsego County

Canalway Trail, Erie Canal

Agricultural lands and forests together cover approximately 87% of the Mohawk Valley land area. Both forestry and agriculture are critical components of the region's economy, culture, history, and educational systems and could become strong areas for economic growth. In addition, critical agriculture and forestry education programs are available at Herkimer County Community College, Fulton Montgomery Community College, and SUNY Cobleskill, with SUNY-Environmental Science and Forestry and SUNY-Morrisville just outside the region. The abundance of timber and pulpwood and a diverse workforce that supports multi-generational farms, logging companies, and small and large businesses depend upon the sustainability of the region's agricultural and forestry resources.

The Mohawk Valley region is served by several major highways. NYS Routes 5 and 5S are the primary regional connectors, and NYS Routes 12 and 12B are used as additional connectors for commuters. Interstate 90 (I-90) is a limited access toll road that travels east-west in Oneida, Herkimer, and Montgomery counties and is used primarily for through traffic. Interstate 88 (I-88) serves the southern portion of the region.

The Griffiss International Airport is the regional airport. The airport is used by general aviation (private aircraft, air ambulance news service, a large airplane maintenance facility) and the Air National Guard; however, residents must travel outside of the region to Syracuse or Albany for commercial passenger service.

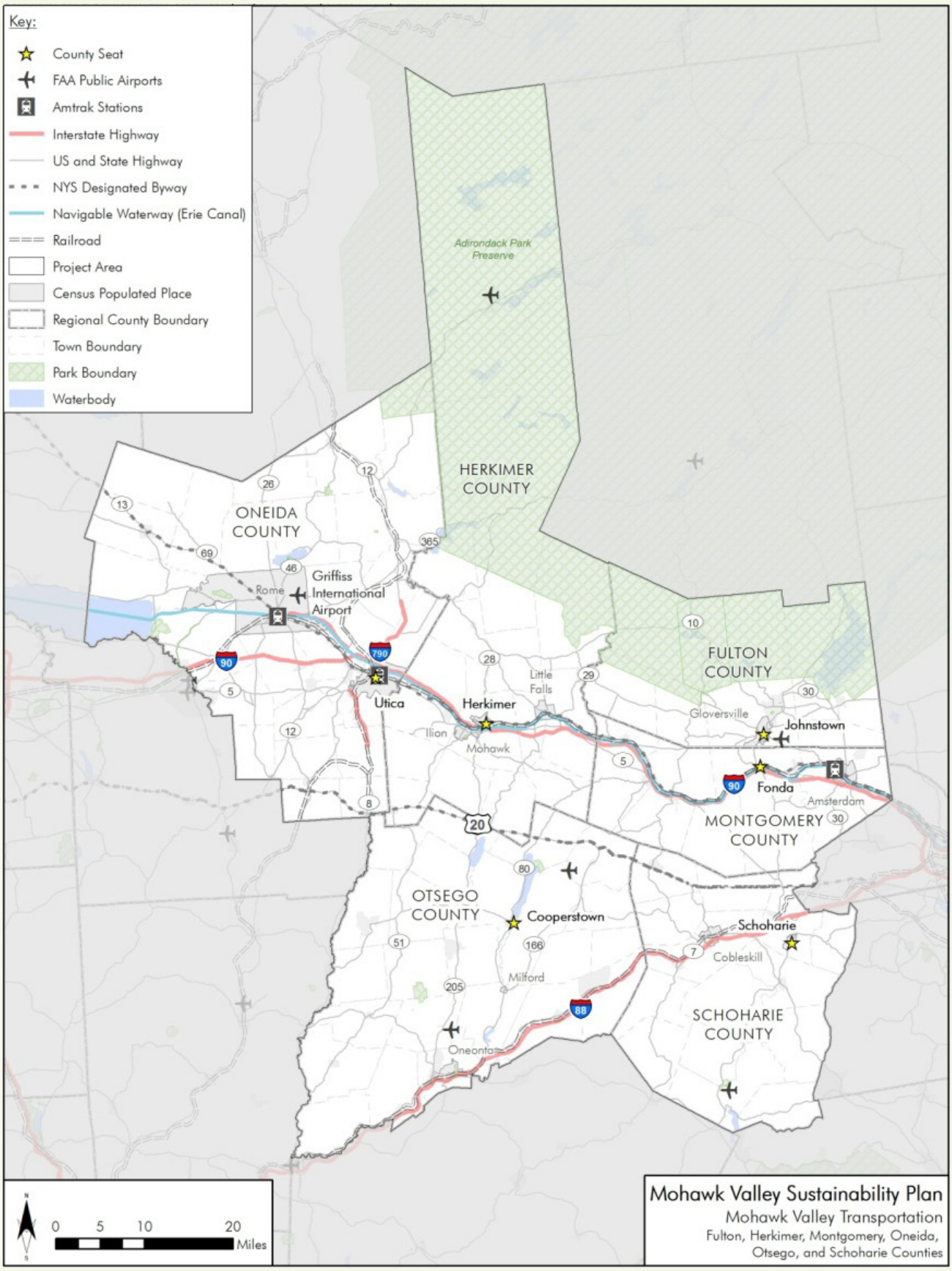
The Central New York Regional Transportation Authority (CNYRTA) that provides public transit service in metropolitan Syracuse, outside of the region, also currently serves Oneida county. Several smaller private and municipal operators provide limited service in other communities throughout the region.

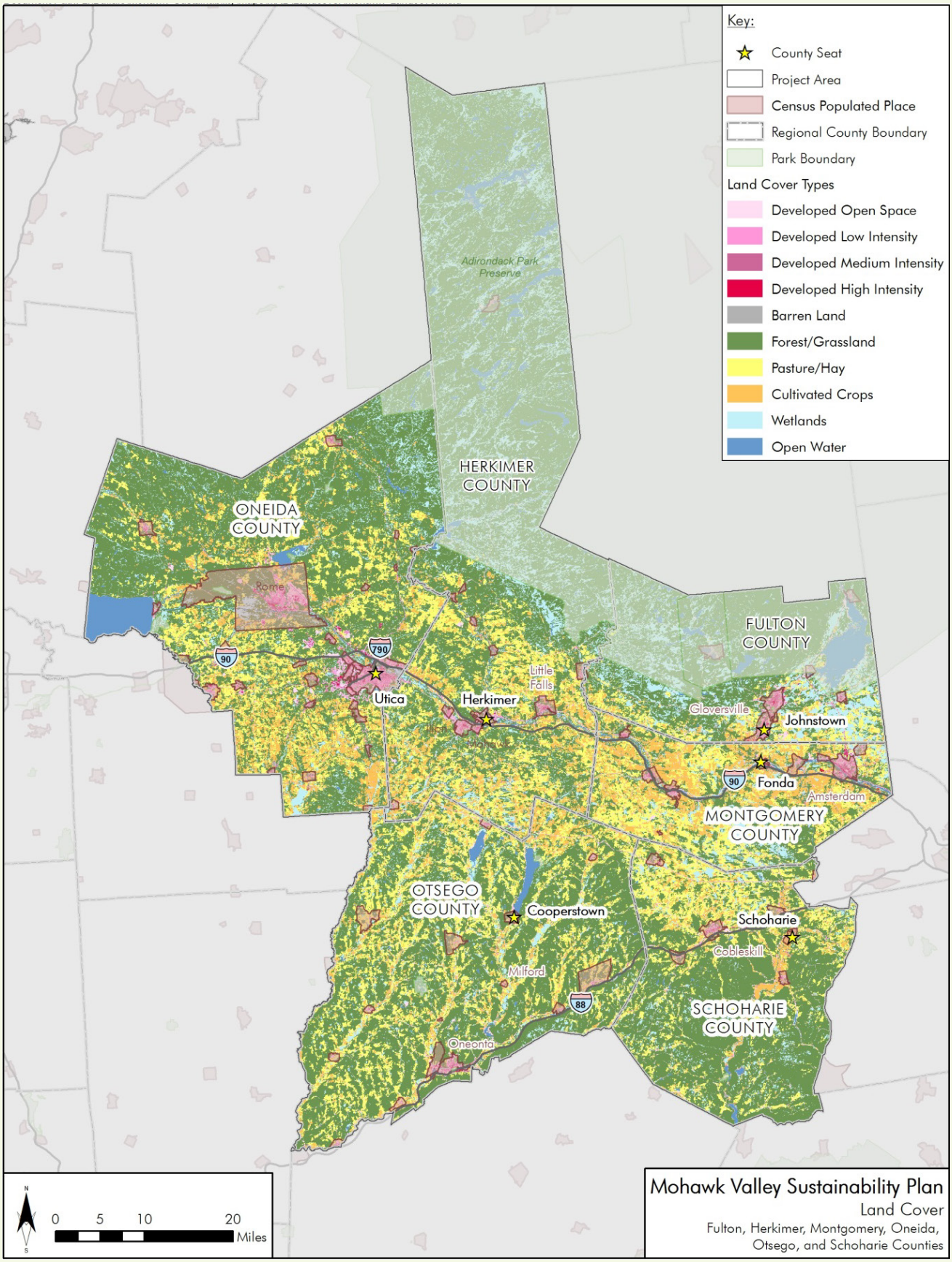
Much of the developed land is located along the I-90 and I-88 corridors and is bordered by areas of agricultural land, forested areas, and open space. Open space is abundant, particularly in the southern part of the region and northern Herkimer and Fulton counties, where Adirondack State Park is located. Both active and abandoned farmland is found throughout the region. Some farmland is at risk from a combination of development and economic challenges; other areas are seeing strong investment from resurgence in small-scale farming, primarily Amish farming communities and other family farms.

Water is a central feature of the Mohawk Valley region, from the lakes and rivers of the Adirondacks in northern Herkimer County, to Otsego and Oneida Lakes, the Mohawk River, and New York State Barge Canal (Erie Canal), formerly the gateway to the western United States. The Erie Canal still is the least expensive way to move products from upstate New York to markets in New York City. The relative abundance of the region's water supply can attract new industries to the region that require ample sources of clean water, with the caveat that the industries do not produce discharges that spoil this valuable resource.

The Mohawk Valley region is home to 8 state parks, 72 golf courses, 500 miles of trails, and 6 historical sites, as well as many cultural resources including historical museums and art centers. The region's heritage includes the origin of the women's suffrage movement in the United States, the birth place of baseball, and numerous historic buildings and iconic main streets.

Herkimer Home State Historic Site, Little Falls, Herkimer County


Key:
County Seat
FAA Public Airports
Amtrak Stations
Interstate Highway
US and State Highway
NYS Designated Byway
Navigable Waterway (Erie Canal)
Railroad
Project Area
Census Populated Place
Regional County Boundary
Town Boundary
Park Boundary
Waterbody
Adirondack Park Preserve
HERKIMER COUNTY
ONEIDA COUNTY
FULTON COUNTY
MONTGOMERY COUNTY
OTSEGO COUNTY
SCHOHARIE COUNTY
Griffiss International Airport
Rome
Utica
Herkimer
Little Falls
Ilion
Mohawk
Gloversville
Johnstown
Fonda
Amsterdam
Cooperstown
Schoharie
Cobleskill
Milford
Oneonta
0 5 10 20 Miles
Mohawk Valley Sustainability Plan
Mohawk Valley Transportation
Fulton, Herkimer, Montgomery, Oneida, Otsego, and Schoharie Counties


Key:
County Seat
Project Area
Census Populated Place
Regional County Boundary
Park Boundary
Land Cover Types
Developed Open Space
Developed Low Intensity
Developed Medium Intensity
Developed High Intensity
Barren Land
Forest/Grassland
Pasture/Hay
Cultivated Crops
Wetlands
Open Water
Adirondack Park Preserve
HERKIMER COUNTY
ONEIDA COUNTY
FULTON COUNTY
MONTGOMERY COUNTY
OTSEGO COUNTY
SCHOHARIE COUNTY
Rome
Utica
Herkimer
Little Falls
Gloversville
Johnstown
Fonda
Amsterdam
Cooperstown
Schoharie
Cobleskill
Milford
Oneonta
90
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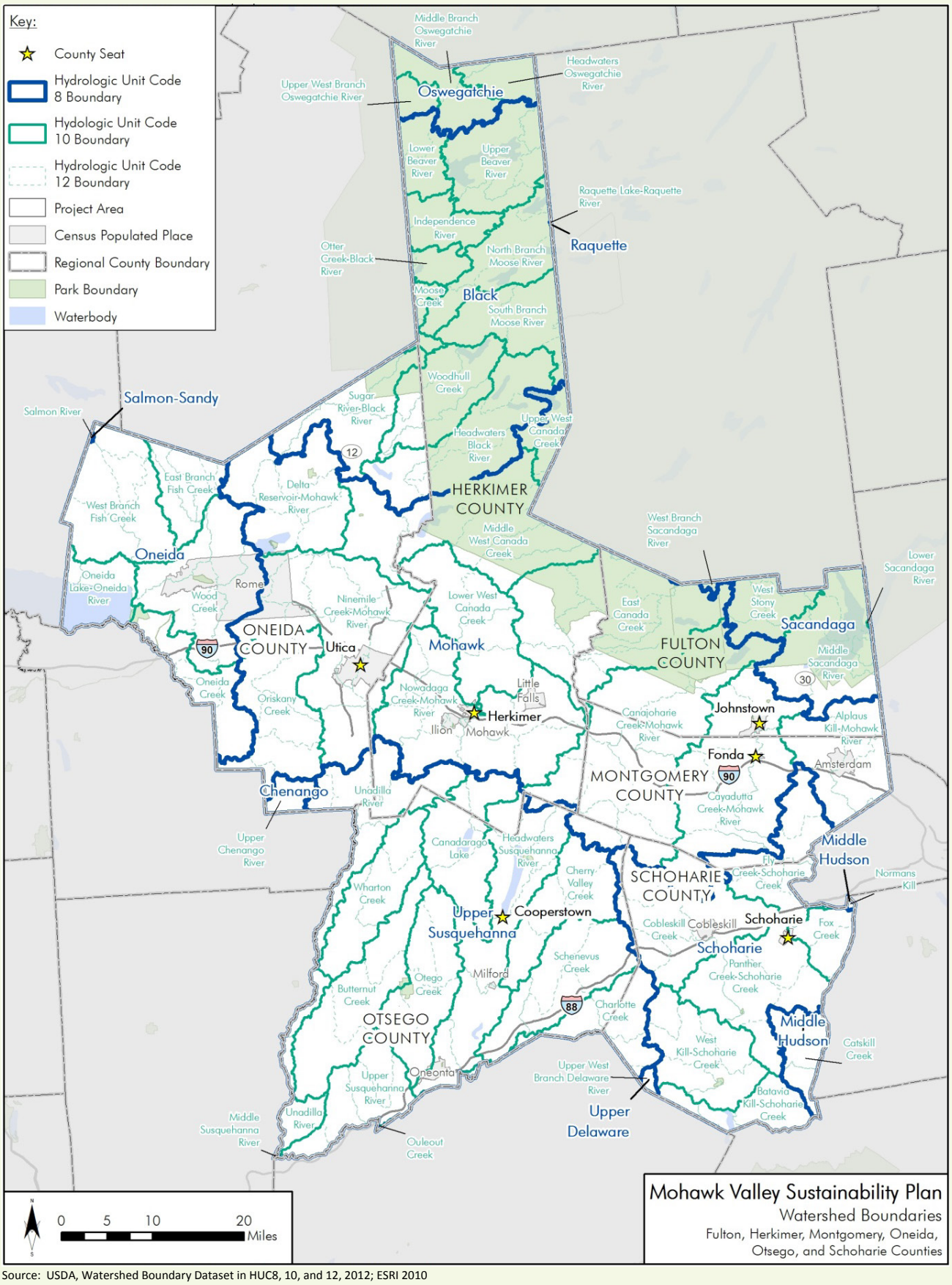
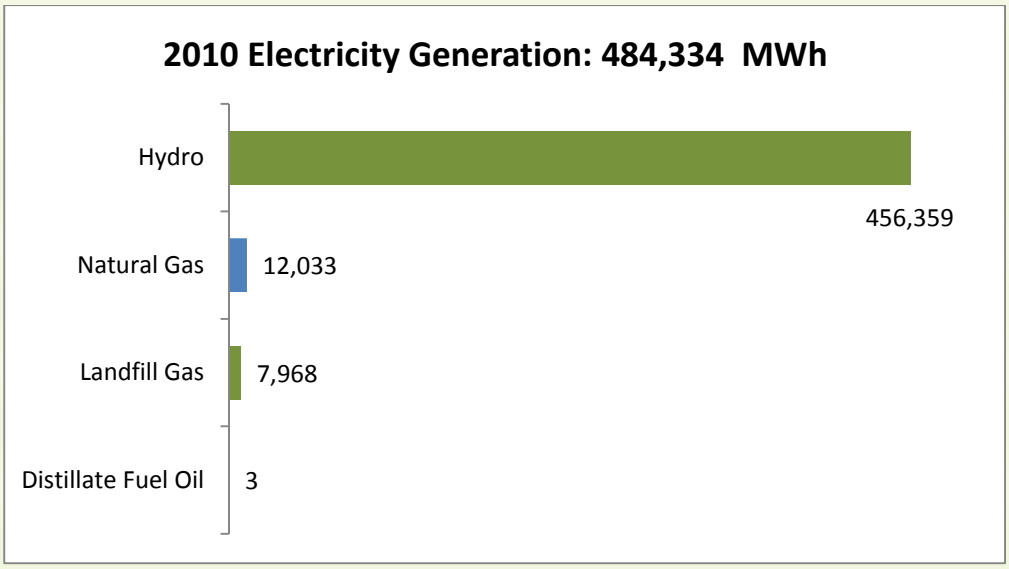
Miles
Mohawk Valley Sustainability Plan
Land Cover
Fulton, Herkimer, Montgomery, Oneida, Otsego, and Schoharie Counties



Source: USDA, Watershed Boundary Dataset in HUC8, 10, and 12, 2012; ESRI 2010



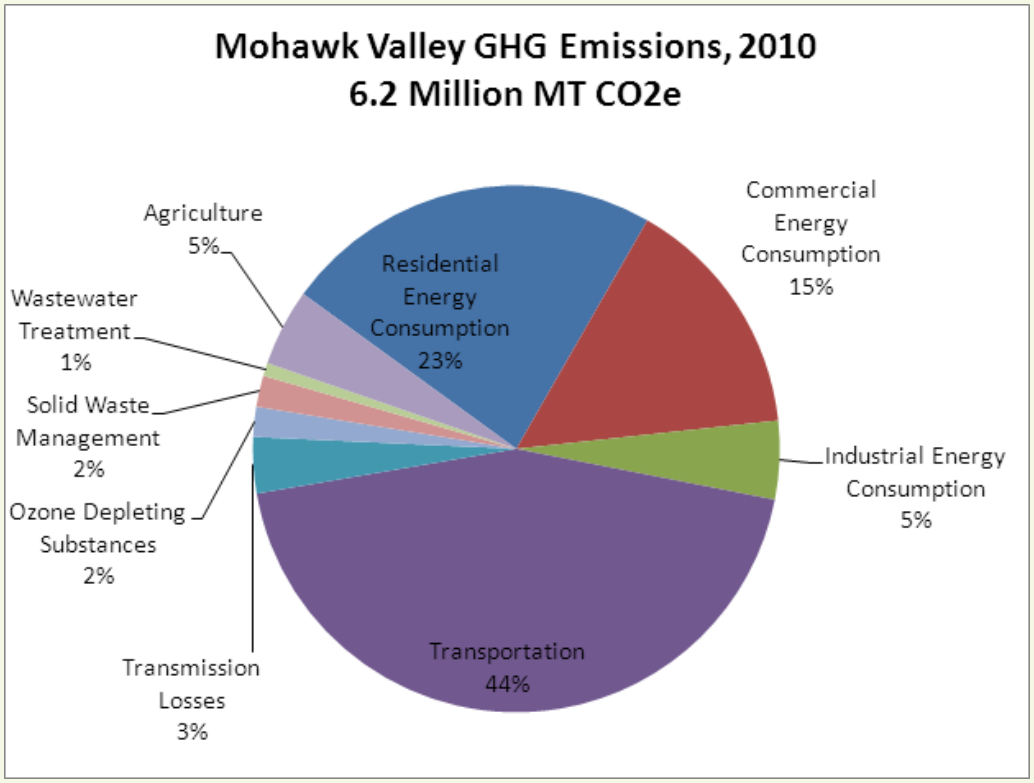
Net Generation of Grid-Supplied Electricity in the Mohawk Valley by Type in 2010

The majority of electricity consumed within the Mohawk Valley region is imported from outside the region. Only 14% of the electricity consumed is generated within the Mohawk Valley region. Ninety-eight percent of the energy generated is from renewable sources, primarily from 13 small hydroelectric facilities. Recently, two renewable energy generation facilities were put on line, including the Hardscrabble windpower project in Herkimer (completed in 2011) and the Oneida-Herkimer Ava landfill biogas electricity-generation project (began operating in 2012).

30 kW Solar Panels on Fort Stanwix Parking Garage, Rome, Oneida County

Greenhouse Gas Emissions

The total GHG emissions for 2010 in the Mohawk Valley Region were estimated at 6.2 million metric tons of carbon dioxide equivalents (million MT CO2e) with transportation (44%), residential energy consumption (23%) and commercial energy consumption (15%) being the largest sectors contributing to that emissions total.



In 2008, New York State emitted approximately 254 million MT CO_2e GHG emissions, equating to about 13.09 MT CO_2e per resident. This represents about 3.7% of GHG emissions from the United States, although New York has 6.3% of the U.S. population: New York's per capita GHG emissions are approximately 43% below the U.S. average of 22.1 MT CO_2e per capita (NYS Climate Action Interim Plan, November 2010). New York's high percentage of renewable electrical energy and the population dense urban region of New York City that utilizes smaller home sizes and public transportation are likely the reason that New York is well below the U.S. average.

Mohawk Valley's GHG emission total of 6.2 million MT CO_2e equates to an average per capita of 12.45 MT CO_2e. The percentage of transportation GHG emissions is higher than the rest of the state, and GHG emissions from industrial and commercial sources are lower than the state averages.

While most of electricity generated in the region is from renewable sources (98%), most of the electricity consumed is imported from other areas of the state (86%). As regional actions can provide limited control over fossil fuel use for electricity generation, regional goals include reducing electricity use and replacing other direct fuel use with renewable sources (such as biomass) to reduce regional GHG emissions. As the region expands its economy, it will be important to address the inevitable increases in energy use and activity that could increase regional GHG emission levels in total and on a per capita basis. Addressing the efficiency of existing buildings, transportation, and other activities will also help ensure a decline in GHG emissions as the regional economy grows.

1.3 Mohawk Valley Stakeholder Involvement

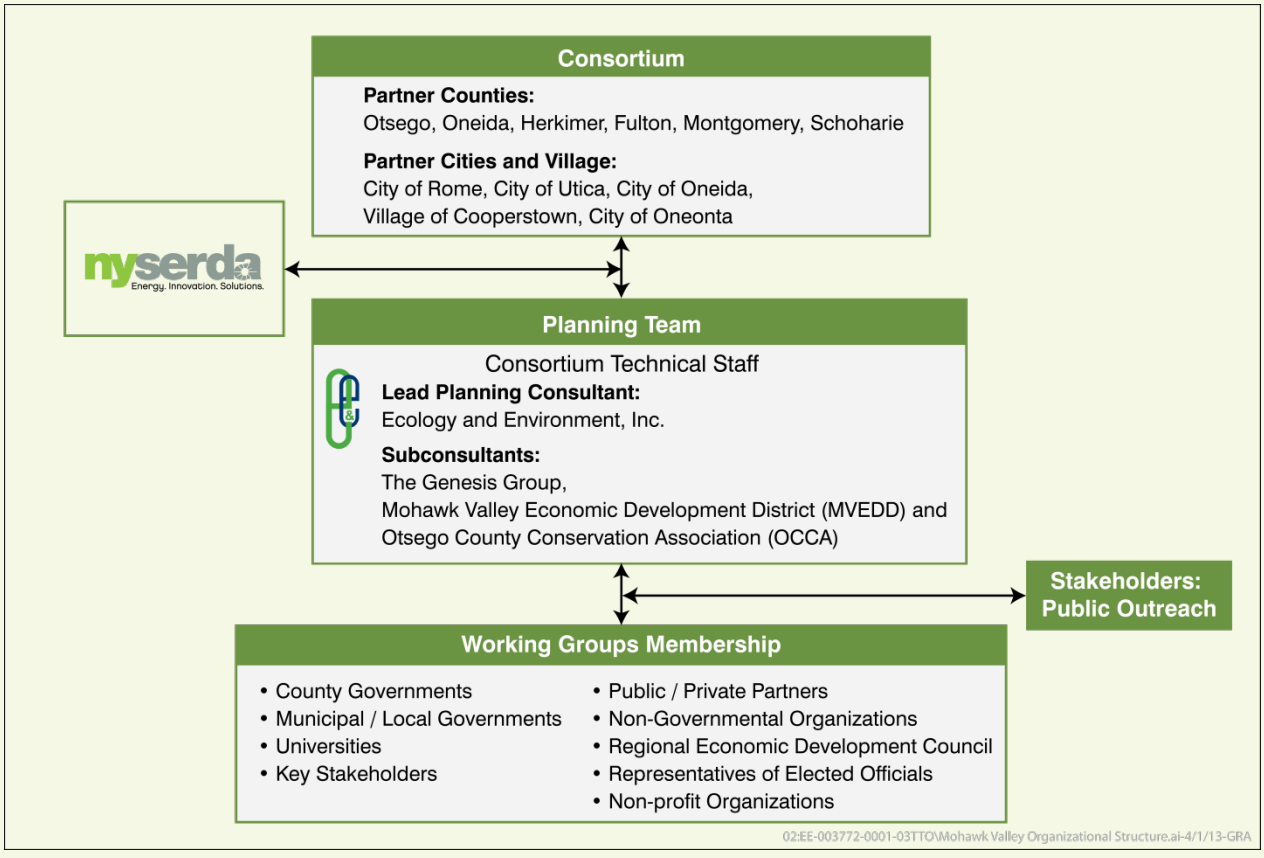
This Plan was developed by the Mohawk Valley Planning Consortium (Consortium), the Planning Team, and regional agency and public stakeholders throughout the region. The Plan defines sustainability goals that were developed for the region; identifies the indicators to measure progress toward sustainability through implementation of the plan; establishes preliminary targets for the future that measure the region's progress toward sustainability; and provides realistic implementation actions based on the strategies and goals of the Plan that will help the Mohawk Valley region to achieve its sustainable future.

Mohawk Valley Regional Consortium

The Consortium was composed of planning professionals and representatives from the Mohawk Valley's six county government agencies and the communities of Utica, Rome, Cooperstown, Oneida, and Oneonta. Otsego County took the lead and recruited members for the Consortium to provide direction and oversight in the development of the Plan. Consortium members provided core knowledge and perspective on regional sustainability issues and links with the various communities throughout the region, helped to prioritize the goals and objectives of the Plan, and assisted in the formation of the working groups.

Regional Planning Team

The Consortium then identified members of the Planning Team, which was composed of key technical and advisory stakeholders that represented the nine topic areas and were supported by the primary contractor, Ecology and Environment, Inc. (E & E) and specialized public outreach subcontractors, including The Genesis Group, the Mohawk Valley Economic Development District, and the Otsego County Conservation Association. The Planning Team members were a part of technical focus area working groups that met three times over the course of the eight-month planning process.



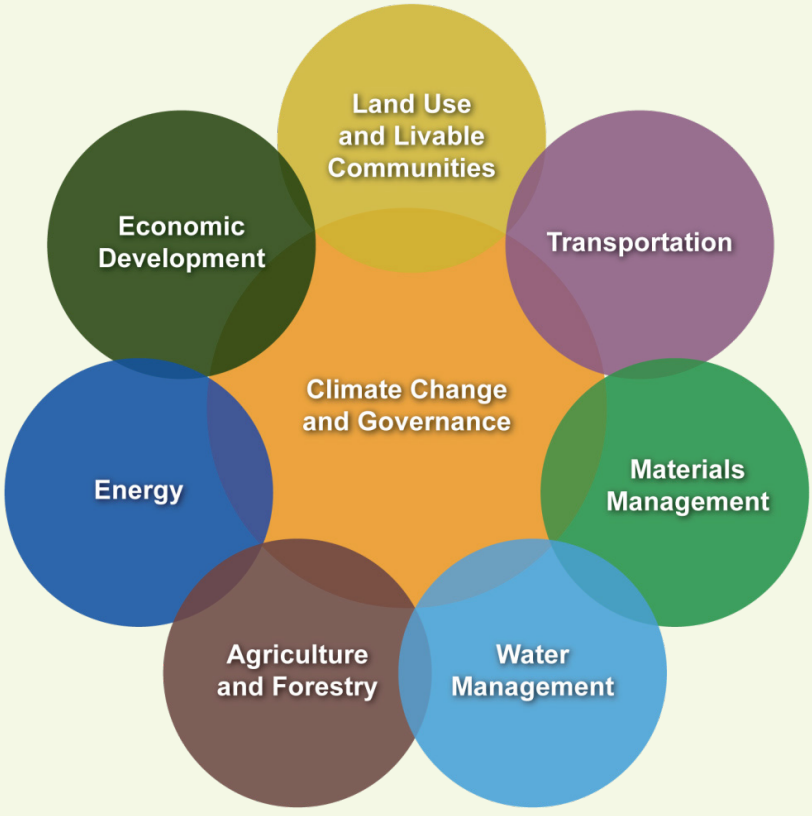
Mohawk Valley Regional Sustainability Planning Organization

Materials Management Working Group Meeting, SUNY Institute of Technology, Oneida County

Technical Working Groups

Seven technical areas for the working groups to focus on were selected: Economic Development, Land Use and Livable Communities, Transportation, Materials Management, Water Management, Agriculture and Forestry, and Energy. The working groups tasks were to gather critical data and knowledge from key stakeholders in the region and provide guidance to ensure that the Plan addresses regional differences and reflects the needs and interests of the entire region. The seven groups met independently to develop their own methods, but also collaborated with each other to identify links between focal areas.

Two additional overarching focal areas — **Governance** and **Climate Change Adaptation**— were the responsibility of technical specialists, E & E, who collected and integrated the information derived from all the working groups.



Technical Working Group Focus Areas

Public Outreach and Involvement

The Planning Team held two public meetings at Herkimer County Community College in December 2012 and March 2013 to encourage public input from Mohawk Valley residents, business owners and other stakeholders. Stakeholder and public involvement outreach was designed to reach as many persons, organizations, and local governments as practical in order to receive input in the development and implementation of the Plan.

In addition to public meetings, e-mails were sent to more than 7,000 people and groups, compiled from extensive contact lists compiled by the Planning Team that included Elected Officials, Superintendents, College Presidents, Faculty, Planning Departments and residents. Press releases were prepared and Planning Team members participated in group meetings at the regional chambers of commerce, radio talk shows, and other venues.

The feedback from the public stakeholders was considered in the development of the final Sustainability Plan. Additionally, residents of Mohawk Valley were able to provide feedback via a public website (www.sustainablemohawkevalley.com). Appendix A, Stakeholder and Public Input Summary, contains the comments from the public and additional stakeholders.

1.4 Mohawk Valley Sustainability Planning Process

Sustainability Indicators and Baseline Assessment

The Plan assesses the current status of the region with respect to the sustainable use of resources. The first step in determining how to stimulate environmental sustainability was to measure the existing status of the region. The indicators, or metrics, that were used to measure sustainability were chosen based on three criteria:

- Measurable across the entire region.
- Repeatable in the future without a large effort.
- Relevance to sustainability goals developed for the region.

The knowledge gained from this baseline assessment was used to establish strategic sustainability goals and track progress toward the achievement of the established targets. The complete baseline assessment and indicators are provided in Appendix B.

Planning Team and Stakeholder Meeting, SUNY Institute of Technology, Oneida County

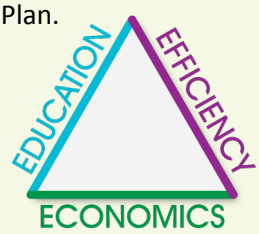
Greenhouse Gas Inventory:

As a part of the baseline assessment for the Mohawk Valley region, two GHG inventories were completed: Tier I and Tier II. The Tier I inventory was provided by NYSERDA and includes state-level data disaggregated to each region. The Tier II inventory was completed by the Planning Team and consists of region-specific data. The complete GHG Inventory for the Mohawk Valley Region is included in Appendix D.

Strategic Sustainability Goals

In considering the baseline assessment, the overarching goals for each focus area that were developed were designed to meet the basic needs of the region and to achieve sustainability. These goals were used to identify targets, implementation strategies, and ideas for specific sustainability projects to be implemented in the region.

During development of strategic sustainability goals for the region common themes that were present throughout the goals and implementation strategies were identified: **Education, Efficiency, and Economics** which formed the foundation needed to implement this Plan.



Sustainability Targets

The region established long-term and short-term Targets for each of the Sustainability Indicators. These targets will represent the future goals of the Mohawk Valley region and will serve as a metric against which to track progress over time. The goals, indicators, and targets are discussed in Section 2.

Implementation Actions:

Specific implementation actions were identified that outline the strategies and actions necessary to move closer to the region's sustainability targets. Implementation actions are like generic project descriptions. In some cases, specific projects are presented as case studies. Additionally, the implementation actions identify the lead municipality, other partners, and stakeholders that will be responsible for implementing each implementation action; establish implementation timelines; and outline the specific actions necessary to meet sustainability targets. The Planning Team has also identified a plan for gaining approval and adoption of the implementation actions by stakeholders and municipalities within the region. The implementation strategies identified in this plan fall into at least one of the sustainability themes of **Education, Efficiency, and Economics**, with some achieving support for all three themes. Implementation strategies are discussed in Section 3.

Town of Otego, Otsego County

2.0 Goals, Indicators, and Targets

This Section defines sustainability goals that were developed by the various Working Groups for the region; identifies the indicators to measure progress towards sustainability through implementation of the plan and establishes preliminary targets for the future that measure the region's progress toward sustainability.

- **Goals** are broadly regional in scope but still measurable.
- **Indicators** are the tools used to measure how the region scores with respect to the goals.
- **Targets** are numerical (wherever feasible) measurements that the region hopes to achieve at three distinct times:
  - 2015 targets are **immediate** and use existing programs and efforts.
  - 2025 targets are **achievable** and use existing technologies and programs.
  - 2050 targets are l**ong-term goals** that may need new technologies or programs not yet developed.

Goals, indicators, and targets are summarized by subject area below. More detail is available in the Baseline Assessment, Appendix B.

2.1 Economic Development

The Mohawk Valley region is in need of economic development that builds on existing industry successes in order to achieve a more sustainable future for the region. Unemployment statistics suggest that the region's diverse economic base makes its economy relatively stable such that it is not deeply impacted by national economic peaks and downturns. However, the wage rates of many existing jobs are at a lower wage scale, indicating the need for higher levels of training to improve access to living-wage job opportunities.

Median household income in 2011 for the region was $44,366, lower than the national median ($51,425) and the state median ($55,233). The median age of the region is 40.9 years compared with 37.7 years in the state and only 19.7% of the region's adults have a four-year college degree.

Despite having six SUNY campuses and eight private colleges, the region has not been able to retain the younger, well-educated population post-graduation. The quality of education is high, yet the ability to retain a younger workforce with the knowledge and technical skills needed for the new economy may be limited due to lack of available jobs and amenities such as vibrant communities with cultural and recreational activities that appeal to young people.

Other major economic sectors that are considered in the REDC Plan as providing an opportunity for growth in the region include the following:

- Agriculture and Food Processing
- Financial Services
- Insurance
- Tourism
- Health Care
- Cyber Security/Information Technology (IT)
- Semiconductors/Nanotechnology
- Clean Technology
- Advanced Manufacturing
- Distribution

Several of the Mohawk Valley REDC-targeted sectors noted above are related to various high technology industries that are an outgrowth of both the region's industrial past and current advanced technology. These industries have evolved and have been strengthened by educational and government partners in the region that collaborate on research and business development in multiple technological areas.

While much of the sewer and storm water management systems are in need of upgrades, other utilities such as water, power, and natural gas lines are well-maintained and provide ample supply in most areas. This infrastructure, along with an excellent transportation network of roads, rail, and ship access via the Erie Canal and Great Lakes should all appeal to new business developments.

The region also has abundant natural resources that are a significant tourist attraction, with Oneida County alone representing $1.1 billion in visitor spending and more than 16,000 jobs[3]. However, the region's natural resources and business-related infrastructure need to be more actively promoted to attract more tourists, businesses, and residents to the area.

BEFORE & AFTER - Green Infrastructure, North James Street, Rome, NY

[3] The Economic Impact of Tourism in New York State, Central New York Focus. 2011.

Sustainability Goals

Economic development goals are closely aligned with the Mohawk Valley REDC's Strategic Plan (the REDC Plan) and 2012 Action Plan, with the goals of this Sustainability Plan intersecting with and supporting those of the REDC Plan and the other focal group areas. The REDC economic development goals and the sustainability tactics that complete the "green" aspects of the REDC Goal are highlighted below.

GOAL

ED-1: Enhance regional concentrations to retain and create business in key growth sectors (REDC Goal: GROW).

- Maintain and expand on the diverse economic base to create resiliency from boom/bust economic cycles.
- Use economic development strategies that are both economically viable and environmentally sustainable.
- Increase job opportunities (and businesses) by leveraging the abundant water and waste water infrastructure that exists in the region.
- Evaluate the full scope and long-term costs and benefits of economic development strategies against short term impacts.

GOAL

ED-2: Align the region's workforce with the appropriate education and training to increase the supply of skilled workers (REDC Goal: BUILD).

- Expand partnerships between educational institutions and businesses to create broader understanding of existing workforce training needs and opportunities.
- Provide training to new workers in agriculture and forestry production to grow and sustain this important regional sector.
- Inventory the existing economic base to determine opportunities for enhancing use or creation of local supply chain materials, vendors and purchases.
- Expand opportunities for export of materials and services to grow business and job opportunities.

GOAL

ED-3: Create innovation enabling infrastructure that will drive entrepreneurialism (REDC Goal: CREATE).

- Expand the linkages between industry and education institution based research.
- Increase small business lending through micro-enterprise programs and establishment of entrepreneurial networks.
- Identify new business opportunities for filling industry supply chain needs that focus on the growing market for sustainable products and services, such as, renewable energy, recycled materials, green procurement and cleaning services.
- Expand access to broadband capacity to support small entrepreneurial growth.

GOAL

ED-4: Restore infrastructure and increase spatial efficiencies that will revitalize existing urban and town centers (REDC Goal: REVIVE).

- Revive/maintain water and wastewater infrastructure to attract new companies and industry to existing, previously developed areas.
- Build/maintain infrastructure for operational efficiency (and resilience).
- Encourage smart growth and transportation planning at the local level.
- Improve bottom line for businesses and municipalities through energy conservation; use energy audits.

GOAL

ED-5: Strengthen government and civic effectiveness to produce a more vibrant economy (REDC Goal: FORGE).

- Explore opportunities for government collaboration, consolidation and shared programs throughout the region.
- Modernize civic and governmental institutions through upgrades and expanded use of technology infrastructure that may also create opportunities for enhanced tracking and elimination of inefficiencies.
- Encourage a public ethos of conservation, efficiency, and local energy independence.
- Expand existing, effective local recycling programs in the region.

GOAL

ED-6: Promote unique regional assets through a unified identity and campaign.

- Create a common theme and brand for the region that reinforces its unique natural resources and quality of life attributes to differentiate the region and support economic development with an emphasis on the REDC target industries.
- Engage the public in the branding process to instill a sense of civic pride and ownership of their region's future.
- Identify audiences outside the region that the brand and a future campaign should target.

Sustainability Indicators and Targets

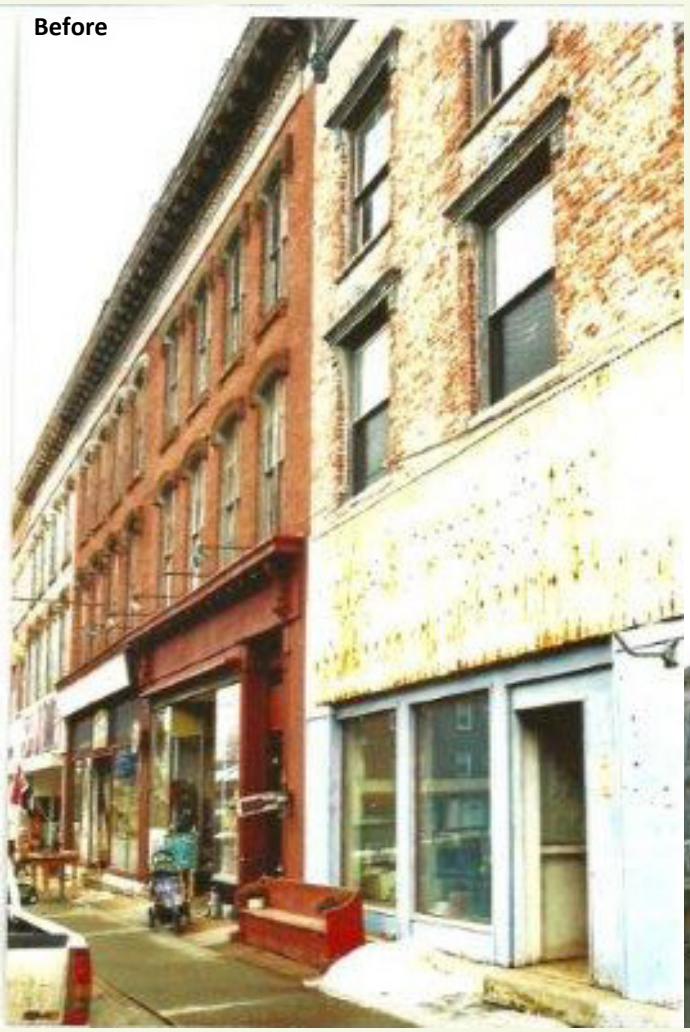
Two indicators were selected to measure and monitor the region's progress toward achieving the economic development objectives.

Table 2-1 Economic Development Indicators

Indicator	Associated Goal(s)
Housing + Transportation (H+T) Index: Transportation / Housing Affordability	ED-2, ED-4
Relationship of Wages to Changes in Employment	ED-1, ED-2, ED-3, ED-4

The Mohawk Valley has established targets (where relevant, an adjustment for inflation has been included) for each indicator. More detailed information regarding these indicators and associated targets is provided in Appendix B.

Before



Redevelopment of 47 Main Street Project, Fort Plain, Montgomery County, NY

After

INDICATOR

H&T Index

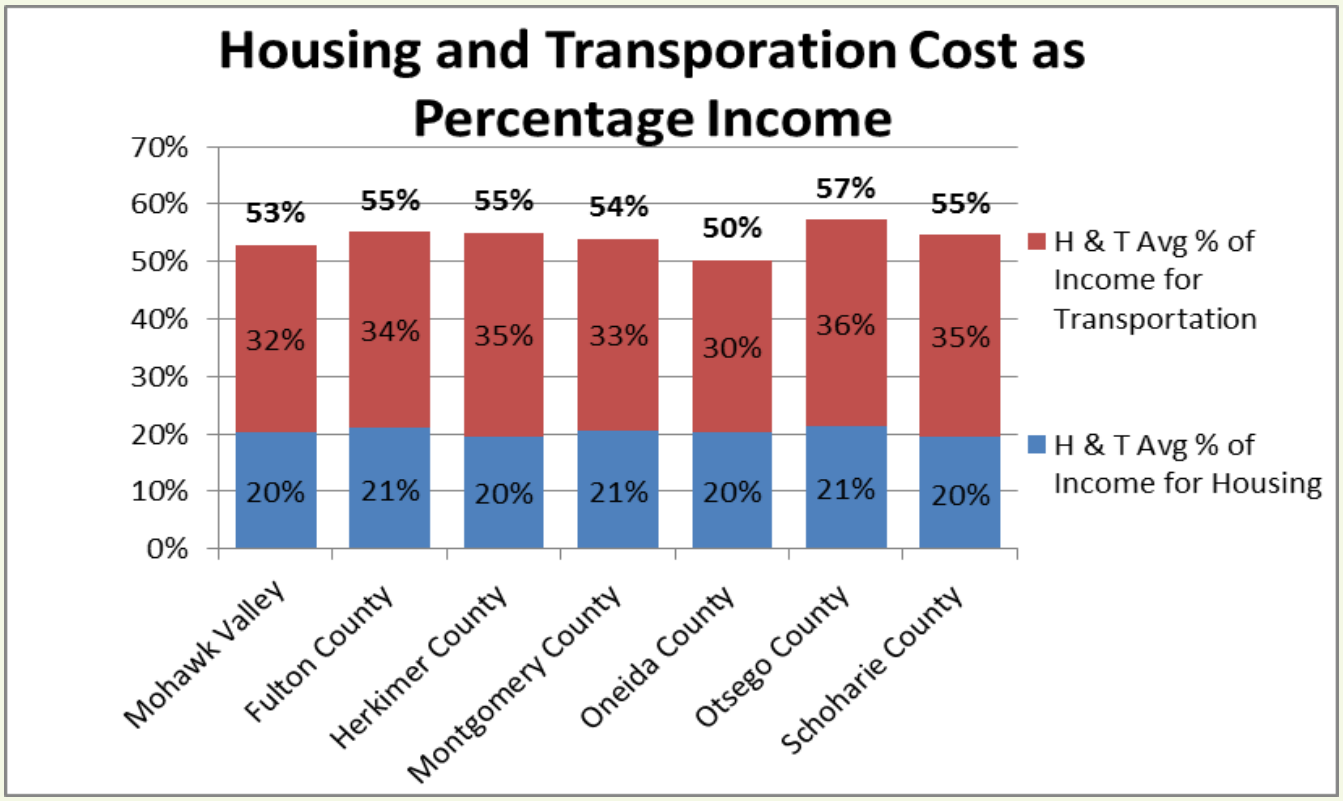
The H+T Index provides information about the true affordability of housing by including the transportation costs associated with a home's location. This indicator is related to the region's sustainability goals ED-2 – BUILD (Increase the supply of skilled workers) and ED-4 – REVIVE (Restore infrastructure). The Center for Neighborhood Technology (CNT) recommends a total H+T index below 45% of total income. The H+T Index average for the Mohawk Valley Region is 53%. The region ranges from a low of 50% in Oneida County to a high of 57% in Otsego County. Housing costs are constant across the region at an average of 20%, which is well below the national financing threshold standard of 28%. However, transportation costs are nearly twice the CNT-recommended goal of 15%, most likely because of the lack of transit options and the rural and less dense land use patterns.

The targets developed for measuring economic development could be achieved through maintaining current housing affordability and focusing on reduced regional transportation costs. However, the long-term goal would require a reduction in regional transportation costs as well as implementation of new national standards that require performance equivalent to 54.5 miles per gallon for cars and light trucks for model years 2017-2025.

In 2012, the average household in the Mohawk Valley region spent approximately 53% of its income on housing and transportation.

TARGET

- **2015:** Maintain current H+T Affordability Index levels at the Mohawk Valley regional average of 53%.
- **2025:** Reduce the H+T Affordability Index by 10% to 43% (2% below CNT current recommended standards).
- **2050:** Reduce the H+T Affordability Index by 15% to 38% (7% below the CNT recommended H+T Index of 45% [2009 base year]).



INDICATOR

Relationship of Wages to Changes in Employment

This indicator correlates changes in the number of regional jobs to the level of wages being provided. This indicator is directly related to sustainability goal ED-2 – Build (increase the skilled workforce), which focuses on the need for a trained workforce; a skilled workforce would be expected to result in an increase in wages and overall standard of living. Wages and employment are not likely to change significantly in the short-term because of the time required to train new workers and create new businesses and job opportunities. The region has experienced job growth at a pace in line with the state while not resulting in overall wage growth for the Mohawk Valley. However, the Mohawk Valley REDC Plan focus areas—agriculture and food processing, financial services, insurance, health care, and distribution—all show growth in wages at or higher than the percent change in jobs, indicating the potential for a positive impact from these sectors on the region's wealth.

Achieving the targets set forth by the region for this indicator will require short-term stabilization of jobs and wages and, moving forward, a significant decrease in the unemployment rate in the region as well as an increase in wages throughout the region.

The Mohawk Valley region saw a 2% increase in jobs from 2010 to 2011, while experiencing a decrease in wages of 1%.

TARGET

- **2015**: No further loss of jobs or wage levels based on the regional average (using 2011 as a base year and a 2% increase in jobs and wages for the REDC target sectors).
- **2025**:
  - Wages: 10% regional average increase in wages from 2011 base year.
  - Employment: an unemployment rate that is 2% below the 2025 state or national averages, whichever is lower.
- **2050**:
  - Wages: 10% increase from 2025 level.
  - Employment: an unemployment rate that is no more than 4%.
  - All residents are making a living wage that is above the poverty level.

2.2 Transportation

The Mohawk Valley region's multi-modal transportation network (major highways, railroads, waterways, and a regional airport) serves both economic and recreational needs of residents and businesses. Routes 5 and 5S are the primary regional connectors for commuters, and Routes 12 and 12B are used as additional connectors. I-90, I-88, and U.S. 20 are used more by through traffic. The Erie Canal is a recreational waterway as well as an additional freight corridor for the region. The Griffiss International Airport, north of Rome, is the major regional general aviation airport, with passenger service in Albany and Syracuse.

The Mohawk Valley region is strategically positioned in the center of New York State between Albany and Syracuse. Rail lines and I-90 connect the region to neighboring communities and offer businesses and agriculture economic development opportunities. Waterways are used for recreational boating, with the Erie Canal also offering some potential as a freight channel. Existing pedestrian, bicycle, equestrian, and snowmobile trails for residents and tourists can be connected to build a region-wide recreational network. The region's urban areas, village centers, and college campuses have the potential to increase transit ridership and travel by alternative modes such as bicycling and ridesharing.

Mohawk Valley is a large region with limited financial resources for maintaining the vast number of roads. Passenger rail service schedules also are limited and are further constrained by having to share rail lines with freight rail. Air service, which is viewed as vital for economic development, is limited by a lack of commercial carriers in the region and the presence of well-connected airports in Albany and Syracuse outside the region.

Sustainability Goals

Five goals were developed to help the region develop a more efficient transportation system that serves residents and supports the communities.

GOAL

T-1: Align Transportation and Land Use Planning and Investment

- Plan new transportation infrastructure to support existing development and limit sprawl.
- Consider traffic volume, lifecycle, and maintenance costs along with land use planning issues when prioritizing transportation infrastructure projects.

GOAL

T-2: Improve Efficiency in Maintenance of Transportation Infrastructure

- Provide training and tools that enable highway departments to better manage assets and resources.
- Increase coordination between municipalities for services such as road salting and sanding, snow removal, shoulder maintenance, and equipment sharing.
- Increase use of supportive technologies such as actuated traffic signals, live traffic cameras, and LED street lights.

GOAL

T-3: Improve and Connect Regional Multi-use Trails

- Improve trails and supporting infrastructure for walking, bicycling, horseback riding, and snowmobiles and increase connections between trails and to community centers without overburdening maintenance budgets.

GOAL

T-4: Increase Public Transportation Ridership

- Promote public transit by expanding service and scheduling and providing incentives to commuters.
- Develop flexible and appropriate services for populations in rural areas with little access to public transportation.

GOAL

T-5: Promote Transportation Alternatives

- Improve reliability and scheduling of existing passenger rail service and support development of high-speed rail.
- Promote the increased use of the Erie Canal for transporting agricultural and other local products.
- Develop infrastructure for ridesharing, bicycling, and alternative fuel vehicles including hybrid, electric, compressed natural gas (CNG), and biodiesel vehicles.
- Promote opportunities for telecommuting to reduce transportation costs.

Sustainability Indicators and Targets

Six indicators were selected to measure and monitor the region's progress toward achieving the sustainable transportation objectives.

In addition, based on the current standards and expected trends, Mohawk Valley has established the targets (where relevant, an adjustment for inflation has been included) for each indicator. More detailed information regarding these indicators and associated targets is provided in Appendix B.

Table 2-2 Transportation Indicators

Indicator	Associated Goal(s)
Total percent of people commuting via walking, biking, public transportation, and carpooling	T-1
Vehicle miles traveled per capita	T-1
Surface rating of state roads	T-2
Regional trail network – miles of trails in the region	T-3
Transit ridership	T-4
Number of registered alternative fueled vehicles	T-5

INDICATOR

Total percentage of people commuting via walking, biking, public transportation, and carpooling

This indicator measures the percentage of commuters age 16 years and older who typically commute using modes other than single-occupancy vehicles Increasing use of these alternative modes corresponds to lower GHG emissions from fewer vehicle miles traveled. This indicator show progress toward the region's Goal T-1 – Align Transportation and Land Use Planning and Investment.

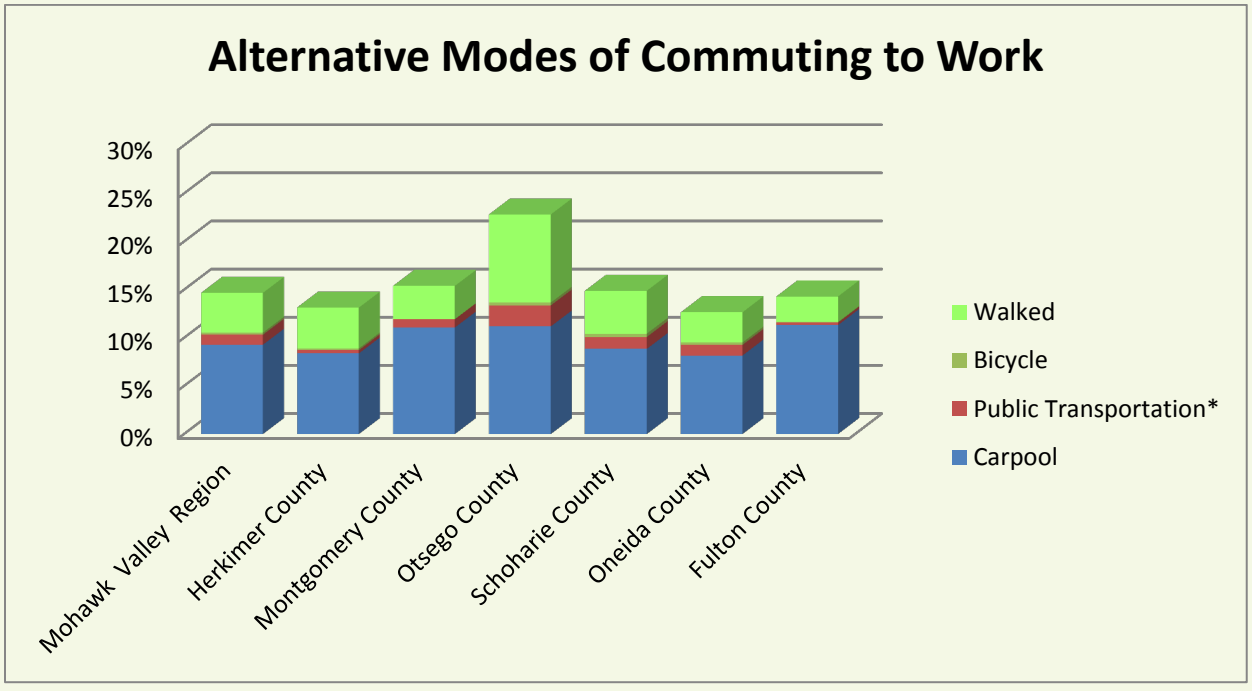
Single-occupancy vehicles (SOVs) are by far the most common mode for commuting. Influencing people to switch to alternative modes will require increasing the convenience of the alternative (e.g., adding bicycle lanes and more frequent buses) and improving their economic appeal through education and financial incentives. Rising gasoline prices will also provide an incentive for people to switch to alternative modes of transportation.

The targets for this indicator consider the current and future availability of alternative modes of transportation. It is anticipated that initiating change will take several years and no change will be made by 2015.

14.7% of the population of the Mohawk Valley Region commuted via alternative transportation in 2010.

TARGET

- **2015:** No change.
- **2025:** Increase percentage alternative commutes from 14.67% to 20%.
- **2050:** Increase percentage alternative commutes from 14.67% to 30%.



Sources:
2010 American Community Survey 1-Year Estimates: Means of Transportation to Work
2008-2010 American Community Survey 3-Year Estimates: Means of Transportation to Work
2006-2010 American Community Survey 5-Year Estimates: Means of Transportation to Work
**Excludes taxicabs*

INDICATOR

Vehicle Miles Traveled per Capita

This indicator measures the total number of miles traveled annually in the region per resident. This provides information about automobile usage in the region and indicates progress toward Goal T-1 – Align transportation and land use planning and investment.

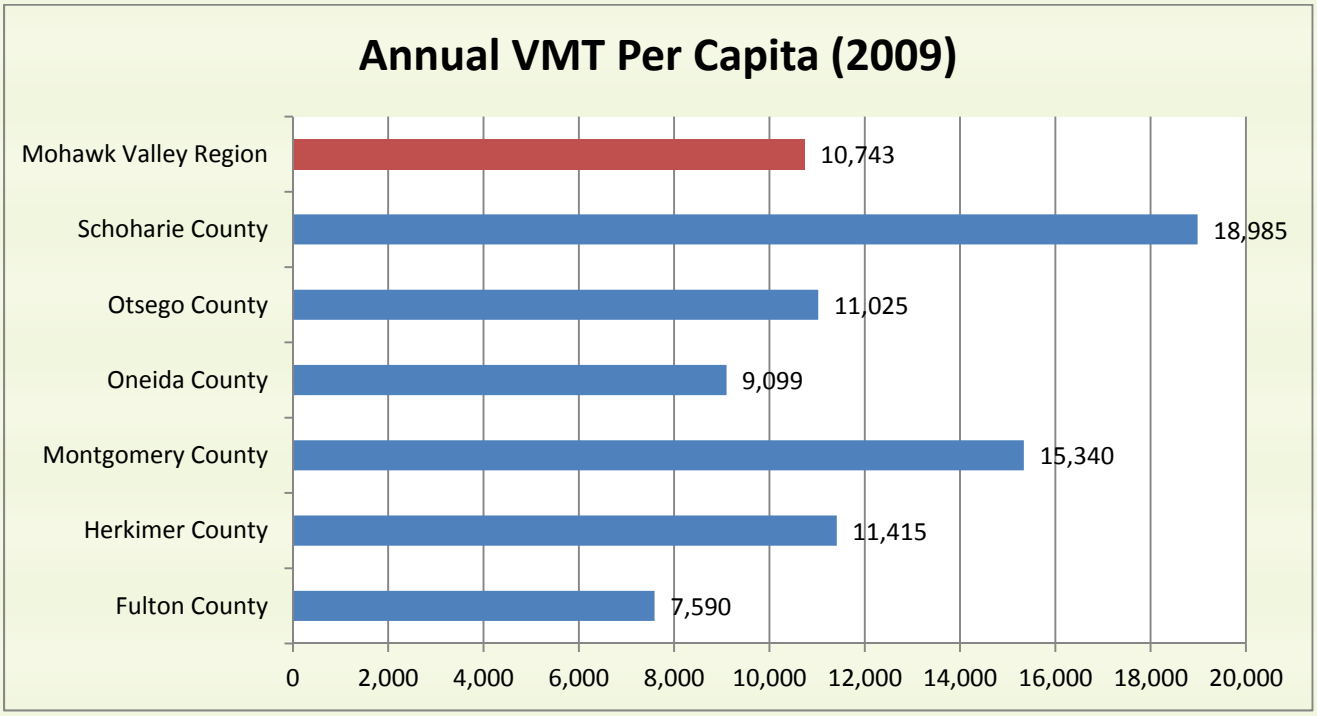
The Mohawk Valley is largely a rural region and so multiple approaches to reducing vehicle miles travelled (VMTs) are needed along with reducing the use of single occupancy vehicles (SOVs). The region will need to consider ways to reduce trip distances and will have to consider the long-term impacts of land use decisions. For example, lower VMT per capita is strongly correlated with compact, mixed use communities.[4] Controlling the level of sprawl is vital to maintaining and reducing current VMT levels.

The targets consider likely changes in population and development patterns. This indicator is tied to the Total Percentage of People Commuting via Walking, Biking, Public Transportation, and Carpooling indicator and will be influenced by those targets. It is anticipated that significant action will need to take place before a measurable difference in annual VMTs can be made.

In 2009, for each person in the Mohawk Valley Region 10,743 miles were driven within the region.

TARGET

- **2015:** No change.
- **2025:** Reduce annual VMT per capita by 10% (from 10,743 to ~9,700).
- **2050:** Reduce annual VMT per capita by 25% (from 10,743 to ~8,100).



Sources: NYSDOT 2009 data; U.S. census.

[4] Ewing, Reid, et al. "Growing Cooler: The Evidence on Urban Development and Climate Change." Urban Land Institute. 2007. http://docs.nrdc.org/cities/files/cit_07092401a.pdf

INDICATOR

Surface Ratings of State Roads

This indicator measures the condition of the surface on state roads. Roads and highways in good repair with even surfaces contribute to safety, mobility for all types of personal and commercial trips, and less wear and tear on vehicles. This indicator measures progress toward achieving Goal T-2 – Improve efficiency in maintenance of transportation infrastructure.

Targets for this indicator are included to initiate a discussion and should be considered preliminary. Ratings and targets would be subject to change based on any changes in rating methodology and the trajectory of federal and state transportation infrastructure funding.

In 2011, New York State roads in the Mohawk Valley Region had an average road surface rating of 6.75 (Fair Rating).

TARGET

- **2015:** No change.
- **2025**: Increase regional average state highway condition rating to 7.0.
- **2050**: Increase regional average state highway condition rating to 7.25.

INDICATOR

Regional Trail network – Miles of Trails within the Region

This indicator measures the number of publically available trails for walking/hiking, bicycling, cross-country skiing, snowmobiling, and horseback riding, including multi-mode trails on public property. Trails on private property are not measured here. This indicator measures the extent of a regional trail system and indicates progress toward achieving Goal T-3 – Develop Regional Multi-mode Trail Networks.

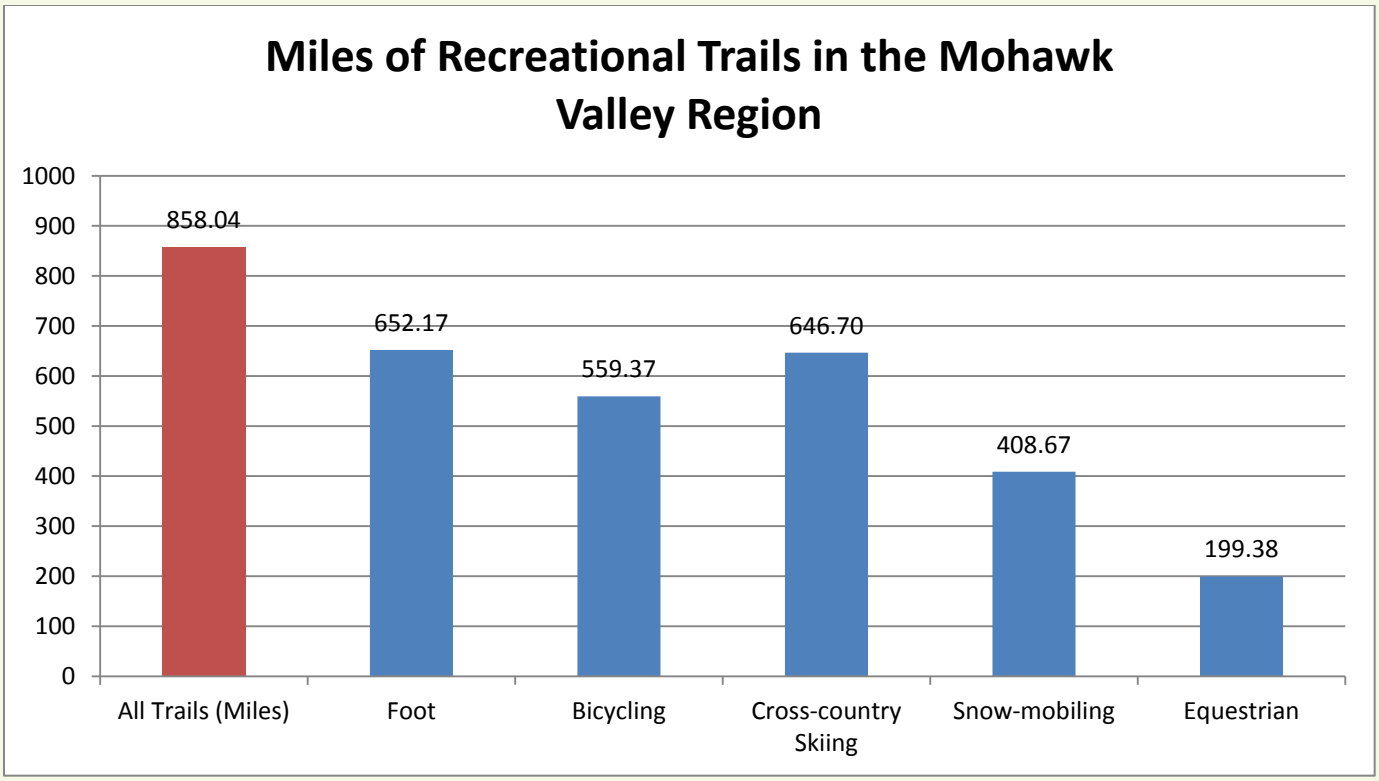
The region has a considerable number of trails; however, trail networks are not evenly connected across all the counties. Much of the focus of planning will likely be in linking existing trails to each other to create regional networks. A number of trail plans have already been developed, and communities will need to identify funding sources for implementation.

Targets for this indicator are included to initiate a discussion and should be considered preliminary. The final targets will consider current number and location of trails as well as likely funding sources for planning and implementation. A regional plan will be an important first step to identifying potential trail linkages.

As of 2012, there were 858 miles of trails located in the Mohawk Valley Region.

TARGET

- **2015:** Formulate a regional strategy to connect trails into a network.
- **2025:** Close remaining gaps in the Canalway trail.
- **2050:** Increase current total by 15%.



INDICATOR

Transit Ridership

This indicator measures the total number of one-way passenger trips on transit services provided to the public. This indicator provides information about the level of mass transit use in the region and indicates progress toward achieving Goal T-4: Increase Public Transportation Ridership.

Increasing transit ridership will require the region to develop transit systems that are convenient and economical alternatives to the automobile. While this can be difficult to achieve in rural communities, the more urban communities can align transit systems with sound land use planning that promotes density, mixed uses, and walkability. Rural communities could develop flexible routes.

The targets for this indicator consider current and future availability of public transit. Increases in public transit ridership are anticipated to be largely made in urban and more densely populated communities.

In 2011, 2,498,379 one-way passenger trips were taken by public transit in the Mohawk Valley Region, accounting for 6,765,582 miles.

TARGET

- **2015:** Increase current total by 1%.
- **2025**: Increase current total by 5%.
- **2050**: Increase current total by 25%.

INDICATOR

Number of Registered Alternative-Fuel Vehicles

This indicator measures the number of vehicles registered with the New York State Department of Motor Vehicles that run primarily on a fuel or power source other than traditional gasoline. Measuring this provides information about the region's overall fuel efficiency and indicates progress toward increasing alternative fuel vehicles under Goal T-5 – Promote Transportation Alternatives.

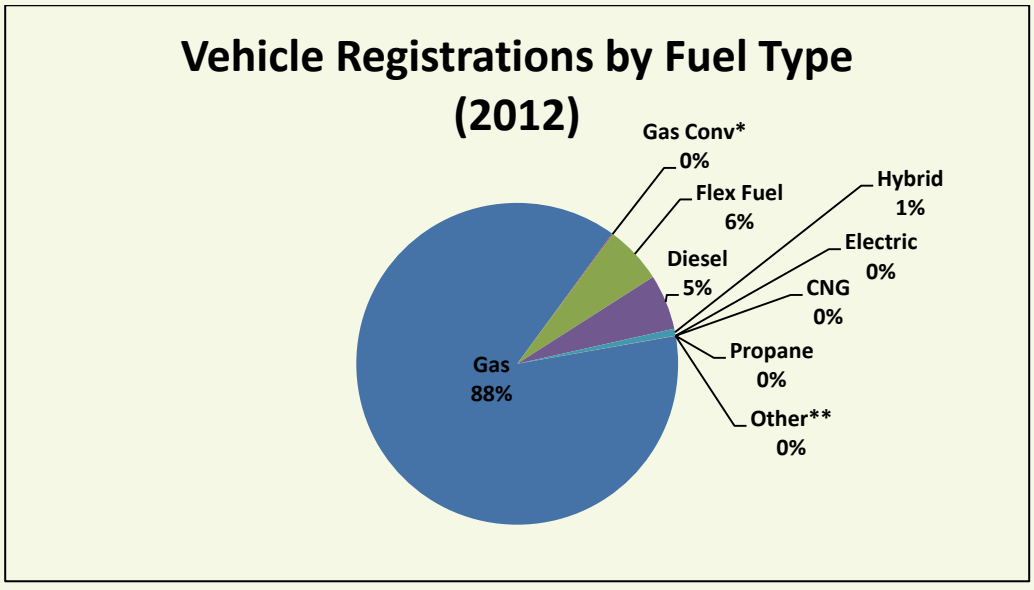
The number of alternative-fuel vehicles will likely be tied to several variables outside of the region's control, such as the cost of alternative vehicles and the cost of fuel. The region will need to develop infrastructure and incentives in order to influence decisions to purchase an alternative fuel vehicle. Increasing the availability of various fueling stations will be vital to making these technologies practical in the region. Municipalities may also consider incentives that provide priority parking for owners of alternative fuel vehicles or to developers that encourage infrastructure that supports alternative fuel vehicles where possible.

The targets refer to vehicles that would fall under the categories of Hybrid, Electric, Compressed Natural Gas (CNG), Propane, and Other. While gas conversion and flex fuel vehicles are capable of running primarily on fuels other than gasoline, only the four categories included are known to rely entirely or significantly on fuel sources other than gasoline and diesel (petroleum).

In 2012, the number of registered alternative fuel vehicles in the Mohawk Valley Region accounted for only 0.72% of all vehicles.

TARGET

- **2015:** No change.
- **2025:** Increase percentage of hybrid, electric, CNG, propane, and other non-petroleum fueled vehicles from 0.72% to 2% of regional NYs Mohawk Valley registrations.
- **2050:** To Be Determined based on vehicle and fuel availability.



*Gas conversion - Gasoline engine that can be easily converted to a gaseous fuel (powered by natural gas, propane, etc.)
**Other - Fuel type not specified in DMV records
Source: New York State Department of Motor Vehicles

2.3 Land Use and Livable Communities

The geography of the Mohawk Valley is broad and varies from the Catskill Mountains surrounding Oneonta to the foothills of the Adirondacks. Much of the developed land is located along the Interstate-90 and Interstate-88 corridors and is bordered by areas of agricultural land, forested areas, and open space. Open space is abundant, particularly in the southern part of the region and in northern Herkimer and Fulton counties where Adirondack State Park is located. More than 17% of the region's land area is greenspace, but this varies across the counties, from 2.7% in Montgomery County to 39% in Herkimer County. Both active and abandoned farmland is found throughout the region. Some farmland is at risk from a combination of development and economic challenges; other areas are seeing strong investment from a resurgence in small-scale farming, primarily Amish farming communities and other family farms.

The region's towns and villages are the centers of the rural communities. They vary in geographic size and population and, while some have defined main streets containing compact development, others are centered on a single building or public space. Some rural community centers lack infrastructure such as public water and sewer systems. The Village of Cooperstown, in the Town of Otsego, represents a mostly successful example of careful planning, strict zoning, and a focus on a village center that concentrates development in a small, attractive core. The presence of the Baseball Hall of Fame provides an economic engine that helps this community attract tourism and retirees.

Pervious Surface North James Street, Rome

2012 NYSDEC Environmental Excellence Award for Green Infrastructure and Economic Development

Sustainability Goals

The following goals/objectives and strategies for enhancing reinvestment in the urban and rural communities and for efficient use of existing land resources have been identified:

GOAL LULC-1: Redevelop Main Streets, Waterfronts, and Brownfields

Encourage the revitalization of main streets and town/village centers, waterfronts, and brownfields. Implement smart growth concepts that enhance the walkability and quality of life of these areas. Use green building practices in redevelopment and construction.

- Encourage infill development and brownfield redevelopment.
- Promote mixed use development.
- Promote adaptive reuse of existing buildings.

GOAL LULC-2: Provide Technical Assistance and Collaboration Opportunities

Provide training and circuit riders to communities and develop partnerships for development of grant proposals and land use planning documents.

- Enable municipalities to easily share data/plans and technical specifications.
- Provide technical assistance and incentives for development of comprehensive plans or smart growth policies.
- Develop partnerships between municipalities and with local Colleges and Universities.

GOAL LULC-3: Identify, Preserve and Protect Lands Suitable for Viable Agriculture

Preserve and encourage local farming by connecting farmers with local and non-local markets and support development of agricultural processing and the distribution infrastructure. Ensure residents have access to fresh food.

- Provide processing and distribution capacity to local agriculture and manufactured products.
- Provide technical assistance to small farms and businesses for funding opportunities and navigating local and state regulations.
- Connect local farms and businesses with residents and new markets.
- Limit development on high quality farmland.

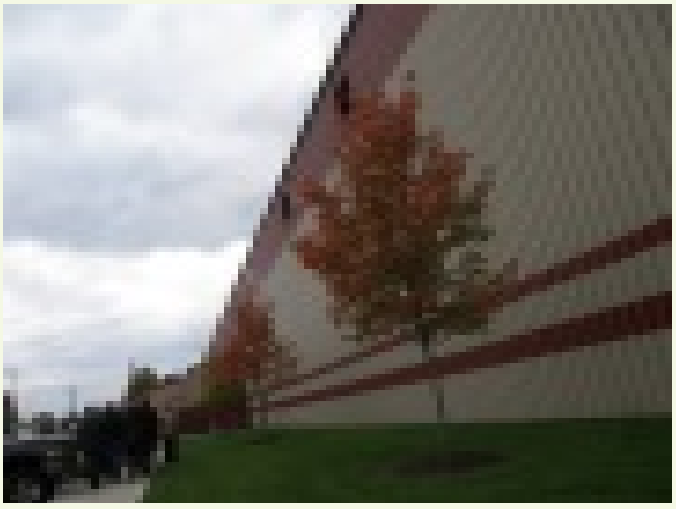
GOAL

LULC-4: Invest in Existing Infrastructure and Housing Stock

Focus investment on public infrastructure and existing building stock near community centers while preserving rural agricultural land and open space. Incorporate "complete streets" concepts in infrastructure design.

- Invest in public infrastructure and existing building stock near community centers.
- Develop/upgrade local sewer systems in currently developed hamlets and villages.
- Diversify the housing market with affordable single and multi-family housing.

Before: Former General Cable Site



After: American Alloy Steel Northeastern Flagship Facility

Former General Cable Site Remediation and Revitalization

Brownfields Redevelopment Strengthens MV Industry Cluster

Construction of American Alloy Steel Northeastern Flagship Facility

Funding: USEPA, NYDEC, Restore NY Round 1 grants

Developer: American Alloy Steel – new construction of \$6M 58,000 ft^2 facility in 2009; 18,000 ft^2 expansion in 2012.

- Remediation,
- Demolition / Blight elimination,
- Reuse of demolished concrete as structural sub-base,
- New construction of clean-manufacturing facility downtown,
- Rail siding constructed into building to ensure efficient movement of product, and
- Global customer base/ net exporter.

100% of stormwater managed on-site with bioretention.

Sustainability Indicators and Targets

Six indicators were chosen to measure and monitor the region's progress toward achieving the sustainable land use and livable communities goals.

In addition, based on the current standards and expected trends, Mohawk Valley has established the targets (where relevant, an adjustment for inflation has been included) for each indicator. More detailed information regarding these indicators and associated targets is provided in Appendix B.

Table 2-3 Land Use and Livable Communities Indicators

Indicators	Associated Goal(s)
Number of Community Centers Awarded Brownfield Opportunity Areas Funding	LULC-1, LULC-2
Number of Communities with Main Street Revitalization Programs	LULC-1, LULC-2
Number of Grocery Stores and Farmer's Markets per 1,000 population	LULC-1
Percentage of Municipalities with a Comprehensive Plans Updated since 2002	LULC-2
Per Capita Land Consumption	LULC-3, LULC-4
Percentage of Population in Community Centers	LULC-3, LULC-4

Adaptive Redevelopment Project, Rome, NY

INDICATOR

Number of Community Centers Awarded Brownfields Opportunity Areas Funding

This indicator measures the number of community centers in the region that have applied and successfully been awarded funding through New York State's Brownfields Opportunity Areas (BOA) program. This indicator measures progress toward Goals LULC 1 – Redevelop Main Streets, Waterfronts, and Brownfields and LULC 2 – Provide Technical Assistance and Collaboration Opportunities. The New York State Department of State provides financial and technical assistance through the BOA program to municipalities and community-based organizations for the completion of revitalization plans and implementation strategies for areas affected by the presence of brownfield sites. This indicator helps to measure the number of communities that are making progress in developing a plan to address remediation and development of environmentally contaminated sites. The program includes three steps: a preliminary analysis, an in-depth assessment, and a full implementation strategy.

The reuse of brownfield sites reduces pressure on developing farmland and areas not well-served by existing infrastructure. Redevelopment of brownfields can also increase the viability of surrounding parcels. To date, six communities— the City of Amsterdam, City of Johnsonville, City of Oneonta, City of Rome, City of Utica and the Village of Frankfort—have taken advantage of this program. Currently, only one program—in the City of Rome—has reached the third step of developing an implementation strategy.

Increasing the number of communities that participate in this program and that develop an implementation strategy will lead to the redevelopment of existing brownfields and to preservation of other lands. Success will require a commitment of technical and resource assistance to help communities successfully apply and develop plans.

In 2012, six communities in the Mohawk Valley region took advantage of Brownfield Opportunity Area Funding.

TARGET

- **2015:** Increase total number of communities participating by 2 to 8.
- **2025:** Increase total number of cities participating by 5 to 11.
- **2050:** To be determined.

INDICATOR

Number of Community Centers with Main Street Revitalization Programs

This indicator identifies the current percentage of community centers that have applied and successfully been awarded funding through New York State's Main Street Program. This indicator measures progress toward Goals LULC 1 – Redevelop Main Streets, Waterfronts, and Brownfields and LULC 2 – Provide Technical Assistance and Collaboration Opportunities. The program provides financial resources and technical assistance to communities to strengthen the economic vitality of the state's traditional Main Streets and neighborhoods.

Identifying communities without a revitalization program will also reveal opportunities to provide technical assistance to advance this issue.

Only fourteen (14) different community centers and organizations in Mohawk Valley participated in the program between 2004 and 2010. Increasing the number of communities participating in this program will require a commitment of financial and technical resources. Identifying potential grant match sources, such as other funding programs or public-private partnerships, will be important for communities with financial constraints. Encouraging towns and villages to apply by offering technical assistance will help to increase the number of successful applications.

Between 2004 and 2010, fourteen (14) different community centers and organizations in Mohawk Valley participated in the Main Street Revitalization Program.

TARGET

- **2015:** Increase number of community centers that have received Main Street Program funding by 4 to 18*.
- **2025:** Increase number of community centers that have received Main Street Program funding by 24 to 31*.

* Assumes participation by two new community centers each year.

INDICATOR

Number of Grocery Stores and Farmer's Markets per 1,000 Population

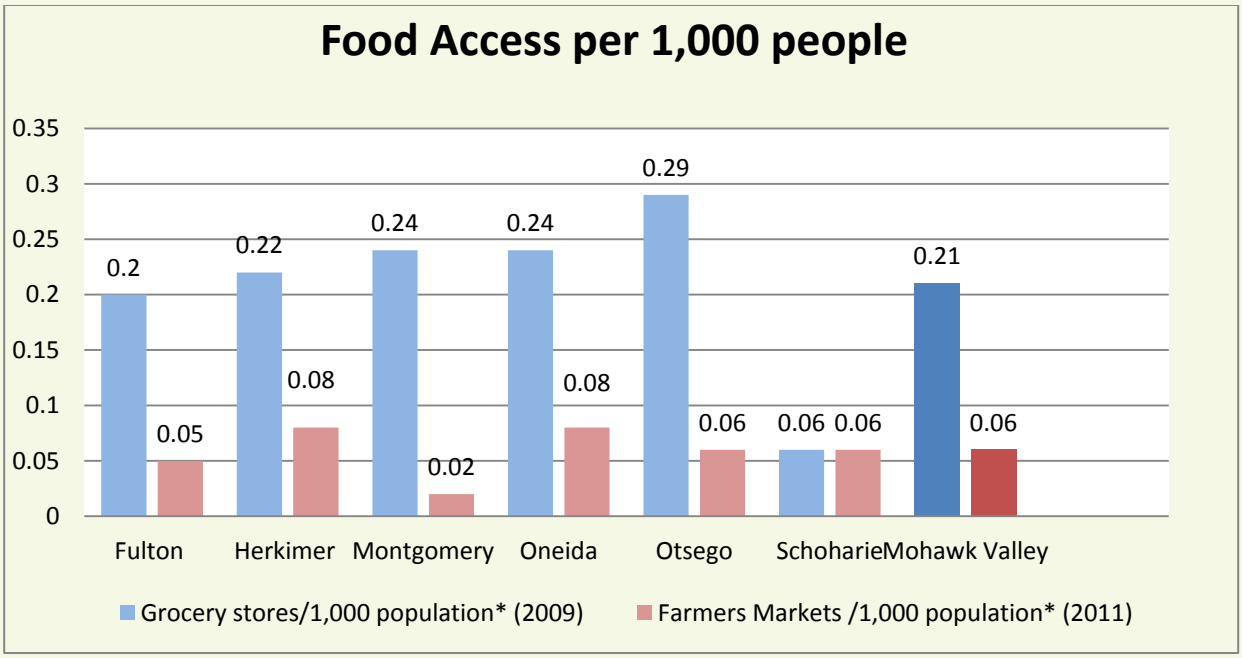
This indicator measures the number of grocery stores per 1,000 population, the number of farmer's markets per 1,000 population, and the number of communities that have been identified by the U.S. Department of Agriculture as "food deserts." This indicator helps to measure the region's ability to access healthy food sources and progress toward achieving Goal LULC-1 – Redevelop Main Streets, Waterfronts, and Brownfields and Goal LUCL-3 – Identify, Preserve and Protect Lands Suitable for Viable Agriculture. Identifying access to food from a grocery store or farmer's market provides a benchmark for opportunities for local economic development, gauges a community's health and well-being, and may reduce vehicle miles traveled for food.

The region does not expect to see a large increase in the number of farmer's markets; however, ensuring there are an adequate number of access points will continue to be important. Community supported agriculture and local farm stands can also play an important role in food access. Areas lacking grocery stores or markets should consider incentives to encourage this type of development in their communities. Educating residents about the value of purchasing local produce will increase the demand and success of existing farmer's markets.

The Mohawk Valley region has 0.21 grocery stores and 0.06 farmer's markets per 1,000 people. There are 8 communities that are considered "food deserts" (3 in Herkimer County and 5 in Otsego County)

TARGET

- **2015:** Maintain number of grocery stores per 1,000 population at 0.21 and farmer's markets per 1,000 population at 0.06.
- **2025:** Increase number of grocery stores per 1,000 population to 0.23 and maintain farmer's markets per 1,000 population at 0.06.



Sources:
Economic Research Service (ERS) and U.S. Department of Agriculture (USDA). Food Environment Atlas. http://www.ers.usda.gov/data-products/food-environment-atlas/go-to-the-atlas
USDA Economic Research Service Food Desert Locations
http://www.ers.usda.gov/data-products/food-desert-locator/go-to-the-locator.aspx
* 2010 U.S. Census Bureau. Communities centers in the Mohawk Valley region are listed in Appendix 4A below.

INDICATOR

Percentage of Municipalities with Comprehensive Plans Updated Since 2002

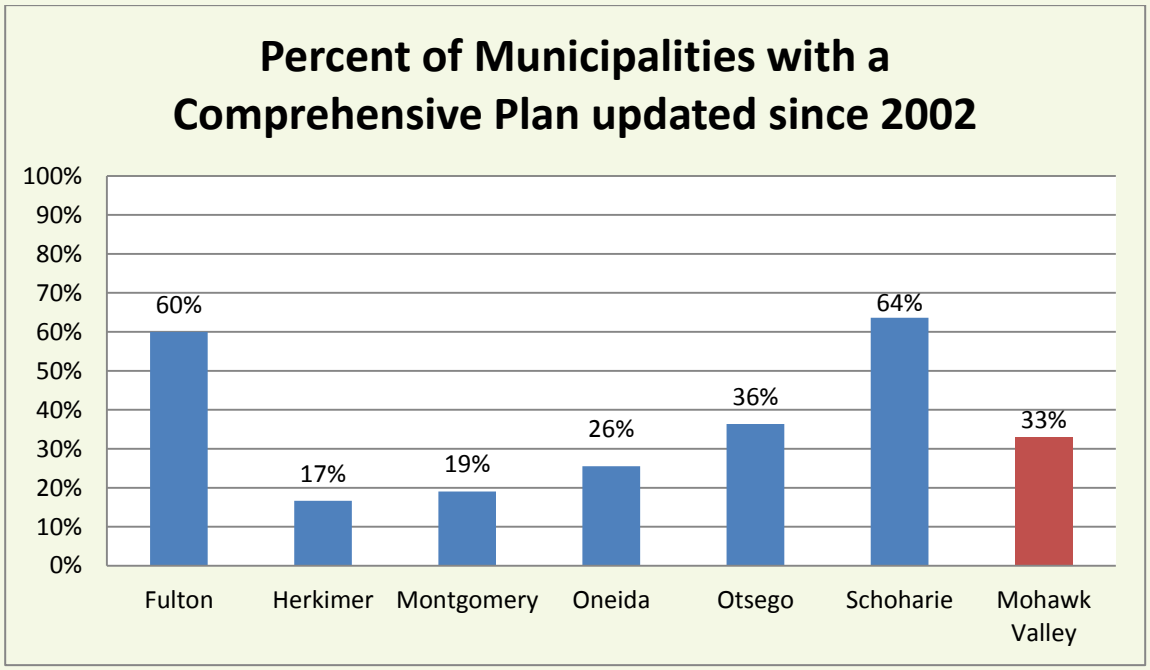
This indicator tracks the percentage of cities, towns, and villages that have adopted or updated a comprehensive plan in the last decade. This metric gives an indication of how local communities can be equipped to guide future growth and development and progress toward sustainability goal LULC-2 – Provide Technical Assistance and Collaboration Opportunities. A municipality's comprehensive plan forms the basis of its goals as they relate to community priorities for enhancement, development, and stability. It is assumed that plans older than ten years do not adequately address current conditions.

Outdated comprehensive plans lack the current tools used to encourage more effective and efficient growth and development of lands and infrastructure. Informing officials of the benefits of planning for smart growth and the problems associated with sprawl and irresponsible development of open space can increase interest in land use planning. Technical and resource assistance will be needed by many of the smaller municipalities in order to create an effective comprehensive plan.

In the Mohawk Valley region, 33% of municipalities have a comprehensive plan that was updated since 2002.

TARGET

- **2015:** Increase percentage of municipalities with an updated comprehensive plan from 33% to 40%.
- **2025:** Increase percentage of municipalities with an updated comprehensive plan to 50%.
- **2050:** Increase percentage of municipalities with an updated comprehensive plan to 70%.



Sources: Otsego County Planning Department; Montgomery County Department of Economic Development and Planning; Fulton County Planning Department; Herkimer Oneida County Comprehensive Planning; Schoharie County

INDICATOR

Indicator: Per Capita Land Consumption

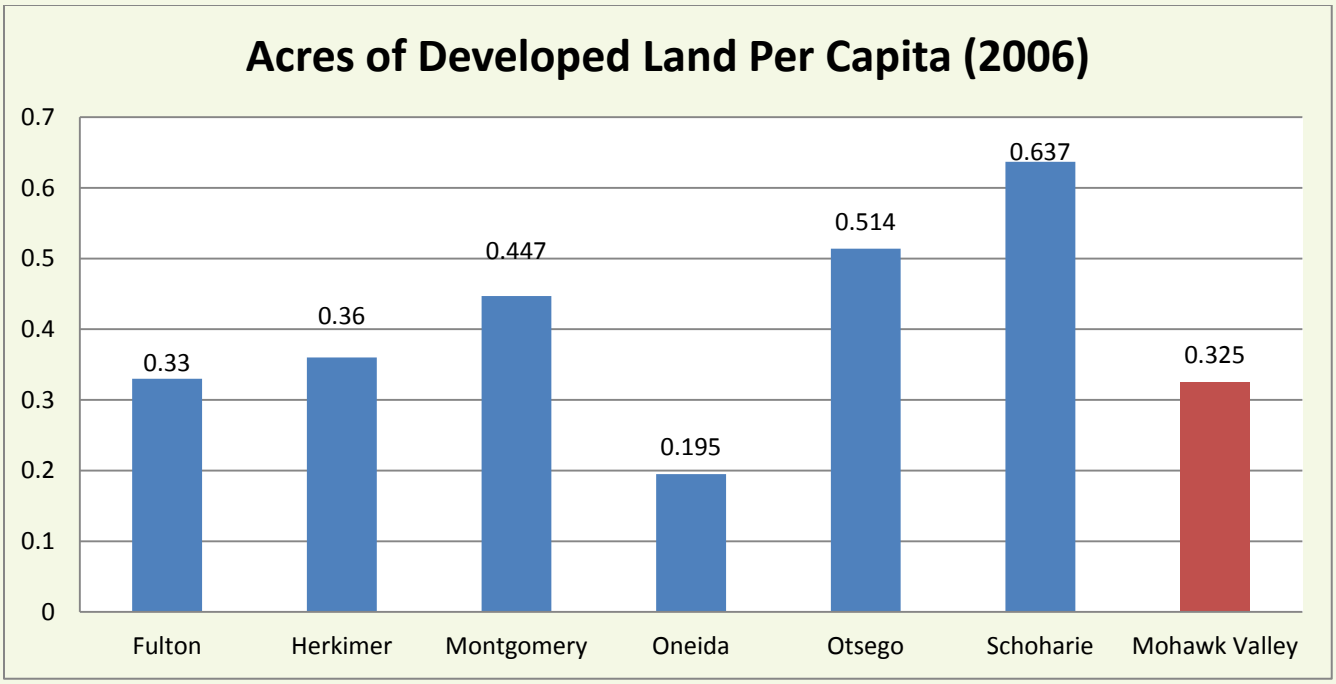
This indicator measures developed land per capita, which is defined as the area of all developed land, including all land uses excluding agriculture, conservation areas, parks, and other open spaces divided by the total population within a particular region. This indicator helps to measure how much non-developed land is being lost to commercial, industrial, and residential uses, as well as progress toward Goals LULC-3 – Identify, Preserve, and Protect lands suitable for viable agriculture production, and LULC-4 – Invest in Existing Infrastructure and Housing Stock.

The region's land use is characterized by large amounts of forest and grassland areas, with a few centralized areas of growth and development. The region expects population growth to be stagnant in some communities and to decline in others over the next few years. The region intends to maintain this indicator at current levels. Achieving this will require limiting development of open space and farmlands and encouraging new development in existing community centers.

In 2006, there were 0.325 acres of developed land per person in the Mohawk Valley region.

TARGET

- **2015:** Maintain at 0.325 developed acres per person.
- **2025:** Maintain at 0.325 developed acres per person.
- **2050:** Maintain at 0.325 developed acres per person.



Source: MRLC – Multi-Resolution Land Characteristics Consortium - National Land Cover Database (http://www.mrlc.gov/)

INDICATOR

Percentage of Population in Community Centers

This indicator compares the total population of all community centers in each county to the total population of the county. A community center includes cities and villages and census-designated places (CDPs), and it was assumed that the majority of open space is outside of these boundaries. This indicator helps to measure the percentage of the region's population that resides in higher density and established communities and indirectly measures sprawl, as well as progress toward Goals LULC-3 – Identify, Preserve, and Protect lands suitable for viable agriculture production, and LULC-4 – Invest in Existing Infrastructure and Housing Stock.

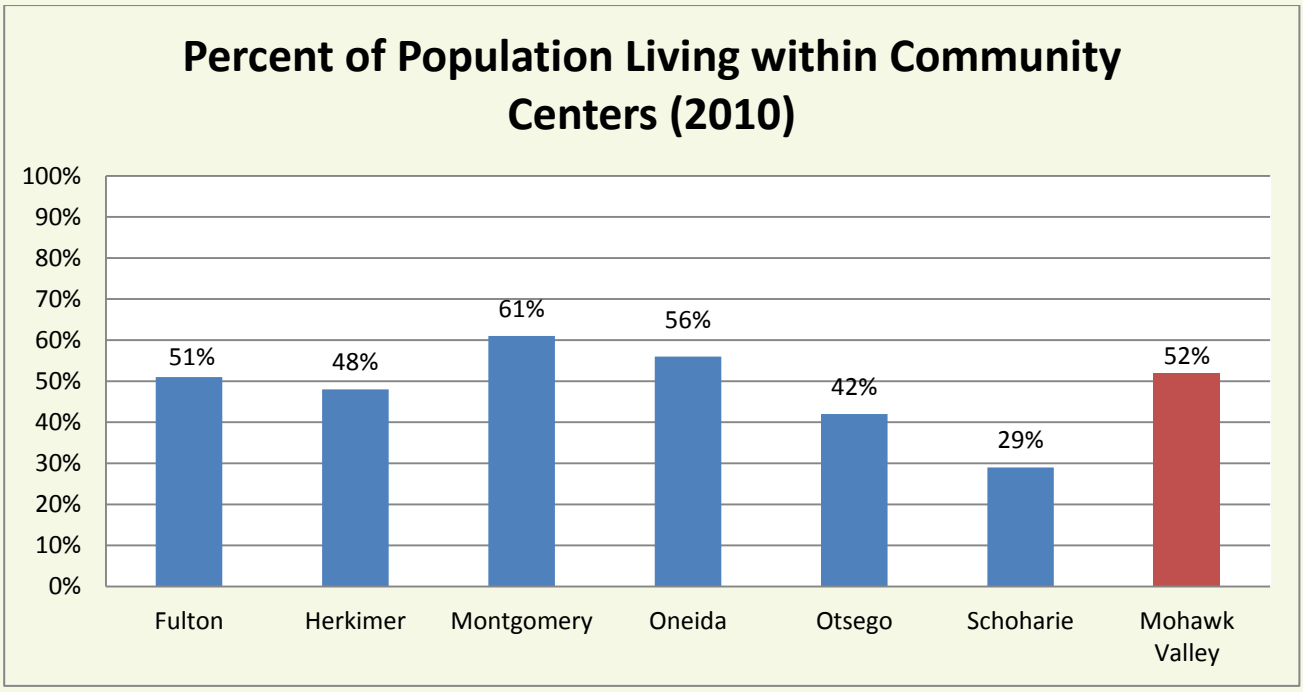
Community centers are defined as places with concentrations of populations, typically including more intensive land uses that are centers of economic and social activity. Community centers include cities, villages, and CDPs as defined by the U.S. Census. It is expected that the increase in the percentage of people living in community centers will be small because populations in the region are stagnant or declining. Success of this indicator will require limiting new development on farmland and open space and investing in infill development and adaptive reuse of existing structures. Encouraging future development in hamlet and village community centers would improve the quality and efficiency of existing development services while reducing sprawl.

In 2010, approximately 52% of the Mohawk Valley's population lived in designated community centers.

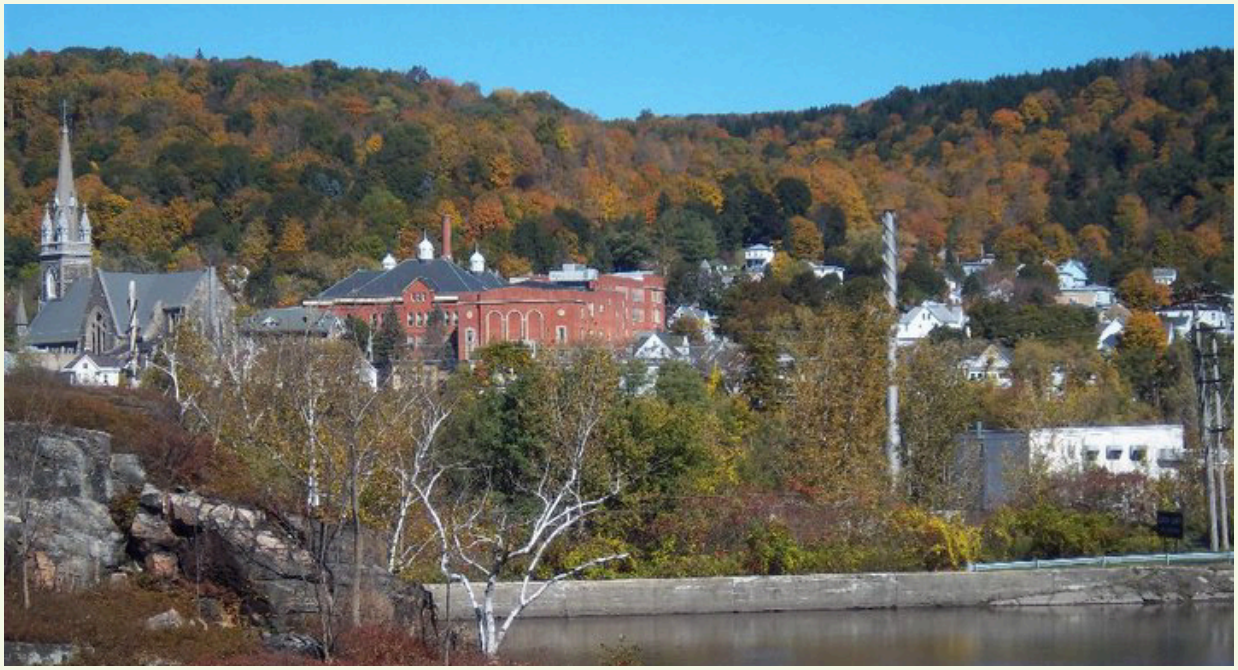
TARGET

- **2015:** Maintain percentage of CDP population at 52%.
- **2030:** Increase percentage of CDP population by 2.5% to 54.5%.*
- **2050:** Increase percentage of CDP population by 5% to 57%.

*Census data will be available in the year 2020 or 2030. Hence, the target year was changed from 2025 to 2030.



Source: U.S. Census Bureau 2010

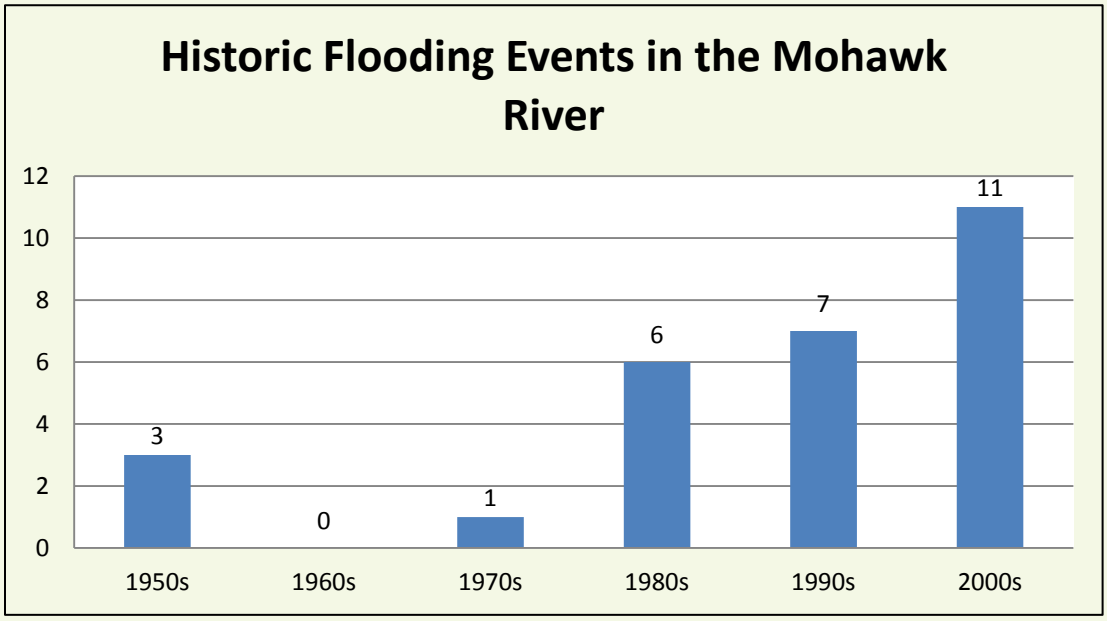


2.4 Water Management

The lakes, streams, rivers, and canals are a defining characteristic of the Mohawk Valley region, from the lakes and rivers of the Adirondacks in northern Herkimer County, to Otsego and Oneida lakes, the Mohawk River, and New York State Ship Canal, formerly the gateway to the western United States. The region's water supply currently meets regional consumption, economic, and ecological needs, and the relative abundance of the region's water supply can attract new industries to the region that require ample sources of clean water, with the caveat that the industries do not produce discharges that spoil this valuable resource. Both surface water and groundwater play an important role in the region. Abundant surface supplies in the region include the Mohawk River and several reservoirs: the Hinckley Reservoir, which supplies drinking water for the Utica area; the Tagoske Reservoir, which supplies the City of Rome; and Delta Lake, which provides water to maintain levels in the Erie Canal. The southeastern part of the region provides the bulk of the drinking water to the 8 million customers of New York City through the city's Catskill-Delaware reservoir and aqueduct system. Many rural communities depend on water supply wells that are recharged by percolation through the overlying rocks, glacial sand, and the gravel-filled valleys that provide an excellent source of clean water.

The cost of maintaining water and sewer facilities and infrastructure in good condition as it ages is a major obstacle. Towns and villages with limited capital may lack the funds to make necessary investments, and sprawl and regulatory changes may result in added costs. Water conservation can be achieved through a combination of the following:

- Educational efforts that promote conservation,
- Management of infrastructure assets,
- System leak detection and repair,
- Zoning and site plans that restrict new growth that strains infrastructure,
- Pricing so that all users pay a fair share,
- Pricing that rewards conservation instead of pricing that lowers costs as volume increases,
- Promoting use of storm water and greywater, and
- Encouraging public-private partnerships to treat biosolids efficiently.



Source: NYSDEC Floodplain Management Section

The region has historically suffered from flooding. Most recently, in 2011, tropical storms Irene and Lee caused devastation along Schoharie Creek, the Mohawk River, and elsewhere. This flooding was not an isolated incident. Severe flooding occurred along the Mohawk in 2006 and serious flooding has occurred periodically since records were first kept.

Climate change will bring higher demand for water and lower supplies. Compared with other parts of the country and the world, the Mohawk Valley water supply is relatively secure, but extended droughts could reduce groundwater levels and affect surface water availability and water quality. In addition, the frequency and intensity of severe weather has already increased in the last ten years, and this trend could accelerate.

Flooding at the Confluence of Schoharie Creek and the Mohawk River, Fort Hunter, NY, in the Wake of Tropical Storm Irene August 29, 2011

Source: Times Union (http://www.timesunion.com/news/slideshow/Aerial-photos-of-Irene-damage-30587.php#photo-1561341)

Sustainability Goals

Four goals were developed to support the region's efforts towards sustainable water management.

GOAL

WM-1: Conserve Water and Related Energy Consumption

Encourage the use of existing state funding programs and incentives that supports energy-efficient upgrades and the use of renewable energy sources for water infrastructure, such as equipment-replacement programs and more efficient controls (such as the installation of variable frequency drives [VFDs]).

- Reduce personal water use.
- Detect and mitigate leaks in water distribution systems to reduce pumping throughout the distribution system.
- Improve energy efficiency of water management infrastructure.
- Promote the reuse and recycling of water.
- Develop educational programs that demonstrate how to conserve water.
- Develop alternative means of collecting revenue so that conservation of water does not reduce revenue to utilities.

GOAL

WM-2: Maintain Water Quality

Maintain waterbodies that are currently in good condition and reduce the number of impaired water bodies within the region. Encourage strategies that will prevent future impairments through watershed management and best management practices.

- Upgrade water and wastewater plants.
- Install green infrastructure for storm water management and consider using treatment wetlands for tertiary treatment.
- Improve nutrient controls and non-point source controls while improving monitoring to better identify and report on the condition of "impaired waters."
- Mitigate flood potential and other climate-related impacts (i.e., improve resiliency to drought).
- Establish management practices and facilitate remedial efforts to control invasive species.

GOAL

WM-3: Improve Existing Infrastructure

- Educate operators on best practices.
- Maintain distribution systems and repair leaks.
- Upgrade collection systems to minimize infiltration and inflow via sewer rehabilitation.
- Use universal metering to establish unit payment for water use.
- Repair storm sewers and culverts subject to frequent flooding and washout.

GOAL

WM-4: Establish Watershed Planning

Planning at a watershed level rather than a jurisdictional level allows for a more effective evaluation of water use impacts on water resources and habitat. Incorporate watershed management into regional growth strategies and comprehensive planning efforts.

- Identify local areas where the water supply may not meet future demands.
- Use hydrological boundaries instead of political boundaries.
- Encourage cooperation between communities and counties, which may require inter-governmental agreements.
- Provide educational opportunities to teach people the importance of sustainable resource use.

Sustainability Indicators and Targets

Four indicators were selected to measure and monitor the region's progress toward achieving sustainable water management.

In addition, based on the current standards and expected trends, Mohawk Valley has established the targets (where relevant, an adjustment for inflation has been included) for each indicator. More detailed information regarding these indicators and associated targets is provided in Appendix B.

Table 2-4 Water Management Indicators

Indicators	Associated Goal(s)
Water Demand per Capita and Sector	WM-1, WM-3
Total number of impaired waters	WM-2
Energy Use by Water and Sewer Utilities per Million Gallons Supplied or Treated	WM-1
Percent of Unaccounted Water	WM-1

INDICATOR

Water Demand per Capita and by Sector

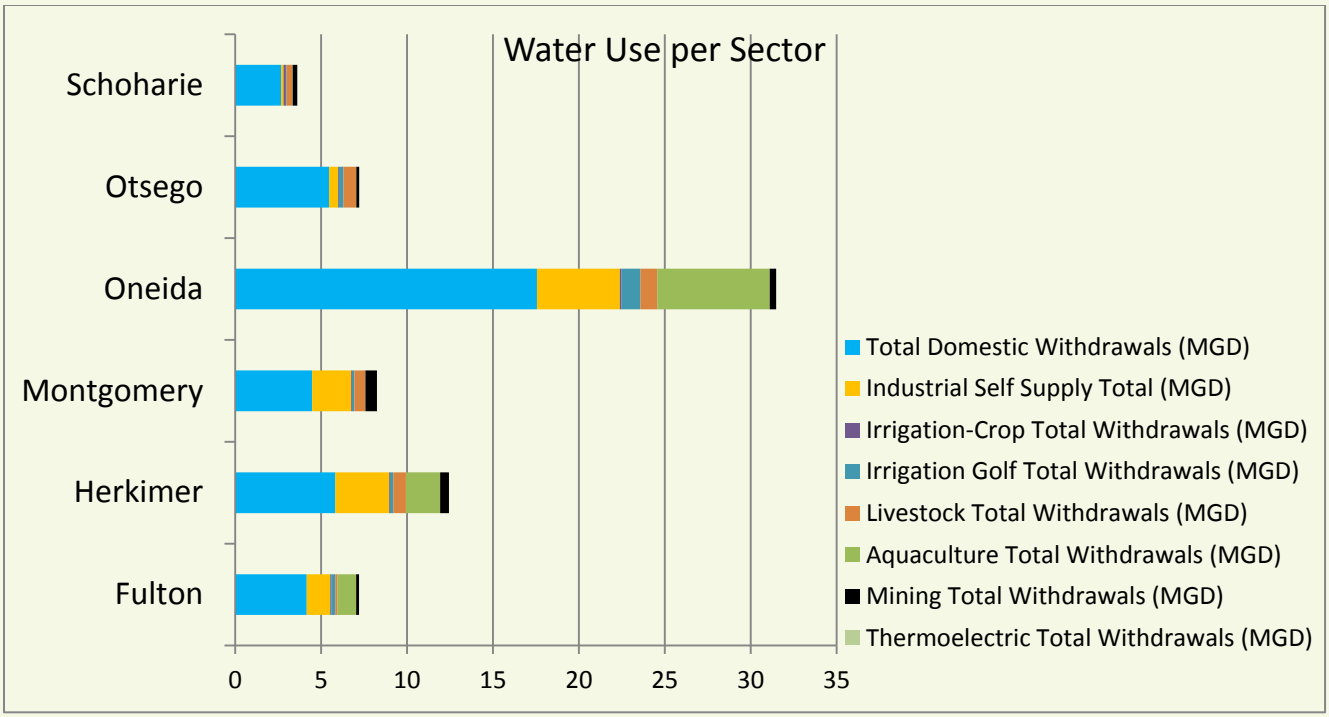
This indicator classifies water usage with respect to the population as well as each sector of use. Data on withdrawals for public supply, domestic supply, irrigation, livestock, aquaculture, industrial, mining, and thermoelectric power are available from the U.S. Geological Survey (USGS)[5]. Reducing water use saves on pumping and treatment costs of the water and also reduces the wastewater flows and the treatment costs associated with wastewater treatment. This indicator works to show progress toward meeting goals WM-1 – Conserve Energy and WM-3 – Improve Existing Infrastructure.

In 2005, each person using public water supplies in the Mohawk Valley used approximately 91 gallons per day. Each person using private water well used approximately 75 gallons per day.

TARGET

- **2015:** No increases in water use unless directly tied to major new uses that promote economic activity without any degradation.
- **2025:** 20% reduction in water use (except new uses).
- **2050:** 30% reduction in water use (except new uses).

[5] United States Geological Survey (USGS) Estimated Use of Water in the United States, County-Level Data for 2005



Source: United States Geological Survey (USGS) Estimated Use of Water in the United States, County-Level Data for 2005

INDICATOR

Total Number of Impaired Waters

This indicator quantifies waters that do not support appropriate uses and that may require development of a total maximum daily load (TMDL). This indicator includes bodies of water in the region listed in Part 1 and Part 2 of the New York State Department of Environmental Conservation (NYSDEC) Section 303(d) list[6]. Part 1 of the list includes waterbodies with an impairment requiring a TMDL. Waterbodies listed in Part 2 include multiple segment/categorical impaired waterbodies. These include acid rain waters, fish consumption waters, and shellfishing waters. This indicator measures progress toward goal WM-2 – Maintain Water Quality.

The waterbody inventory/priority waterbodies list (WI/PWL) waterbody assessment rates the water quality of bodies of water in each of the watersheds in New York State.[7] The water quality rating uses raw chemical and biological water quality data to measure the ability of the body of water to support a variety of uses, including drinking water supply, recreation, and aquatic life.

The NYSDEC surveys indicate that water quality in the region is generally good. Of the 395 stream segments in the region, 137 may be impaired. Among these possibly impaired streams, only 35 (9%) are categorized as impaired, with the remainder requiring further study, or are categorized as minor impairments.[8]

Of the 395 stream segments in the Mohawk Valley Region, 137 waters may be impaired as of 2012.

TARGET

- **2015:** No degradation of water quality.
- **2025:** 10% reduction in impaired water bodies.
- **2050:** 25% reduction in impaired water bodies.

[6] http://www.dec.ny.gov/chemical/31290.html
[7] http://www.dec.ny.gov/chemical/36730.html
[8] NYSDEC list of impaired water bodies: http://www.dec.ny.gov/docs/water_pdf/303dlistpropfnl2012.pdf

INDICATOR

Energy Use by Water and Sewer Utilities per Million Gallons Supplied or Treated

This indicator measures the energy used by public water and wastewater treatment facilities in the region. In general, data for this indicator are limited to general industry-wide values for the energy used for water and wastewater treatment. The actual values specific to Mohawk Valley treatment plants will have to be provided from wastewater treatment plant operators. This information will not be available from every plant, so this indicator will be represented by a few case studies of actual wastewater treatment plants (WWTPs). This indicator measures progress toward goal WM-1 – Conserve Energy.

In 2012, the average energy usage at a wastewater treatment facility in the Mohawk Valley used approximately 15,970 kW/day.

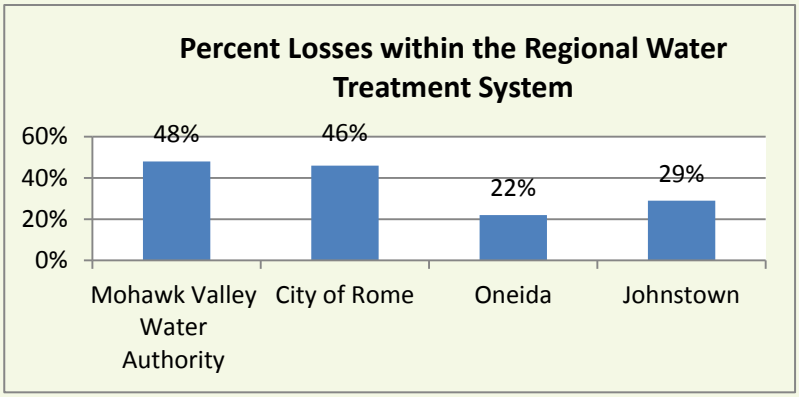
TARGET

- **2015:** 5% reduction in energy use.
- **2025:** 20% reduction in energy use.
- **2050:** 50% reduction in energy use.

INDICATOR

Percent of Unaccounted Water

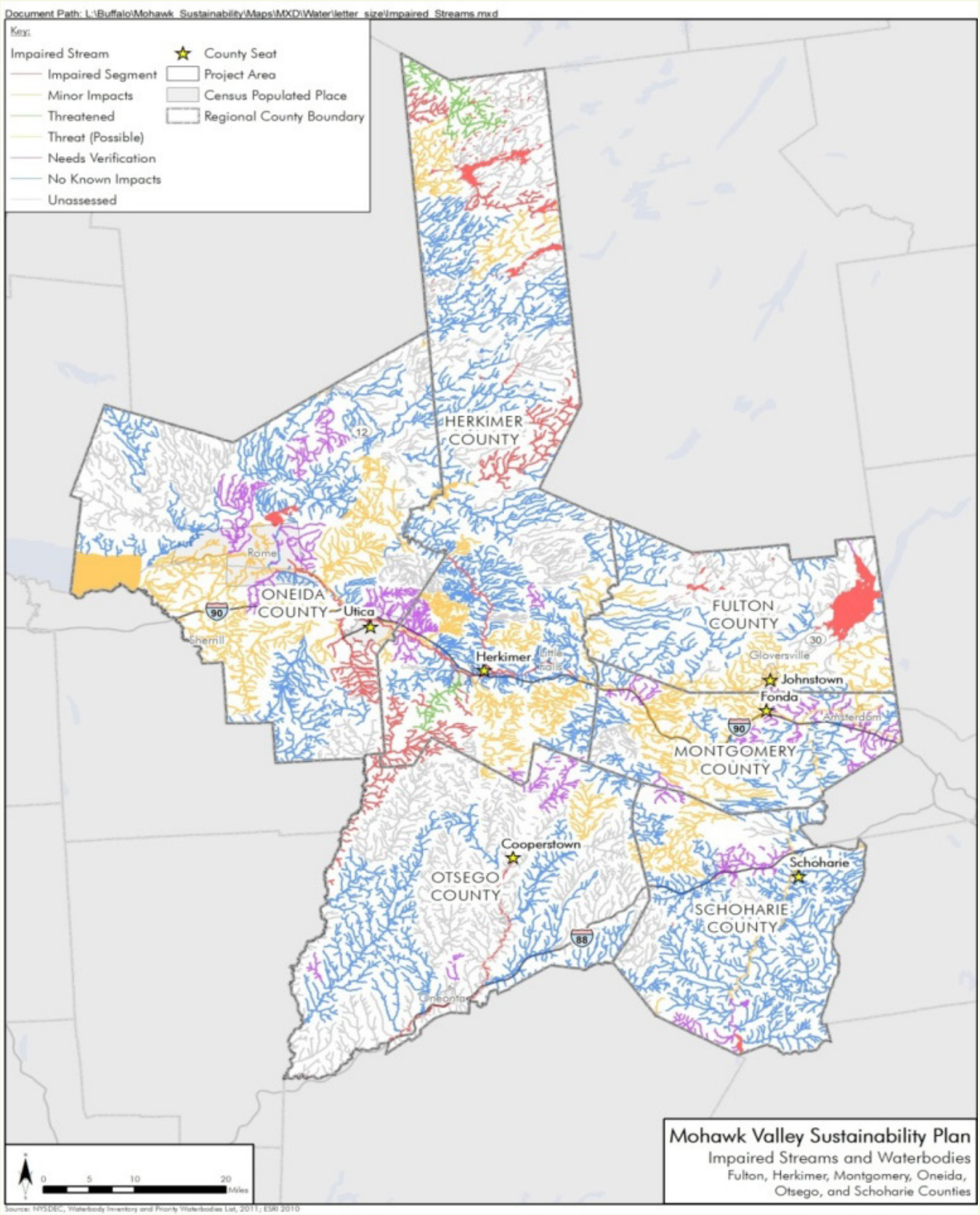
This indicator includes water leaks, water used for fire suppression, and flat-rate customers. It represents lost revenues and includes water for which there is little incentive to conserve. These data were provided by representatives of the facilities and were presented in the annual water quality reports for these facilities. This indicator measures progress toward goal WM-1 – Conserve Energy



In 2012, the Mohawk Valley Region's four public water utilities losses in the system were 48% for the Mohawk Valley Water Authority; 46% for the City of Rome; 29% for Johnson, and 22% for Oneida.

TARGET

- **2015:** Identify potential loss areas. Incur no additional system losses.
- **2025:** 10% reduction in system losses.
- **2050:** 30% reduction in system losses.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Key:
Impaired Stream
Impaired Segment
Minor Impacts
Threatened
Threat (Possible)
Needs Verification
No Known Impacts
Unassessed
County Seat
Project Area
Census Populated Place
Regional County Boundary
HERKIMER COUNTY
ONEIDA COUNTY
FULTON COUNTY
MONTGOMERY COUNTY
OTSEGO COUNTY
SCHOHARIE COUNTY
Rome
Utica
Herkimer
Johnstown
Gloversville
Fonda
Amsterdam
Cooperstown
Schoharie
Oneonta
Chemill
12
90
30
88
0 5 10 20 Miles
Mohawk Valley Sustainability Plan
Impaired Streams and Waterbodies
Fulton, Herkimer, Montgomery, Oneida, Otsego, and Schoharie Counties
Source: NYSDEC, Waterbody Inventory and Priority Waterbodies List, 2011; ESRI 2010

2.5 Materials Management

Materials and solid waste management in the Mohawk Valley region is a complex mixture of both public and private sector participants. At the regional and county level, solid waste planning units provide oversight, guidance, and, in some cases, manage facilities and other infrastructure. The three solid waste planning units in the Mohawk Valley region are 1) the Fulton County Department of Solid Waste (FC-DSW), 2) Montgomery-Otsego-Schoharie Solid Waste Management Authority (MOSA), and 3) Oneida-Herkimer Solid Waste Authority (OHSWA). Each of these planning units is responsible for developing and implementing a local solid waste management plan (LSWMP) for their jurisdictions. The purpose of an LSWMP is to provide clear, specific guidance, including selecting appropriate solid waste management technologies, policies, programs, and implementation strategies to meet state and local waste management laws and goals.

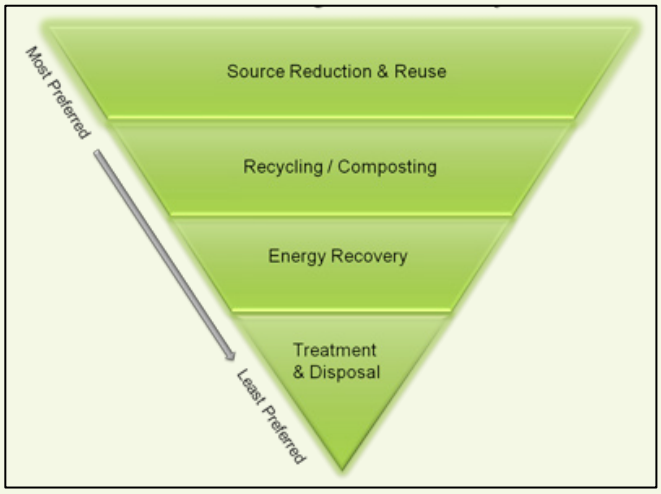
Under the aegis of the planning units are multiple public and private entities that play a critical role in providing materials and waste management services for the residences, institutions, and businesses in the region. These entities include waste and recycling collectors, waste haulers, recyclers, junk yards, and compost facilities.

Last, and most importantly, the responsibility of implementing a successful and sustainable materials and solid waste management plan ultimately rests with individuals themselves. It is critical to have an educated public that makes personal decisions based on minimizing waste and understands how to use post-consumer products as a resource. This includes actions like purchasing products with minimal, reusable, or recyclable packaging; disposing garbage into the proper container; and advocating for improvements to the waste management system.

The Mohawk Valley Region has a wide range of materials and solid waste facilities, both private and public, including but not exclusive to recyclables handling and recovery facilities (RHRFs) – also known as materials recovery facilities (MRFs), construction and demolition (C&D) processing centers, composting centers, or landfills.

Notably absent from the list of regional facilities are waste-to-energy (WTE) plants. Although WTE plants can significantly reduce the waste volumes and generate heat and energy, a 2007 study conducted by the OHSWA concluded that a WTE facility would be economically infeasible for the region.[9] Nevertheless, both the OHSWA and FC-DSW are recovering a portion of energy from waste materials by employing landfill-gas-to-energy (LGTE) plants at their respective landfills. More information about the region's LGTE plants is provided in Section 2.6, Energy.

A key challenge in the Mohawk Valley region, as it is elsewhere, is to foster a paradigmatic change in how individuals, businesses, and policy makers view materials typically disposed of in the garbage not as waste but as a resource to be conserved, managed, and remarketed. As stated in NYSDEC's Beyond Waste plan, "materials are not waste until they are destined for a landfill or municipal waste combustor" (The terms "materials" and "materials management" are used here rather than "waste" or "waste management" when referring to activities at the upper end of the waste management hierarchy such as reduction, reuse, recycling. The term "disposal" includes municipal waste combustion, landfilling, and export for ultimate disposal.)



Materials and Waste Management Hierarchy

[9] Oneida-Herkimer Solid Waste Authority. 2010. Draft Local Solid Waste Management Plan.

Sustainability Goals

The following materials management goals and tactics for the region have been identified:

GOAL

MM-1: Reduce Solid Waste Generation

- Increase public education and outreach.
- Expand or improve existing recycling and reuse programs.
- Develop a larger capacity for recycling organic materials.
- Improve materials and waste management infrastructure and technologies.
- Encourage product stewardship from businesses and industries operating in the region.

GOAL

MM-2: Increase the Regional Market for Recycled Goods

- Facilitate the development and growth of local businesses and industries that make new products out of locally available recyclable materials.
- Ensure a reliable and high quality supply of recyclable materials for the businesses and industries that use them.

GOAL

MM-3: Reduce Energy Costs Associated with Materials and Solid Waste Management

- Continually evaluate the efficiency of vehicles and vehicle routes used to collect and transport materials and solid waste.
- Determine opportunities for energy savings or energy recovery at materials management facilities.

GOAL MM-4: Expand Effective Existing Projects and Promote New Regional Strategies

- Highlight initiatives that work well and expand them to regional scale.
- Evaluate billing and tariff structures to encourage less waste generation.
- Create an environment that encourages research and innovation in solving waste reduction and management challenges.

Sustainability Indicators and Targets

Four indicators were selected to measure and monitor the region's progress toward achieving the sustainable material management goals.

Mohawk Valley has established the targets (where relevant, an adjustment for inflation has been included) for each indicator based on the current standards and expected trends. More detailed information regarding these indicators and associated targets is provided in Appendix B.

Table 2-5 Materials Management Indicators

Indicators	Associated Goal(s)
Total Municipal Solid Waste Disposed of Per Capita	MM-1
Proportion of Solid Materials Diverted (Recycled or Composted)	MM-2
Energy Cost per Ton of Materials Processed	MM-3
Expenditures per Capita Dedicated to Education and Outreach	MM-4

INDICATOR

Total Municipal Solid Waste Disposed of Per Capita

This indicator, the total regional MSW in tons per day divided by the size of the population that is served provides an overall view of the region's contribution to municipal solid waste (MSW) that is disposed of in landfills. This indicator measures progress toward goal MM-1 – Reduce Solid Waste Generation.

In 2010, the region overall disposed of less Municipal Solid Waste (MSW) per person than the New York State average, which was 4.1 pounds per day per person. The region has seen slight decline in MSW disposal rates between 2010 and 2011 among most of the counties, with one major exception—Schoharie County—which more than doubled its disposal rate per person. Schoharie County's dramatic increase in solid waste disposal is attributed to Tropical Storm Irene, which caused significant flood damage to the county, particularly in the villages of Schoharie and Middleburg. The total MSW generated from the flood damage was estimated to be 15,000 tons. When the MSW generated from the tropical storm is subtracted from Schoharie's total MSW disposed in 2011, the disposal rate is 2.2 pounds per person per day – a value only slightly higher than in 2010.

Although the region has a lower than average MSW disposal rate per capita than the New York State average, more can be done to increase the proportion of materials diverted from disposal into the region's landfills.

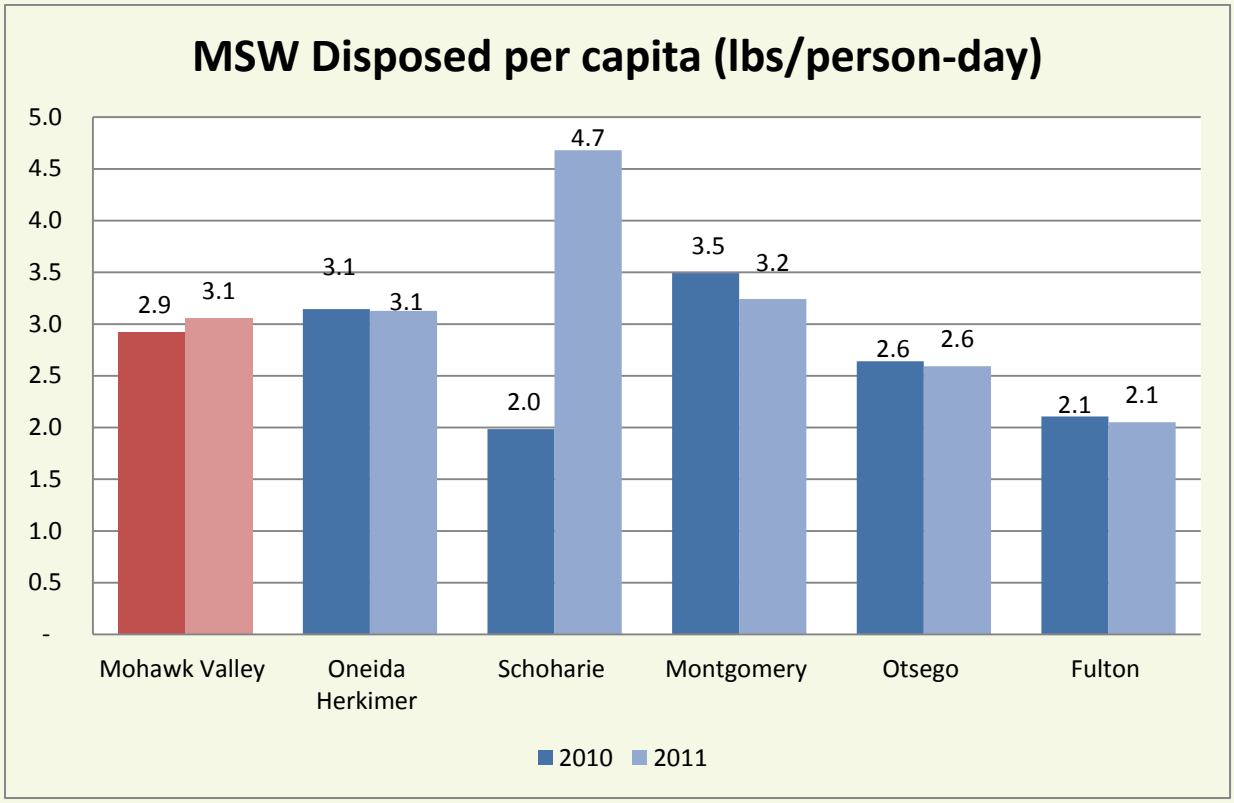
In line with the goals set in NYSDEC's *Beyond Waste*, this plan strives to achieve a progressive reduction in the amount of MSW destined for disposal to 0.6 pounds per person per day by 2030.

In 2010, the Mohawk Valley Region disposed of 2.9 pounds of MSW per person-day

TARGET

- 2.5 pounds/person-day by 2015.
- 0.5 pounds/person-day by 2025.
- 0.1 pounds/person-day by 2050.

Town of Maryland, Otsego County, NY



INDICATOR

Proportion of Solid Materials Diverted (Recycled or Composted)

This indicator, calculating by dividing the total regional solid materials diverted per year by the total amount of reported waste, provides an overall view of the region's recycling efficiency by measuring the proportion of materials diverted from disposal in regional landfills, exported for disposal, or combusted. Compared with the rest of New York State, which diverted 36% of its solid waste from landfills in 2010, the Mohawk Valley region appears to be lagging behind. This indicator measures progress toward goal MM-2 – Increase Regional Market for Recycled Goods. Each county is required to send an annual Solid Waste Planning Units Recycling Report to NYSDEC that documents waste disposed and waste diverted at planning unit facilities, which are the sources of the data presented here.

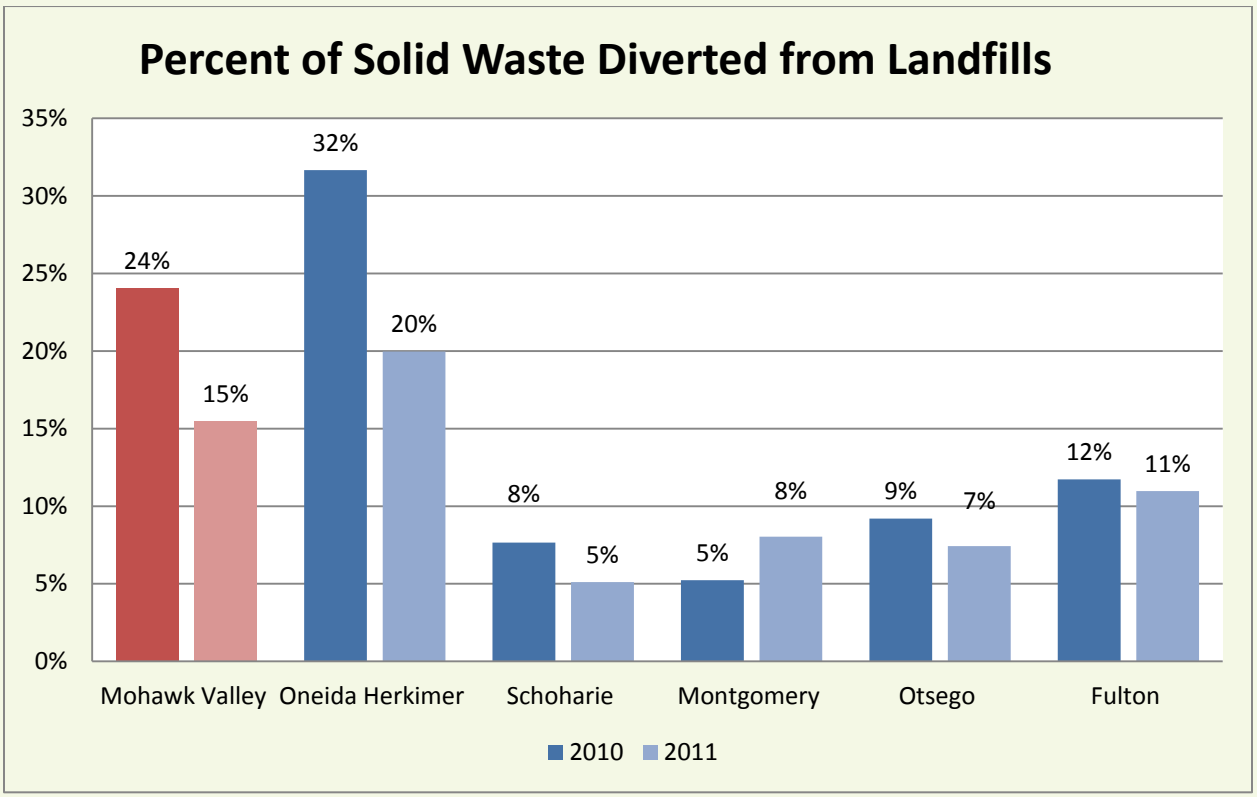
However, these reports do not provide a clear and consistent picture of all activity in the counties because not all waste is managed directly by the planning unit. For example, many commercial businesses and industries pay, or are paid by, a private hauler to transport waste and recyclables to a private facility. These types of transactions are not typically tracked by the planning units. However, some planning units, such as the Oneida-Herkimer Solid Waste Authority, routinely send out surveys to commercial businesses and industries in their jurisdiction to collect material disposal and recycling information. Yet this is not a common or transparent practice among all of the planning units. The Oneida-Herkimer's materials diversion rate does not include the quantity information from private entities. If that information were included, Oneida and Herkimer counties would have a combined materials diversion rate of 55%, far exceeding any of the other counties in the region.

There was a decline in the recycling rate across the region, except for Montgomery County, from 2010 through 2011. Consistent with the goals set in NYSDEC's "*Beyond Waste: A Sustainable Materials Management Strategy for New York State,"* this plan strives to achieve a progressive reduction in the amount of materials diverted to 50% (pounds per person per day) by 2020.

In 2010, the Mohawk Valley region diverted 24% of its solid waste from landfills.

TARGET

- Divert 35% solid waste by 2015.
- Divert 70% solid waste by 2025.
- Divert 95% solid waste by 2050.



INDICATOR

Energy Cost per Ton of Materials Processed

This indicator, a measure of the energy-efficiency of waste management, totals the amount of money spent each year to operate and maintain waste management facilities and equipment and divides that by the total amount of material that is processed. This indicator measures progress toward goals MM-3 – Reduce Energy Costs Associated with Materials and Solid Waste Management.

Data provided by each of the three Mohawk Valley planning units showed that the energy cost per ton of materials managed by each planning unit ranges from $1.19 to $8.10 per ton. The wide variation in the energy costs is due to differences in the activities, technologies, and facilities that each planning unit employs. A single year's dataset alone does not provide much information and should not be used as an indication of each planning unit's efficiency. Rather, what should be tracked is the difference in cost from year to year for each planning unit.

Energy costs for recycling and waste are highly volatile. For example, in 2011, Oneida-Herkimer's Solid Waste Management Authority's energy cost per ton was $4.30. This is nearly a 48% increase in energy costs, attributed largely to rising fuel costs.

In 2010, the Mohawk Valley region spent $4.10 on energy per ton of materials processed.

TARGET

- No change from baseline by 2015.
- 20% reduction from baseline by 2025.
- 50% reduction from baseline by 2050.

INDICATOR

Expenditures per Capita Dedicated to Education and Outreach

This indicator measures the funds spent on public education about waste, materials management best practices, and options. This indicator measures progress toward goal MM-4 – Expand Effective Existing Projects and Promote New Regional Strategies. Strategies Increases in this indicator are assumed to lead to reductions in waste generation and increase in reuse and recycling. Data provided by each of the three Mohawk Valley planning units shows the budget per capita dedicated to education and outreach by each planning unit ranges from $0.30 to $1.08 per person[10]. To better evaluate the effectiveness that each dollar spent on education has on waste reduction, this indicator should be used in conjunction with indicators Total Municipal Solid Waste Disposed of Per Capita and Proportion of Solid Materials Diverted. The region's planning units will need to continue to evaluate their economic and environmental efficiencies in terms of funds spent on energy and education and compare this with the achievements in reaching regional objectives.

[10] Data provided through personal email communications with representatives from each of the three Mohawk Valley planning units (FCDSW, MOSA and OHSWA), December 2012.

In 2010, the Mohawk Valley region had an average budget of $0.58* per person dedicated to education and outreach.

TARGET

- 10% increase from baseline by 2015.
- 30% increase from baseline by 2025.
- 50% increase from baseline by 2050.

*$0.58 is the average of the 2010 educational budget line items from each planning unit (Education cost/ person for MOSA - $0.30, Fulton - $1.08 and OHSWA - $0.37) divided by their respective 2010 populations.

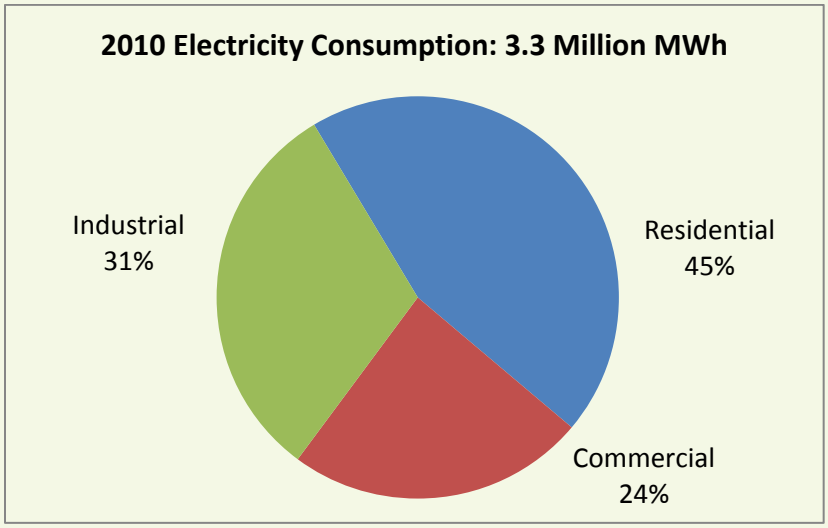
Source: Personal communications with Cindy Livingston, Deputy Director of Fulton County Department of Solid Waste; Bill Rabbia, Executive Director Oneida Herkimer Solid Waste Authority, and Dennis Heaton, Executive Director of MOSA. Circa December 18, 2012

2.6 Energy

Three aspects of the Mohawk Valley region's energy use are unusual: 1) the majority of electricity consumed is imported from outside the region; 2) 98% of the energy generated in the region is renewable; and 3) the residential sector uses significantly more wood and home heating oil than other regions in the state. The difference between electricity generated in the region at power plants for commercial sale on the grid and the amount of electricity used in the region (based on sales data provided by utility companies) represents electricity that is imported from outside the region.

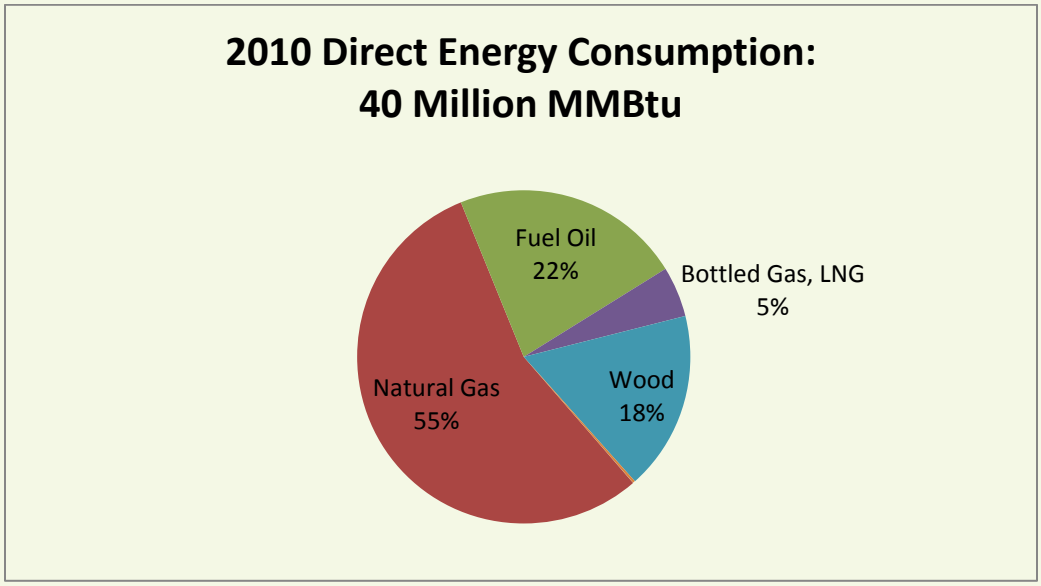
Electricity is supplied to residents, businesses, and organizations in the region by two commercial utilities, National Grid and New York State Electric and Gas (NYSEG), in addition to four municipality-owned utilities in Richmondville, Frankfort, Herkimer, and Boonville. National Grid is the largest provider, supplying 78% of the region's electricity in 2010. The imported energy is from a mix of renewable and fossil fuel sources.

Only 14% of the electricity consumed is generated in the Mohawk Valley region. 98% of this is from renewable sources, primarily from small hydroelectric facilities or landfill gas. The figure below summarizes the electricity generated in the region, which is primarily from 13 small hydroelectric facilities: the Sterling power plant in Oneida is the largest fossil fuel electricity generation facility, powered primarily by natural gas. There were no large wind turbine facilities operating in 2010, although the Hardscrabble Wind Power Project in Herkimer was completed in 2011. In addition, the Oneida-Herkimer Ava landfill biogas electricity generation project began operating in 2012.



Direct Energy Consumption

Direct consumption of energy is the use of fossil fuels, including natural gas, distillate and residual fuel oil (but not gasoline), propane and liquid natural gas, and biomass such as wood, primarily for heating buildings and water. Direct energy consumption and does not include fuel used in transportation. As calculated for the regional GHG inventory, this energy use in residential, commercial, and industrial facilities in the region amounted to 40 million British thermal units (MMBtu) of energy and 2 million metric tons (MT) carbon dioxide equivalent (CO_2e), or 32% of total Mohawk Valley regional GHG emissions. The pie chart below shows the percentage of MMBtus of direct energy consumption by fuel type.



Because accurate and complete Tier II direct energy use data are not available for the region, direct consumption of stationary fuels is calculated using a Tier I, or "top down" approach in accordance with the NYS GHG inventory protocol. Energy data collected from 2010 statewide fuel-use data from the U.S. Energy Information Agency (EIA) State Energy Data System (SEDS) was allocated to each county in the residential, commercial, and industrial sectors using different allocation methods, chosen to best represent energy usage at the regional level throughout the state.

Sustainability Goals

Four energy goals and tactics for the region have been identified:

GOAL E-1: Reduce consumption of electricity and heat generated from fossil fuels

- Reduce direct consumption by promoting conservation behavior.
- Improve the thermal and electrical efficiency of existing and new buildings.

GOAL E-2: Increase energy efficiency

- In support of this goal as well as the first goal, improve energy efficiency of existing and new buildings.
- Improve access to and application of existing energy efficiency programs provided by the state and by utilities.
- Promote energy efficiency at the community and individual level.
- Increase local municipal participation in energy efficiency projects.
- Improve access to funds for demonstration projects.

GOAL E-3: Increase renewable local energy generation and use for electricity and heat

- Promote the use of local renewable energy at the individual level.
- Promote biomass, solar, wind, biofuel, and micro-hydro to generate electricity and heat and reduce fossil fuel generated electricity use and heat consumption.

GOAL E-4: Evaluate life-cycle impacts of energy generation and use

- Life-cycle analysis of energy generation has been recognized as a new science necessary for effective long-term planning and decision-making.

As new technology and science are developed, energy solutions should be re-evaluated.

Sustainability Indicators and Targets

Five indicators were selected to measure and monitor the region's progress toward achieving sustainable energy goals.

Table 2-6 Energy Indicators

Indicator	Associated Goal(s)
CO2e Emitted by Energy Usage (residential, commercial, industrial), Total Per Capita	E-1, E-4
Regional Energy Consumption Per Capita	E-2, E-4
Regional Direct Fossil Fuel Energy Consumption per Capita	E-2
Total Annual Renewable Energy Generation	E-3
Number of Households and Businesses Enrolled in Energy Efficiency Programs and Implementation of NYSERDA-Funded Projects	E-2

Mohawk Valley has established the targets (where relevant, an adjustment for inflation has been included) for each indicator, based on the current standards and expected trends. More detailed information regarding these indicators and associated targets is provided in Appendix B.

INDICATOR

Greenhouse Gas Emissions - CO_2e Emitted by Energy Usage (residential, commercial, industrial) Total and Per Capita

The GHG emissions for the whole region were divided by the population to develop this measure of per capita emissions. GHGs include CO_2e and other heat-trapping gases, including water vapor and methane. To simplify reporting, all emissions were converted to the heat-trapping capability of CO_2e. Detailed methods are explained in the GHG inventory. This indicator measures progress toward goals E-1 – Reduce consumption of electricity and heat generated from fossil fuels and E-4 – Evaluate Life Cycle impacts of energy generation and use.

This indicator includes all regional GHG emission sources, providing total and per capita GHG emissions from energy usage only in buildings in the region. The total includes all energy consumption in buildings, including electricity, which is about a third of the total regional GHG emissions.

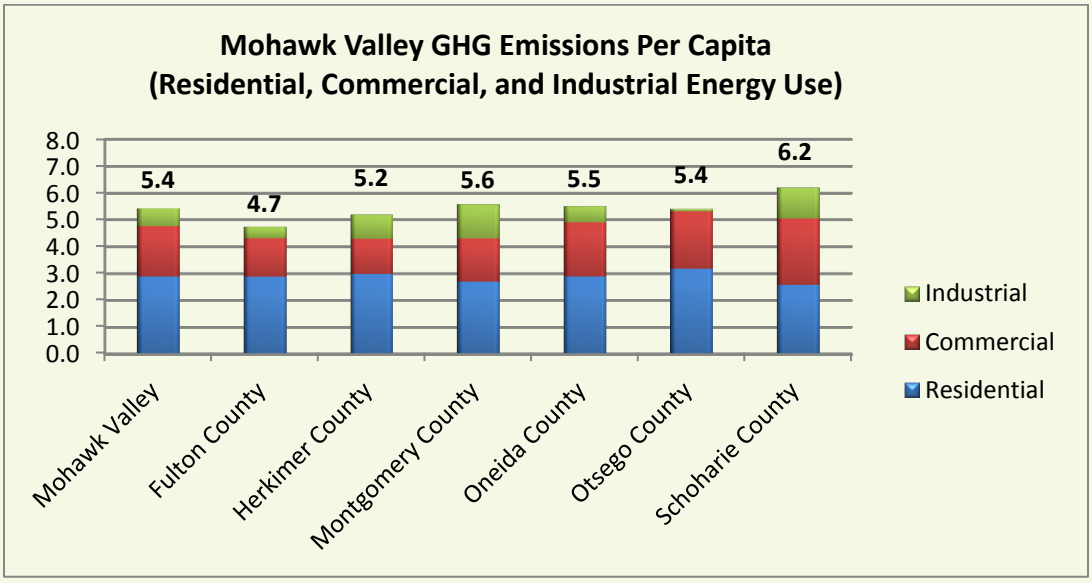
Approximately, 43% of the total regional GHG emissions for all sources (including transportation, industrial sources, waste management, agriculture and forestry) comes from building energy consumption. Of this, residential energy consumption is 23% of regional GHG emissions, more than emissions attributed to commercial (15%) and industrial (5%) energy consumption combined.

Caption: 30 kW Solar Panels on Fort Stanwix Parking Garage, Rome, Oneida County

In 2010, the Mohawk Valley region emitted 2.7 million metric tons CO_2e, which represents 5.4 tons CO_2e for every person.

TARGET

- **2015:** 2.43 million metric tons CO_2e reduction (10%).
- **2025:** 1.82 million metric tons CO_2e reduction (25%).
- **2050:** 0.91 million metric tons CO_2e reduction (50%).



INDICATOR

Energy Indicator: Regional Energy Consumption per Capita (MMBtu)

This indicator measures all energy consumption in the region, including the use of renewable energy. Energy from residential, commercial, and industrial building energy use and transportation are included in this indicator. Energy consumption is collected and calculated in accordance with the NYS GHG inventory protocol. This indicator measures progress toward goals E-2 – Increase Energy Efficiency and E-4 – Evaluate Life Cycle impacts of energy generation and use.

The six counties of the Mohawk Valley region represent 2.6% of the state population and accounted for 2.5% of the state's annual energy consumption of 3,728 trillion Btu in 2010. Transportation uses the most fossil fuel, with a total energy use of 44% in 2010, which is significantly higher than the national average of 28.1%.[11] The New York Independent System Operator (NY ISO) Gold Book 2011[12] projects a small increase in the Mohawk Valley (Zone E) electrical demand of 0.6 % between 2011 and 2021; the total statewide increase is projected to be 4% over the same period. These projections account for statewide energy-efficiency programs.

[11] National Energy Education Development Project. 2012. The Intermediate Energy Infobook. http://www.need.org/needpdf/Intermediate%20Energy%20Infobook.pdf.

[12] New York Independent System Operator 2011. Load and Capacity Data. Gold Book http://www.nyiso.com/public/webdocs/markets_operations/services/planning/Documents_and_Rsources/Planning_Data_and_Reference_Docs/Data_and_Reference_Docs/2011_GoldBook_Public_Final.pdf

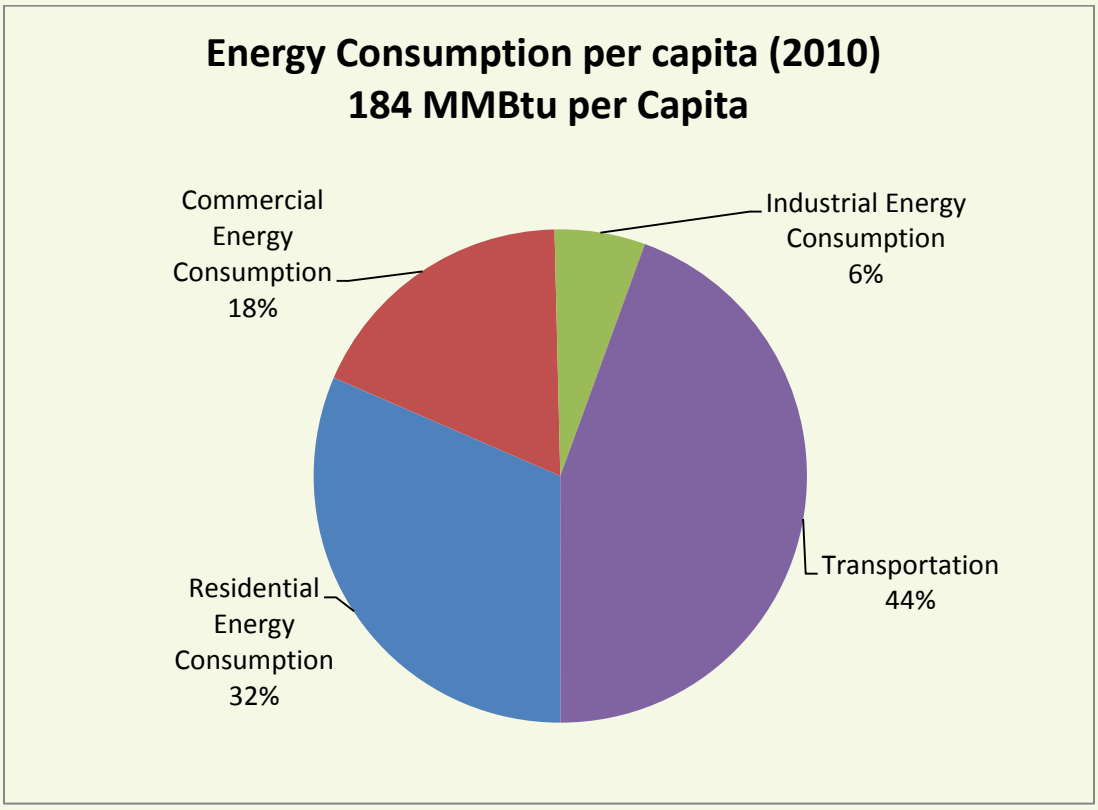
While the New York Climate Action Plan Interim Report calls for an 80% reduction in GHG emissions from 1990,[13] it acknowledges that without significant changes, GHG emissions from all sources, including energy, will continue to increase, resulting in an 8% increase in GHG emissions between 1990 and 2030. Increases in absolute energy demand may be attributable to many factors, such as increased use of energy-intensive technology, weather extremes requiring additional heating and cooling, and increases in industries, businesses, and population. Decreases in energy demand will also occur as energy-intensive equipment and appliances are replaced.

Per capita analysis provides a reasonable scale to understand these data; however, per capita analysis is also subject to additional independent parameters, e.g., changes in population. As this indicator is used, it should demonstrate the change in total and per capita energy consumption as well as population in the region. Furthermore, significant growth in the industrial and commercial sectors, which is a goal of the Mohawk Valley REDC, could raise per capita consumption unless a concomitant increase in population occurs. The dynamic nature of the inputs to this indicator warrant revising of the target values periodically.

In 2010, each person in the Mohawk Valley region used 184 MMBtu.

TARGET

- **2015:** 165 MMBtu per capita reduction (10%).
- **2025:** 138 MMBtu per capita reduction (25%).
- **2050:** 92 MMBtu per capita reduction (50%).



[13] NYSDEC 2012. http://www.dec.ny.gov/energy/80930.html

INDICATOR

Regional Direct Fossil Fuel Energy Consumption per Capita (MMBtu)

This indicator is a subset of the indicator "regional energy consumption per capita," specifically, the direct stationary use of fossil fuels primarily for heating buildings. This indicator measures increased efficiencies of heating systems and building envelopes as well as the reduction in fossil fuels as a heating source for buildings associated with the incorporation of renewable energy. Consumption associated with transportation and use of electricity is not measured by this indicator. This indicator measures progress toward goals E-2 – Increase Energy Efficiency.

Fossil fuel energy consumption for heating in the Mohawk Valley is 16% higher than the state-wide average. There are several key factors that contribute to the higher regional fossil fuel energy usage:

- 81% of the region relies on fossil fuel to heat their homes;
- 22% more heating degree days (6,873) in the region than the state weighted average of 5,616 heating degree days; and
- 63% of the region lives in single-family detached houses.

In accordance with the NYS GHG inventory protocol, single-family detached homes are assumed to consume twice as much energy to heat as a multifamily home.

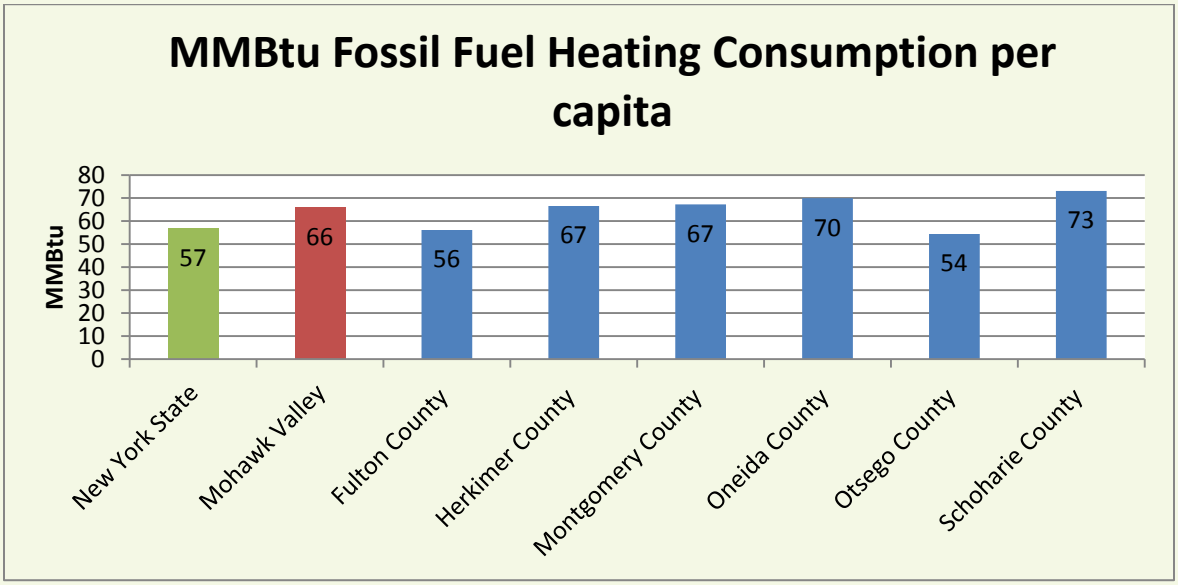
Households in the region use significantly more wood and home heating oil compared with other regions in the state. The counties also vary significantly in use of fuel oil and natural gas, depending on the availability of natural gas.

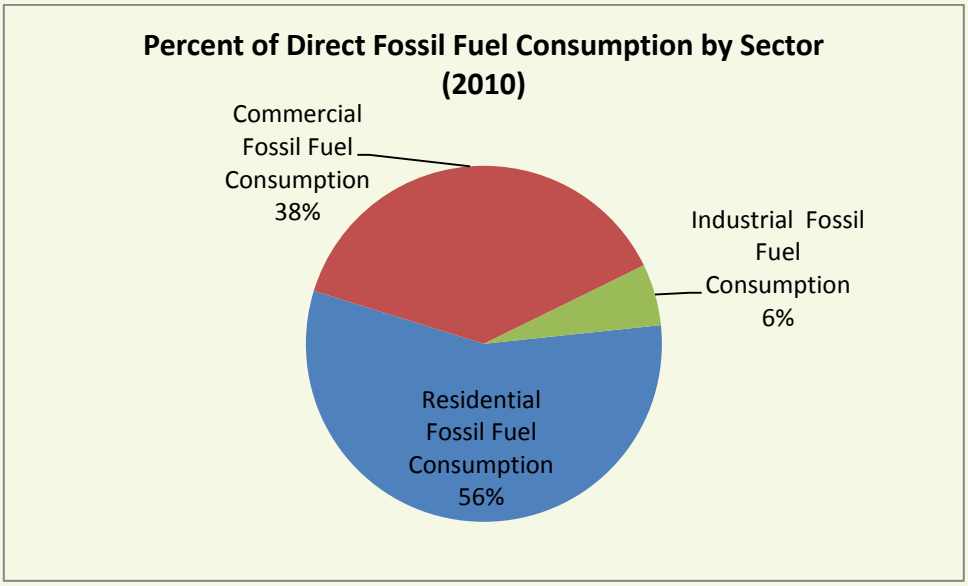
This indicator addresses total energy usage and can be used to demonstrate energy efficiency improvements; however, it does not address the type of energy use or distinguish between fossil fuel use and renewable energy. The primary fossil fuel used directly for energy is natural gas. The majority of fossil fuel consumption in the region, 56%, is used for residential heating.

In 2010, the region consumed 33 million MMBtu of fossil fuel energy, which represents 66 MMBtu for every person in the region.

TARGET

- **2015:** 59 MMBtu per capita reduction (10%).
- **2025:** 49 MMBtu per capita reduction (25%).
- **2050:** 33 MMBtu per capita reduction (50%).





INDICATOR

Total Annual Renewable Energy Generation

This indicator shows the total annual renewable grid-tied electricity energy generation in the region. Because of the different efficiencies of different technologies, reporting electricity generation in megawatts per hour (MWh), rather than capacity, provides consistency between technologies that is not possible when considering only capacity and reflects the actual performance of these technologies. This indicator measures progress toward goal E-3 – Increase renewable local energy generation and use for electricity and heat.

The Mohawk Valley region produces 14% of the power consumed within the region and imports the remainder through the transmission grid. Renewable energy accounts for nearly all (98%) of the power generated in the region, with the majority of the energy coming from small hydropower projects.

There were no large wind turbine facilities operating in 2010, although the Hardscrabble Wind Power Project in Herkimer was completed in 2011 and produced 152,000 MWh in that year.[14] In April 2012, the largest and newest landfill in the region, the Ava Landfill operated by the OHSWA, began generating electricity from recovered landfill gas.[15] The operation is estimated to provide more than 12,000 MWh per year and provided about 8,000 MWh to the grid in 2012. Plans for 2013 include the installation of a second generator that would double this output and provide an additional 24,000 MWh of renewable electricity in the region compared to the 2010 baseline.[16] The addition of the Hardscrabble Wind Farm and the Oneida-Herkimer Landfill biogas generation projects could increase annual renewable energy generation by 176,000 MWh from 2010 levels, producing more than 540,000 MWh of renewable power in 2014.

In 2010, the Mohawk Valley region generated 464,327 MWh of grid-tied renewable electricity.

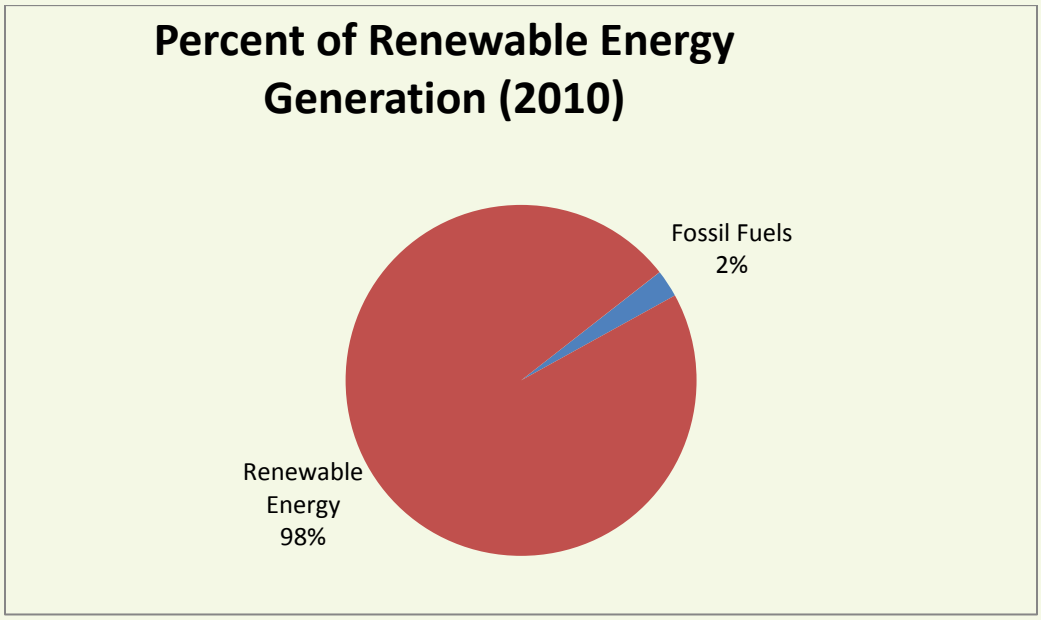
TARGET

- **2015:** 696,490 MWh (50% increase in renewable energy generation).
- **2025:** 928,654 MWh (100% increase in renewable energy generation).
- **2050:** 1,857,308 MWh (200% increase in renewable energy generation).

[14] U.S. Energy Information Administration. State Energy Data System (SEDS). July 2012. New York State Profile. http://www.eia.gov/beta/state/?sid=NY

[15] Cooper, Elizabeth. August 23, 2011. "Ava landfill generator will use methane gas to produce electricity." Utica Observer-Dispatch. http://www.uticaod.com/news/x925242965/Ava-landfill-generator-will-use-methane-gas-to-produce-electricity

[16] Rabbia, Bill. January 4, 2013. Bill Rabbia, Executive Director, Oneida-Herkimer Solid Waste Authority. Email re "Mohawk Valley" to James Dumpert and Laurie Kutina (E&E).



INDICATOR

Number of Households and Businesses Enrolled in Energy Efficiency Programs and Implementation of NYSERDA-Funded Projects

This indicator is the measure of the number of households and businesses enrolled in energy efficiency programs and implementation of NYSERDA-funded Projects. For the commercial, institutional, and industrial sector, NYSERDA reports participation in the Existing Facilities Program (EFP), New Construction Program (NCP), and Industrial & Process Efficiency Program. Participation in the Mohawk Valley region resulted in a total of 22,385,460 kWh removed from the grid through 240 projects during 2010 and 2011. This electrical demand represents 0.7% of the region's total electrical usage. The regional participation is relatively high compared with total participation in New York State, considering its population is 2.6% of the total state population. This indicator measures progress toward goals E-2 – Increase Energy Efficiency.

New York State has set a goal of achieving a 15% reduction in energy use through energy-efficiency improvements by 2015. Energy-efficiency programs that evaluate and educate households and businesses can be an effective way to reduce energy consumption. Determining the effectiveness of such programs can be difficult to quantify; however, measuring enrollment in such programs is a reasonable indication of coverage. Note - The programs used to measure this target are not the only efficiency programs that NYSERDA has available for businesses or home owners to participate in. The aforementioned programs were the only programs we found participation data on."

In 2010, 140 new NYSERDA energy-efficiency projects were implemented in the Mohawk Valley region, resulting in approximately 11.5 million kilowatts per hour (kWh) of energy taken off-grid

TARGET

- **2015:** 12.7 kWh (10% increase).
- **2025:** 15.9 kWh (25% increase).
- **2050:** To be determined*.

* NYSERDA programs are subject to change so it is not possible to forecast accurately participation in these programs in 2050.

2.7 Agriculture and Forestry

Agricultural lands and forests together cover approximately 87% of the Mohawk Valley land area. Both forestry and agriculture are critical components of the region's economy, culture, history, and educational systems, and could become strong areas for economic growth. In addition to assets such as agriculture and forestry education programs in institutions such as Herkimer County Community College, Fulton Montgomery Community College, SUNY Cobleskill, and SUNY-Environmental Science and Forestry, major transportation routes— I-88 and I-90, the Mohawk River and canal system, and rail— are used to distribute products into and out of the region. The abundance of timber and pulpwood and a diverse workforce that supports multi-generational farms, logging companies, and small and large businesses depend upon the sustainability of the region's agricultural and forestry resources.

The region must carefully consider land use planning to preserve acreage for agriculture and forestry because the areas that are best suited for these uses are under continual pressure for conversion to other uses. This is particularly true in those counties where useable acreage is limited. While keeping agricultural land in production may be influenced by regional planning efforts, the expansion of timberland acreage is largely outside of the region's control because of expanding state ownership within the Adirondack Park. Some expansion of timberland could occur through the conversion of farmland to forests, preferably marginally productive farmland. The quantity of high-value wood could be increased even as forest harvest levels increase through the application of scientific forest management.

Sustainability Goals

The following goals and strategies have been identified:

GOAL

A&F-1: Promote Education

- Increase involvement of younger people in the region's agriculture and forestry industries.
- Provide educational resources for producers/processors/operators and policy makers.

GOAL

A&F-2: Enhance Efficiencies

- Create efficiencies in the production and distribution of products through improved marketing, logistics, and coordination of resources among producers/processors/operators.
- Provide technical assistance to farmers to identify opportunities to use energy more efficiently and financial assistance to accelerate implementation of more efficient technologies.
- Increase use of high-efficiency, low-emission biomass for home grown energy.

GOAL

A&F-3: Promote sustainable agricultural and forestry economic development for individuals, families, and the region to help sustain the current workforce and encourage others to join the workforce.

- Create marketing opportunities to bring higher prices to producers and processors through more direct sales (e.g., food hubs).
- Create a regional brand for marketing.
- Create new or strengthen existing processing facilities for added value.

Along with identifying these regional strengths, a number of challenges to sustaining these industries within the region include:

- The aging population of farmers and loggers in the region.
- Loss of graduates from agriculture and forestry schools to other locations.
- Inefficiencies in moving products from farm or forest to market, which increase costs to the producer, require excess energy for transportation, and can result in the loss of perishable products.
- A need for better education of landowners and business owners on topics such as habitat preservation and land management (e.g., the long-term value of employing foresters) and for informing policy makers on critical agriculture and forestry issues.
- The need for improved marketing, primarily product aggregation, as a resource for small producers/processors/operators.
- A need for independent planning and marketing approaches because of the diversity of products produced in the region.
- The rate of economic development in the region, given market pressures and taxes.

Sustainability Indicators and Targets

Eight indicators were selected to measure and monitor the region's progress toward achieving the Agriculture and Forestry objectives.

Table 2-7 Agriculture and Forestry Indicators

Indicators	Associated Goal(s)
On-farm energy efficiency projects implemented	A&F-2
Acres of Cropland Available for or in Production	A&F-3
Forest Land Available for Production and Harvest of Wood	A&F-3
Economics of Farmer Households	A&F-1, A&F-2, A&F-3
Number of Agricultural and Food Processing Operations	A&F-1, A&F-2, A&F-3
Number of Forest Product Processing Operations	A&F-1, A&F-2, A&F-3
Number of Local Food Markets	A&F-1, A&F-2, A&F-3

In addition, based on the current standards and expected trends, Mohawk Valley has established the targets (where relevant, an adjustment for inflation has been included) for each indicator. More detailed information regarding these indicators and associated targets is provided in Appendix B.

INDICATOR

On-farm energy efficiency projects implemented

This indicator quantifies the number of farms that have reduced their energy usage by installing more energy efficient equipment and implemented energy saving practices. This indicator measures progress toward goal A&F-2 – Enhance Efficiencies.

Between 2010 -2012, 170 farms participated in NYSERDA's Agriculture Energy Efficiency.

TARGET

- **2015:** 220 farms in 2013 round of funding.
- **2025:** Dependent on future of program.
- **2050:** Dependent on future of program.

INDICATOR

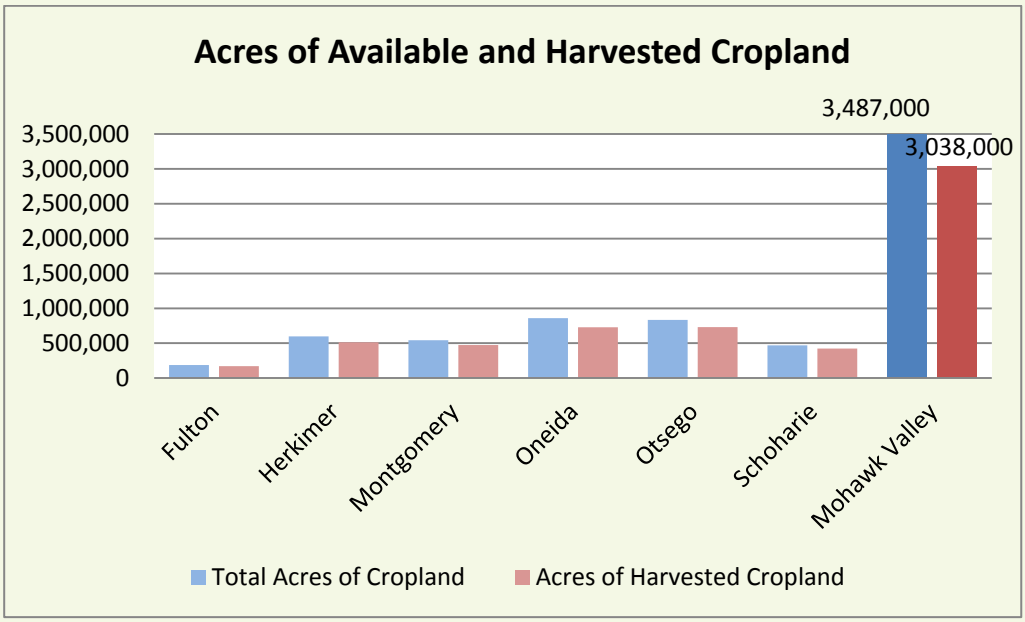
Acres of Cropland

This indicator quantifies available acreage as well as the amount being actively used. The Census of Agriculture is currently the only known source of reliable data for acres of cropland and harvested cropland, which includes pasture, hayland, orchards, etc. This indicator measures progress toward goal A&F-3 – Promote Agriculture and Forestry economy.

In 2007, 3,487,000 acres were available; 3,038,000 acres are currently being harvested.

TARGET

- **2015:** No loss of cropland.
- **2025:** No loss of cropland.
- **2050:** No loss of cropland.



Source: 2007 U.S. Department of Agriculture. Agriculture Census.
http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/

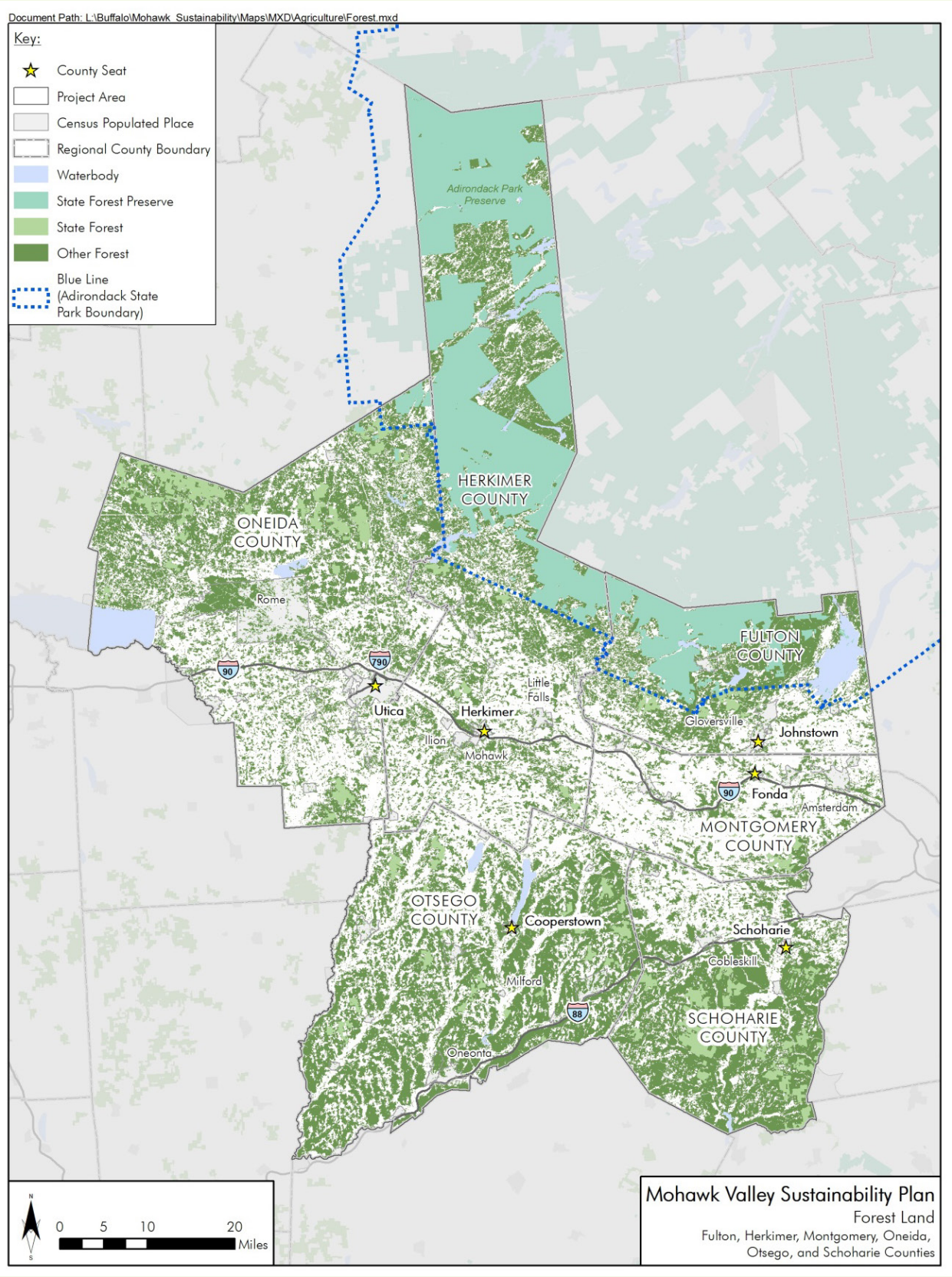
INDICATOR

Forest Land Available for Production and Harvest of Wood

This indicator quantifies available public and private forest land acreage that is capable of growing marketable wood products and that is not restricted by state law, easements, or other conditions. Forest land meeting that definition is designated timberland by the U.S. Forest Service (USFS). Using acres of timberland as an indicator of forest industry health would allow the amount of forest land in the region available for commercial wood production to be tracked. In a region where some lands are being bought by the state for inclusion in the Adirondack Forest Preserve, the availability of wood can be a concern.

However, the state's judicious purchase of additions to the State Forest Preserve, including last year's announcement by Governor Cuomo that the State will acquire 69,000 acres of former Finch lands in the Adirondacks and will have no discernible impact on the availability of wood fiber for the Mohawk Valley region. New York's forests continue to grow. The state has invested heavily in the past two decades on the purchase of working forest conservation easements on private forest lands, helping to ensure that there is an adequate supply of wood fiber for the entire region's needs. The Adirondack region has over 9 billion cubic feet of net growing wood volume on privately owned timberland. The fee acquisition of 65,000 acres of former Finch lands represents just 1.2% of that timberland. With this addition to the Forest Preserve there will still be 8.9 billion cubic feet of commercial tree species volume available and growing for continued economic use across the Adirondacks, well in excess of current and projected future demand.

USFS timberland data exclude areas of forest reserved for non-extractive uses, including the Adirondack Forest Preserve. This indicator measures progress toward promoting economic development since the availability of land for tree production and harvesting is essential to sustaining the region's forestry industry. This indicator measures progress toward goal A&F-3 – Promote Agriculture and Forestry economy.



Sources: Multi-Resolution Land Characteristics Consortium. Land Use Land Cover dataset. 2006. www.mrlc.gov/nlcd06_data.php; New York State Department of Environmental Conservation. DEC Lands. 2008. http://www.dec.ny.gov/geodata/ptk; New York State Adirondack Park Agency.1993 http://www.apa.ny.gov/gis/shared/index.html

In 2007, 1,794,000 acres of harvestable timberlands were available within the Mohawk Valley region.

TARGET

- **2015:** No loss of timberland (per USFS definition).
- **2025:** No loss of timberland (per USFS definition).
- **2050:** No loss of timberland (per USFS definition).

INDICATOR

Economics of Farmer Households

This indicator measures the overall economics of households in the agriculture industry. The Census of Agriculture has information on the net cash income of farm operators and the number of operators who farm as their principal occupation. Since many farmers within the region rely on additional income from outside jobs or businesses in order to support their families or operations, this indicator measures progress toward promoting economic development in farming. Tracking the income derived from operation of their businesses reflects economic sustainability. This indicator measures progress toward goals A&F-1 – Promote Education, A&F-2 – Enhance Efficiencies and A&F-3 – Promote Agriculture and Forestry economy.

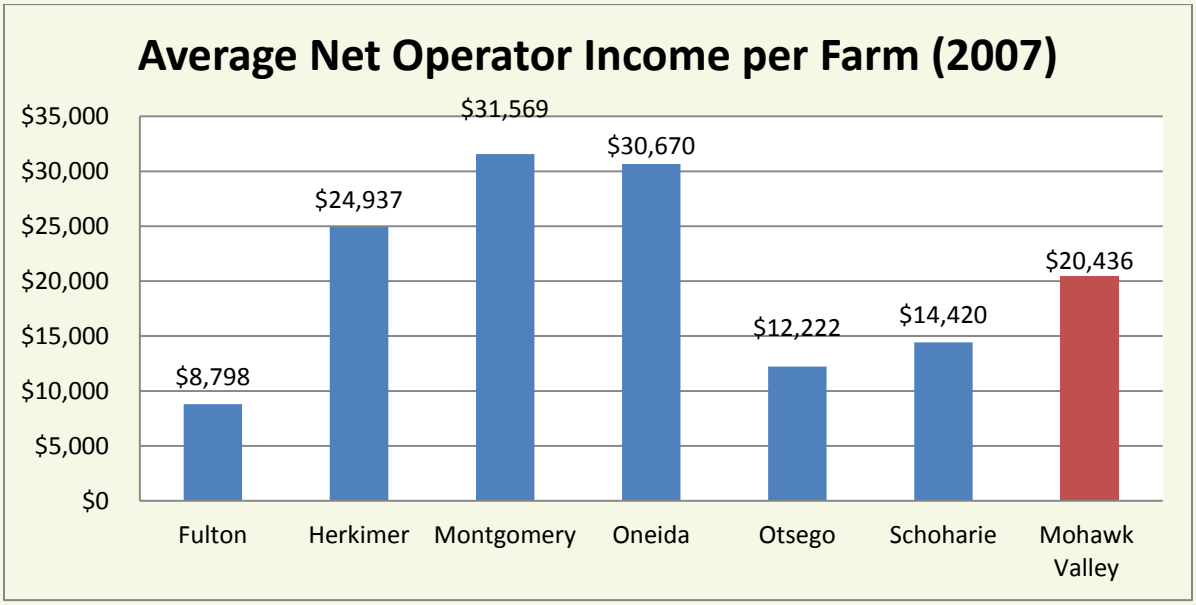
The current average net farmer operator income is generally insufficient to support a household. As a result, there has been a trend toward fewer farmers who identify farming as their principal occupation. Stabilizing and reversing this trend will require regional efforts to increase market access and greater production of value-added products. This may be accomplished through a variety of efforts including promotion of regional farm product processors, retailers and wholesalers; developing marketing campaigns for regional products so that these efforts do not need to be undertaken by individual producers; reducing on-farm expenses through implementation of energy-saving programs; and improving regional product distribution/shipping mechanisms.

Data Gaps - Comparable data for loggers/foresters are not available.

The average net operating income for a single farm in 2007 was $20,436.

TARGET

- **2015:** Average net operator income/farm increases from $20,436 (2007) to $25,000.
- **2025:** Average net operator income/farm increases to $40,000.
- **2050:** Average net operator income/farm increases to $60,000.



INDICATOR

Agriculture and Forestry Indicator: Number of Agricultural and Food Processing Operations

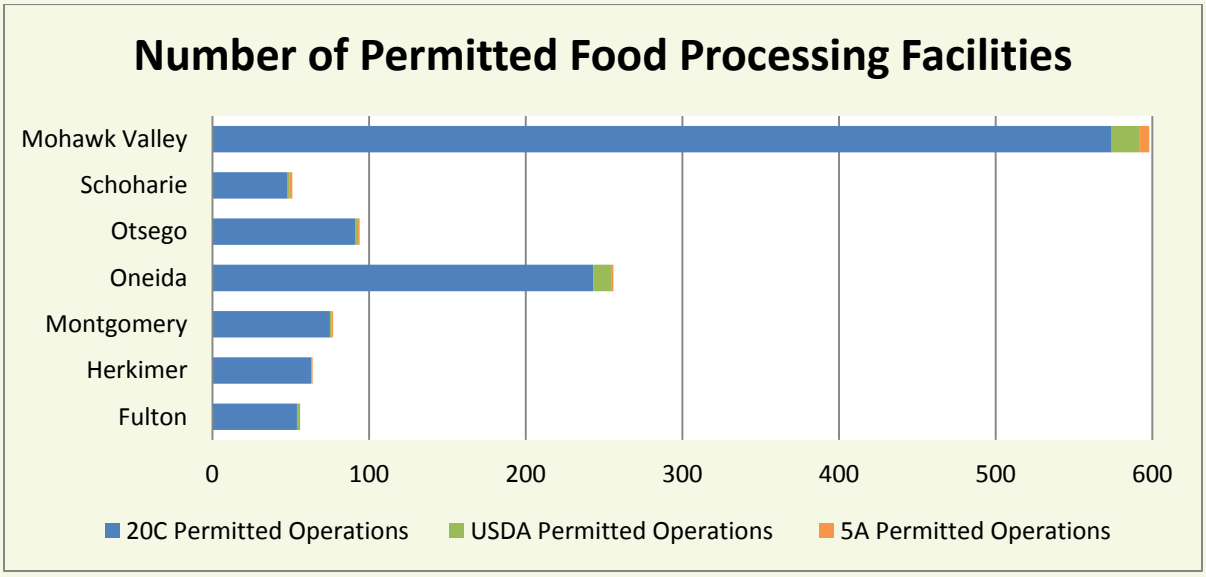
This agricultural indicator tracks the number of facilities operating under NYS Department of Agriculture and Markets (NYS Ag & Markets) 20C (retail food preparation establishments) and 5A (slaughterhouses) permits and USDA permits for establishments that produce meat, poultry, and/or egg products. Establishing and tracking the number of processors within the region is a good measure of activity within this component of the farm-to-table pathway. The number of NYS Ag & Markets 20C and 5A and USDA permits indicates the level of economic activity in the region related to processing raw foods. This indicator measures progress toward goals A&F-1 – Promote Education, A&F-2 – Enhance Efficiencies and A&F-3 – Promote Agriculture and Forestry economy.

Increasing the number of local processing operations will require economic incentives for owners and improved transportation efficiency for producers. The economic incentive may be programmatic or simply an increase in market demand due to increases in the amount of agriculture and forestry products generated within the region based on improvements in other indicators.

Food processing permits in the Mohawk Valley region in 2012 totaled 598.

TARGET

- **2015:** NYS Agriculture & Markets 20 C Permit holders increase to 600 (5% from 2012); NYS Agriculture & Markets 5A Permit holders increase to 7 (20% from 2012); USDA Permit holders increase to 19 (5% from 2012).
- **2025:** NYS Agriculture & Markets 20 C Permit holders increase to 660 (15% from 2012); NYS Agriculture & Markets 5A Permit holders increase to 12 (200% from 2012); USDA Permit holders increase to 23 (30% from 2012).
- **2050:** NYS Agriculture & Markets 20C permit holders increase to 745 (30% from 2012); NYS Agriculture & Markets 5A permit holders increase to 18 (300% from 2012); USDA permit holders increase to 27 (200% from 2012).



Sources: Data set received from NYS Ag & Markets through a Freedom of Information Law (FOIL) request and USDA FSIS Meat, Poultry, and Egg Product Inspection Directory.
http://www.fsis.usda.gov/Regulations_&_Policies/Meat_Poultry_Egg_Inspection_Directory/index.asp

INDICATOR

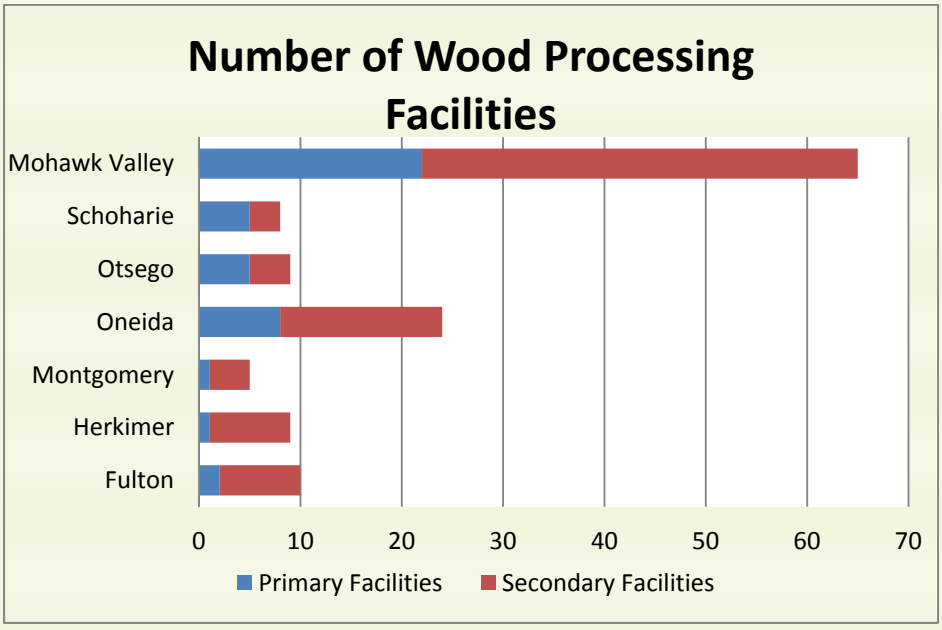
Number of Forest Product Processing Operations

This indicator tracks the number of facilities processing wood. The number of forest products facilities in the region also indicates the level of economic activity related to turning wood into higher value products. NYSDEC maintains directories of primary and secondary wood-using businesses in each county of New York State (Directory of Secondary Wood-Using Industry in New York State March 2009; Directory of Primary Wood-Using Industry in New York State March 2009). Primary wood-using facilities process trees into products such as sawn timber, plywood, or pulp for paper making. Secondary wood-using facilities process the output of primary facilities into millwork and finished products such as furniture or their components. This indicator includes both primary and secondary facilities and measures progress toward promoting economic development in and through forestry. This indicator measures progress toward goals A&F-1 – Promote Education, A&F-2 – Enhance Efficiencies and A&F-3 – Promote Agriculture and Forestry economy.

In 2009, 65 wood-using industries were located in the Mohawk Valley region.

TARGET

- **2015:** Increase in wood processing operations from 65 to 70.
- **2025:** Increase in wood processing operations to 100.
- **2050:** Increase in wood processing operations to 135.



Source: NYS Department of Environmental Conservations Directories of Primary and Secondary Wood-Using Industries. http://www.dec.ny.gov/docs/lands_forests_pdf/primary.pdf, and http://www.dec.ny.gov/docs/lands_forests_pdf/secondary.pdf

INDICATOR

Number of Local Food Markets

Access to local, fresh food that is grown, harvested, or produced by the local agricultural market is a critical indicator of agriculture's sustainability. The rationale for this indicator is that identifying access to markets provides a benchmark for opportunities for local economic development that generate profitable (i.e., sustainable) economic activity at the regional level. For the purposes of this plan, we have considered any of the types of farms or markets as a "local food market." In addition to Community Supported Agriculture (CSAs), direct sales of food from farms to consumers, farmer's markets, farm to school programs, food hubs, and co-ops were also selected as critical options for local food sales. This indicator also is related to gauging the health and well-being of communities and miles traveled of shipped food.

This indicator measures progress toward goals A&F-1 – Promote Education, A&F-2 – Enhance Efficiencies and A&F-3 – Promote Agriculture and Forestry economy.

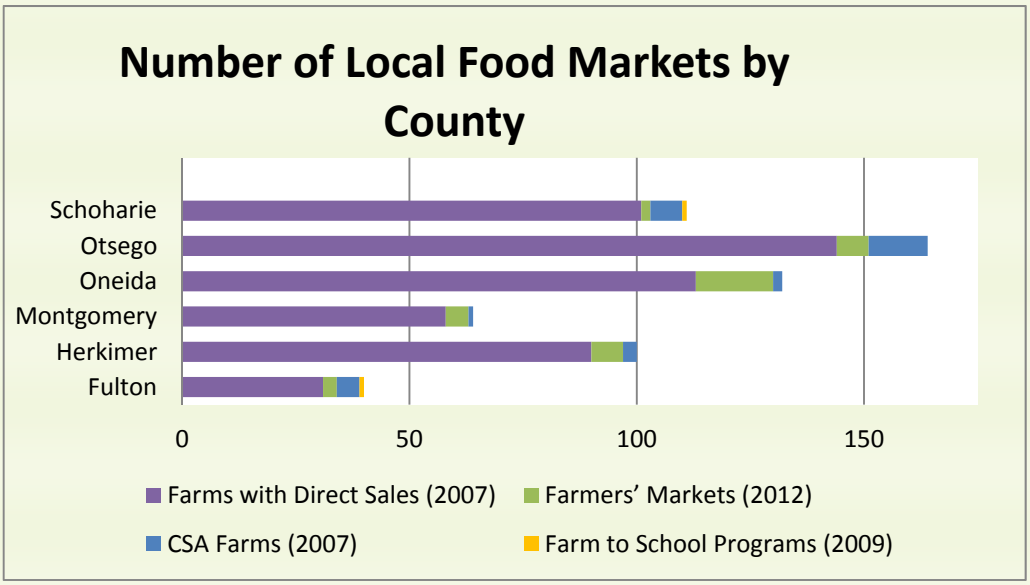
The region has a significant number of farms that sell directly to consumers. However, this can be labor-intensive for the quantity or value of product sold. Improvements must be made to increase higher volume sales through farmer's markets, CSAs, farm-to-institution programs, and food hubs. Local food marketing campaigns, regional branding, marketing assistance provided to farmers for specific products, and implementing programs to encourage institutions to procure local food should be considered. Funding may be available through New York State Department of Agriculture and Markets to initiate some of these efforts.

In 2012, 611 local food markets were in the region; 537 farms sold directly to consumers, 41 farms sold to farmer's markets, 31 were CSA farms, and 2 were farm-to-school programs.

TARGET

- **2015:** Increase to 565 farms with direct sales (up 5% from 2012); increase to 5 farm-to-school programs; increase to 34 CSAs (up 10% from 2012); increase to 43 farmer's markets (up 5% from 2012); establish 2 food hubs*.
- **2025:** Increase to 591 farms with direct sales (up 10% from 2012); increase to 20 farm-to-school programs; increase to 37 CSAs (up 20% from 2012); increase to 45 farmer's markets (up 10% from 2012); increase to 4 food hubs.
- **2050:** Increase to 618 farms with direct sales (up 15% from 2012); increase to 40 farm-to-school programs; increase to 40 CSAs (up 30% from 2012); increase to 49 farmer's markets (up 20% from 2012); increase to 6 food hubs.

*Note: There are currently no food hubs within the region.



Source: U.S. Department of Agriculture Economic Research Service. Food Environment Atlas
http://www.ers.usda.gov/data-products/food-environment-atlas/go-to-the-atlas.aspx

3.0 Implementation Actions

Introduction

The Consortium and Working Groups advocated that highlighting examples of actual *Actions* that help achieve the sustainability Targets (Section 2) is the best strategy for implementing the plan. Therefore this section will present examples which, if replicated, will achieve the goals of the Sustainability Plan. Some actions encourage people, agencies, or businesses to conserve resources and increase the efficiency with which natural resources are used. Some of these *Implementation Actions* are construction projects; some advocate policy changes, and all of them require public awareness to empower people to implement additional *Actions*. All the actions recognize that projects must make economic sense to be viable. The Plan is the aggregate of these large and small actions, replicated throughout the Mohawk Valley region.

As the working groups and stakeholders presented ideas that were collected into implementation actions, it became apparent that three over-arching themes—**education, efficiency, and economics**— define sustainability in the region. All the *Implementation Actions* address aspects of one or more of these three themes. The actions included in this section are steps that will together create a more sustainable region that places the consumption and derivation of its resources in balance, and which in turn will lead the region towards achievement of its long-term goals.

This section describes the general actions that can be used to achieve sustainability. In this discussion of individual actions, the logo shown here is used to show which theme is emphasized by a specific action. Each action is grounded in one of the focal subject areas, and many actions address several focal areas. The table that begins on the following page, which summarizes the actions, identifies the focal areas with logos shown across the top of the table and the corresponding goal (see Goals and Targets, Section 2).

To assist in the attainment of these *Implementation Actions*, a table of potential funding sources is provided (in Appendix E). Finally, whenever possible, examples of projects that actually demonstrate the actions are presented briefly in this Implementation Strategy section and in more detail in Appendix C. The goal of the Plan is to give the communities the tools to replicate case examples, develop new projects, and make the principles of sustainability part of the process when conducting business in the Mohawk Valley Region.

The implementation of the plan, including the actions proposed in the following pages, will require ongoing effort and coordination among stakeholders, including communities, government and businesses. The first step in the effective implementation of the plan would be the appointment of a Regional Sustainability Coordinator. The impetus and expertise for plan implementation is also likely to be found within Working Group members, who are already committed to the promotion of sustainability within the region. The existing Consortium and Working Group members have agreed to form a Sustainability Working Committee to oversee plan implementation. They are currently identifying sources of support for the Regional Sustainability Coordinator. This support would likely come from small allotments from the Counties in the region to match funds from one of several agencies, many of which are listed in Appendix E. The Mohawk Valley Economic Development District, a current Consortium member and 401(c)3 non-profit, has expressed willingness to host this position.

Supported by the Regional Coordinator, who would source funding and work to gain ongoing community support, the committee will work with stakeholders who have already provided input into the Plan to identify which of the proposed actions are most likely to gain traction and could be successfully implemented. This would lead to the next step; a prioritized list of those actions that should be progressed now. Once these actions are identified, the Sustainability Working Committee and regional coordinator could engage established agencies and organizations such as NYSERDA, REDC, NYSDEC etc., take advantage of available funding and existing programs (Appendix E provides more details), and begin the next phase of the plan. To initiate this process, the *Implementation Actions* presented below are categorized into those that have active project proponents and are ready for immediate implementation and those that require additional work from the Sustainability Working Committee to identify proponents, sites, or funding sources.

Summary of Implementation Actions:

The *Implementation Actions* summarized in the following pages have been developed based on public input and the work of the Planning and Working Group Technical Committees. These *Implementation Action*s are important in making the region more sustainable. They were selected based on the following criteria:

- Potential for making progress toward the implementation goals and targets
- Economic viability
- Consistency with the REDC goals
- Potential availability of funding
- Availability of data
- Presence of project proponents

These *Implementation Action*s are organized into two categories under each of the three sustainability themes, as follows:

FIRST: Actions that are ready to implement, based on resources and funding already being available, existing stakeholder support and ease and speed of implementation;

FUTURE: Actions that can be undertaken in the near future but will have a longer lead time due to a need to find a combination of resources, funding, or a project proponent. Some of these future actions may be more complex or require additional research.

The symbols below illustrate the integration of the seven focal areas under the three main themes (Education, Efficiency, and Economics) of the region that form the basis of the Plan.

Focal Areas and Associated Goals	THEMES
Economic Development	Action associated with only 1 theme – Education
Transportation	
Land Use and Livable Communities	Action associated with 2 themes – Efficiency and Economics
Water Management	
Materials Management	Action associated with all themes – Education, Efficiency, and Economics
Energy	
Agriculture and Forestry	
Case Examples	

3.1 EDUCATION

Everyone has a stake in achieving sustainability, and a successful *Implementation Action* requires a broad understanding of the goals. A top-down approach to changing the way resources are used will not succeed. Success will require changes at home, in schools, businesses, and governments. Education, in terms of increasing public awareness, supporting behavioral change and providing information on how to adhere to sustainability principles, is the first element of this Implementation Strategy because it is the key to enacting broad change. The following *Actions* are presented as potential approaches that promise to reach a broad number of people who have influence over resource use.

FIRST ACTIONS

3.1.1 Coordinate a regional "one-stop-shop" of existing technical assistance programs through the REDC

Many smaller municipalities do not have the knowledge and/or resources to develop planning documents and seek available grant funding. Although several organizations providing this type of technical assistance do exist in the Mohawk Valley region, many have limited resources and do not provide services for all communities. In addition, municipalities are not always aware of the full range of technical services available to them. Coordinating the work of these organizations will facilitate more increased awareness of and access to available services.

The Cornell Cooperative Extension (CCE) has ties throughout the region and already provides technical assistance to many communities. CCE would be responsible for coordinating existing programs that currently provide technical assistance and circuit riders (regional experts who travel to provide services and support to multiple jurisdictions and organizations) to communities for the development of land use and comprehensive plans and sustainability planning documents and writing grant proposals. A complete list of services, the service area, and fees for each organization that provide technical assistance or circuit riders would be accessible online to the region. The website would also include links to other online resources for developing land use, zoning and sustainability documents. Municipalities needing technical assistance could be connected to an appropriate organization through the CCE. Additional circuit riders would be hired to provide services to communities and expand the work of these existing organizations.

An entity such as the CCE will need to agree to take responsibility for coordination of these programs. Successful implementation will also require securing reliable funding for circuit riders and expanding services in parts of the region where technical assistance is not currently available.

Climate Adaptation and GHG Impact:

This action allows communities with limited resources to consider climate adaptation in addition to incorporating the principles of smart growth into planning activities. Facilitating planning at the local level will enable better land use provisions, enabling redevelopment in city/town cores, preserving open land for water management to reduce impacts from flooding, and increasing urban tree cover to reduce heat and increase carbon sequestration. Potential GHG reduction benefits come from the reduction in vehicle miles traveled and reduced use of fuel.

Potential Costs:

The creation of a single information-access portal will require developing a Regional Technical Assistance Website or a dedicated web page on an existing site that has an estimated cost of approximately $4,500. This action would also require employing a circuit rider, either full time or part time, at an estimated annual cost of $84,000—based on the costs of a current program in Northern Oneida County. However this program would also assist municipalities in identifying and securing additional grant funding sources.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following:

- U.S. Department of Housing and Urban Development, Community Development Block Grant Program
- NYS Smart Growth Public Infrastructure Policy Act of 2010
- NYS Division of Local Government Services
- Municipal User Fee
- Rural Area Revitalization Program
- Urban Initiatives Program
- Environmental Protection Fund (EPF) Municipal Grants, NYS Parks, Recreation & Historic Preservation

Additional details of these programs are provided in Appendix E.

Next steps:

The next step for this action is to convene a meeting between representatives of existing circuit rider programs and the REDC to develop an estimate of the existing program's coverage. This will help determine if there is an existing governmental structure in place to support the management and organization of the program. Additional considerations would include establishment of priority projects and programs and funding sources.

Case Examples

- The **Northern Oneida County Council of Governments (NOCCOG**) is a coalition of 19 towns and villages in northern Oneida County. There is a full-time and two part- time circuit riders that respond to technical assistance from members and offer training and workshops related to issues affecting the region.

- **Mohawk Valley Main Street Program, Otsego County** was awarded $300,000 as part of the 2012 Regional Economic Development Council Awards. An element of this program was to establish a Regional Main Street Coordinating Program that helped revitalize communities.

- The **City of Utica Harbor Point Project** was funded in 2011 with REDC funding. The Project will create a Master Plan for redevelopment of the site with a focus on residential and commercial land uses.

3.1.2 *Improve public awareness of effective energy conservation behavior by publicizing successful projects, implementing school education programs and sponsoring public workshops*

Financial incentive and efficiency upgrade programs are numerous in the region. However, participation is low, suggesting a disconnection between financial incentives and behavior. This action would address the behavioral and programmatic barriers of adopting energy conservation technologies and activities. The education programs and public workshops would be developed and implemented to increase awareness of the cause and effect between behaviors and energy use. The programs would connect a variety of aspects of life that use energy: buildings, transportation, and businesses. For example, promoting sustainable transportation choices such as cycling would increase awareness of the need for transportation infrastructure that supports these choices, such as bike lanes. The school based program would develop a curriculum for kindergarten through 12th grade, connecting knowledge with understanding of the impacts of choices on energy and electricity use. The public education workshops would be geared toward adults with the same objective, including access to financial programs for improving energy efficiency and use. The action would include publicizing successful case examples in school and community newsletters and promoting individual, small group, and community efforts that demonstrate conservation behavior.

Non-profits like 'Rome Clean and Green' and public agencies including NYSERDA NYSDHCR, and New York State Department of Tax and Finance (NYSDTF) already have programs in place to promote energy conservation and efficiency. Non-profit groups generally focus on a specific population or educational sector within a small area because they typically do not have the resources to do more. Public agencies are generally focused on their own initiatives, and their coverage areas are often too large, and outreach funding too small such that many beneficiaries are overlooked. This *Action* will provide information to potential beneficiaries that will help them to connect to whichever program they qualify for and will extend the reach of existing programs.

Climate Adaptation and GHG Impact:

Building energy use is the second largest source of GHG emissions in the region. Providing information on energy consumption and encouraging awareness of opportunities to reduce energy use is an effective way to reduce costs and GHG emissions without substantial capital investments. Insulated buildings are also more resilient to the effects of extreme weather conditions, either winter storms or summer heat waves.

Every kWh of electricity, gallon of fuel oil, or cubic foot of natural gas saved equates directly to GHG emission reductions in the region.

Potential Costs:

These efforts could be coordinated by the proposed Sustainability Coordinator and the NYSERDA Regional Coordinators (funded by NYSERDA Economic Development Growth Extension Program - EDGE Program). Potential costs would include the labor costs of the Sustainability Coordinator, advertising costs, curriculum development or modification, and materials. Much of the implementation of this *Action* can be done at low to zero cost. For example, based on discussions within the Consortium, the Otsego County Planning Department recently hosted the regional NYSERDA Coordinator at a community workshop. The awareness of the program, brought about as a direct result of this sustainability planning effort, resulted in a number of residences receiving energy audits and retrofit advice.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided in Appendix E.

- NYSERDA: Economic Development Growth Extension Program
- NYSERDA: Green Jobs Green New York
- NYSERDA: Consumer Education Program for Residential Energy Efficiency
  New York State Association for Reduction, Reuse, and Recycling grant program for "green" schools

Next Steps:

The proposed Sustainability Coordinator would work together with the NYSERDA Regional Coordinator to identify gaps in the current programs and a strategy for filling those gaps. They should meet with other members of the Sustainability Planning Committee (current Consortium and Working Group members) to review the existing programs and determine if more coordination of existing programs will result in further reach of the programs. If it is determined that additional staffing will reap significant benefits, they can prepare a job description, cost/budget, outline of an organization within the region (who will these people report to), and also identify needs for any external resources. Mohawk Valley County Planning Units should hold a plenary meeting to develop a scope and RFP/Grant for the position of Regional Energy Coordinator. Planning representatives should include responsibilities for improving public awareness of existing programs and promoting energy conservation behavior in school and other public institutions.

Case Example: The Syracuse City Schools Green Schools Program (Green SCSD) Team is a collaborative effort between the Syracuse City School District (SCSD), the National Energy Education Development Project (NEED), and Energy Training Solutions (ETS). The program was developed to incorporate environmentally themed initiatives within the school day at each grade level throughout the city's schools as well as increase the school's energy and waste management efficiencies. (http://www.syracusecityschools.com/about/curriculum/science/GreenSCSD)

3.1.3 *Promote, incentivize, and provide technical assistance for the development of small-scale composting facilities for institutions and businesses*

The average American wastes 15 to 20 pounds of food per month, most of which ends up in landfills where it accounts for generation of nearly 25% of U.S. methane emissions[1]. This action would provide an opportunity to divert organic waste materials from landfills, thereby reducing solid waste volumes and GHG emissions, and also provide an opportunity to use the recycled organic material for ecological and economical beneficial use.

This action would encourage, incentivize and provide technical assistance for the development and construction of small-scale composting facilities at institutions such as colleges, universities, commercial farms and hospitals in the Mohawk Valley region in an effort to divert food waste and green waste from landfills and to reuse it on-site or sell to local farmers and gardeners. The institutions themselves would have ownership and the responsibility for operating and maintaining these facilities.

This action would generate substantial cost savings (a pilot program realized a net savings of $10,000 in waste disposal fees (see the Mohican Farm Case Example) and would facilitate the conversion of waste products into a usable product (compost / topsoil). It would address the current problem large-scale institutions face in the disposal of organic waste and would reduce the disposal of this material to landfill.

The major challenge for this action will be getting institutions onboard. The action would require a change in behavior and operating procedures for an institution's staff, which can be a difficult process. Public perceptions of composting will also need to be addressed, as many people associate composting activities with unpleasant odors, rodents, and flies. These can all be avoided with the correct organics management technologies and procedures. Zoning restrictions may also be a barrier, as in some urban and suburban areas, zoning laws have limited or prevented the development of waste treatment facilities, a classification frequently made of organic compost facilities.

Climate Adaptation and GHG Impact:

This action would reduce the amounts of GHG emissions emitted from the disposal of organic waste. Small-scale composting can have a dramatic impact on an institution's waste stream: more than 98% of organics are removed from Municipal Solid Waste (MSW). A conservative estimate of the impact small-scale composting would have on the Mohawk Valley Region is a 20% removal of organics from the waste stream by 2020. This would remove 3,800 MT CO_2e annually, calculated using the EPA's Waste Reduction Model (WARM)[2]. This is equivalent to removing the annual GHG emissions from 450 passenger vehicles, or conserving 426,186 gallons of gasoline.

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[1] Natural Resources Defense Council (NRDC). 2012. *Wasted: How America is losing up to 40 percent of its food from farm to fork to landfill.* http://www.nrdc.org/food/wasted-food.asp. Accessed February 8, 2012

[2] The U.S. EPA's Waste Reduction Model (WARM) was created by the U.S. Environmental Protection Agency (EPA) to help solid waste planners and organizations estimate greenhouse gas (GHG) emission reductions from several different waste management practices.

Potential Costs:

A typical static forced air compost structure costs between $25,000 and $40,000 to build (size depends on the institution and if constructed in house or by an outside contractor). Return on investment is typically within five years.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following:

- NYS assistance administered through NYSDEC's Municipal Waste Reduction and Recycling Programs (MWR&R).
- NYS financial assistance administered through Empire State Development's Environmental Investment Program (EIP)
- NYS Solid Waste Management Act of 1988.

Additional details of these programs are provided in Appendix E.

Next Steps:

Compost experts and representatives from each of the Mohawk Valley Planning Units will hold a working meeting to develop promotional and technical assistance materials aimed at appealing to local colleges and institutions to develop a composting program. Planning Department public outreach personnel, or the Regional Sustainability Coordinator, will be charged with disseminating the idea and providing the supporting materials to the directors and facility managers at the targeted institutions. Planning Department personnel will provide technical assistance until the participating institutions have fully implemented a self-sustaining composting program.

Case Example: The **Mohican Farm** is located north of Cooperstown, New York. The farm is an educational outreach facility with the mission of demonstrating integrated urban / agricultural sustainability and environmental stewardship. The farm's compost system processes food waste from two restaurants at the Otesaga Hotel, along with autumn leaves, shredded landscaping debris, and livestock manure. It was designed to mirror the historic buildings on the farm and includes eight aerated compost bays, each with a capacity of 15 cubic yards. All eight compost bays are used during the peak tourist season and four of the eight are used during the off-season. The finished compost is used in the Otesaga Hotel's landscaping, with excess used on the farm.

The cost for constructing the facility was approximately $37,000; a sum that was recovered in waste disposal and topsoil savings within three years of operation.

FUTURE ACTIONS

3.1.4 Enhance collaboration between training programs, economic development organizations and businesses throughout the region

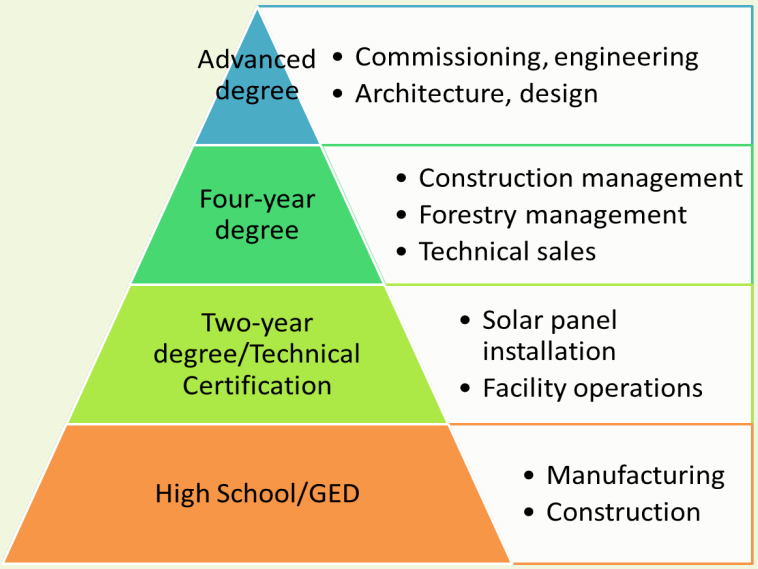
A ready supply of highly trained workers is fundamental to business growth and regional economic development. The Mohawk Valley region has multiple higher education institutions, workforce training programs and economic development organizations. However, the REDC regional geographic boundary is new to many of these institutions and organizations that previously focused on only one or two counties and are now learning about new programs and players. The REDC planning process has initiated a forum for expanding linkages and partnerships throughout the region. Based on discussions as part of this sustainability planning effort, business members of the REDC Board and the Mohawk Valley Economic Development District (MVEDD) and their colleagues are ready and willing to expand their operations with a locally trained workforce. This *Action* would be led by the Sustainability Committee that has grown out of the Consortium that led the development of the Sustainability Plan. This action acknowledges the new regional scale boundary and new partnerships that need to be forged to fully leverage existing training and education programs and what will be needed to create new programs that best match future business needs and market trends. This *Action* encourages the existing job training leaders to meet with the REDC, MVEDD, Mohawk Valley EDGE, and other economic development groups to identify current and future job needs and to coordinate training, hiring, and economic development in the "green sector." The agencies listed below under "Additional Information" are currently working toward implementing workforce training; coordinating, focusing, and expanding their efforts as "green" job training is the intended outcome of this *Action.*

This action would benefit the region through:

- **Enhanced and expanded communications between programs, economic development agencies, and businesses.** Coordination among economic development agencies and with businesses interested in locating or expanding in the region that further enhance the capacity of the region to match skilled workers and programs to those who can advance business growth.

- **Improve the perception of the value of non-college degree, certificate, and training programs.** A worker base that includes college as well as non-college degree, certification or other workforce training programs will work to support a diversified economy that provides opportunities to achieve a living wage for all. A pipeline of students and future workers must be initiated in the early stages of education and requires counseling and programs to be established in middle and high schools.

The connection between jobs and sustainability needs to be better understood, with clear examples of the types of "green" jobs that are created or enhanced when sustainability is added to the equation. Green jobs employ a variety of education levels and are accessible to those without a college degree. The manufacturing sector employs the most number of professionals for green jobs, followed by the construction sector and the professional, scientific and technical services. In addition, environmental regulations and controls provide greater equity and economic growth for all by accounting for all costs within a production cycle.
A comparison of typical employment in those sectors and their corresponding educational levels is shown in the following figure:



Climate Adaptation and GHG Impacts:

Workforce training should take into consideration future market needs and trends that include the impact on society and business from volatile storm events, temperature rise and extremes, with corresponding changes in agriculture production, and shifts in climate zones, to name a few. These changes can present new market and product opportunities along with expanded technical services such as energy retrofits, renewable energy sources, watershed management, and green infrastructure. By forming close collaborations between business operations, sales and research and development, training programs have the potential to train not just for today's needs but also for the future. These efforts can start at the primary and secondary education levels with the integration of sustainability into the curriculum.

Potential Costs:

Following the initial investment, the cost of these training programs can often be self-funded. However, start-up investment is generally related to business planning, facilities, equipment, curriculum development, faculty and promotion, along with initial placement services.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, and additional details of these programs are provided in Appendix E.

- United States Department of Commerce, Economic Development Administration, Public Works, and Economic Development Program
- Regional Economic Development Corporations
  - Empire State Development Grant
  - Excelsior Jobs Program

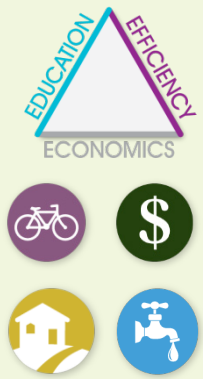
- Empire State Development:
  - Economic Development Fund
  - Economic Development Purposes Grant
  - Jobs Now Programs
  - Regional Council Capital Fund
- Fulton-Montgomery Community College; Herkimer County Community College; *SUNY Institute of Technology – Center for Computer Chip Integration Program*; *Mohawk Valley Community College Brownfields Training*
- Fulton-Montgomery County Community College Workforce Training Program
- Business and economic development groups: Economic Development Growth Enterprise (EDGE), Mohawk Valley Economic Development District (MVEDD), and Genesis Group
- Public primary and secondary schools: *Milford Central School's CORE (Opportunities in Rural Education) community program*

Next Steps:

- Expand the activity related to REDC "BUILD Goal: Workforce Alignment & Education," led by Mohawk Valley EDGE, to include emphasize additional consideration of green job related opportunities.
- The proposed Regional Sustainability Coordinator should work with all the regional training schools to promote "green" workforce training, much like FMCCC has done with their innovative Workforce Training Program (Appendix C).

Case Example: Fulton - Montgomery Community College Center Workforce Training Program
The Community College's Center for Energy Efficiency and Building Science provides training to construction industry professionals to enhance their abilities in building science technology. Construction industry professionals are trained to provide more efficient heating and cooling energy solutions for their customers. This program is offered in collaboration with NYSERDA. Students in this program installed a photovoltaic array at FMCCC as a training/demonstration project and have been successfully placed in the building trades industry (See Appendix C).

3.1.5 *Train and equip municipal highway departments to better manage transportation assets*



Municipal highway departments lack resources, with limited staff, budgets and schedules to adequately manage their overall transportation equipment and infrastructure. Funding for equipment and training also is limited, and the necessary field technologies are generally not available. The result is that it is extremely difficult to keep track of a given jurisdiction's fleets and equipment, traffic signs, the condition of culverts and roads, maintenance history, and other transportation-related information. This adversely affects the management and maintenance of the transportation system and severely limits the opportunity to implement efficiency and safety measures.

Tracking inventories and operating procedures would improve efficiency and increase the life expectancy of the transportation infrastructure as a result of better management and maintenance. In the short-term, it should result in reduced labor costs, materials costs, and vehicle maintenance and fuel costs as work schedules and locations are more effectively planned. In the long-term, it should extend the life of transportation infrastructure, also contributing to cost savings.

Agreements between several municipalities to use the same inventory system would facilitate exchange of data and information and best practices. Staff who are assigned to collect data are likely to require training, which may be difficult. Even with the cooperation of superintendent's associations, it may be difficult to implement this action in all municipalities if funding is limited.

Climate Adaptation and GHG Impact:

Municipalities will be better able to recognize and address vulnerabilities in road and drainage infrastructure through systematic and regular inventories. This will facilitate efficient management and maintenance of roads, bridges, culverts, and other infrastructure. Strengthening transportation infrastructure will make it more likely to be able to withstand extreme weather events and minimize flooding.

Potential GHG reductions depend on the scale of participation, but the gains would be through more efficient use of vehicles and equipment (i.e., reduced consumption of gasoline and diesel), which would result in direct reductions of GHG emissions from transportation fuel use.

Potential Costs:

Costs include the initial cost of purchasing the necessary software and equipment in addition to costs associated with the development and implementation of necessary training.

Additional Information:

Programs, funding and information sources that may be used to help further this action are below. Additional details about these programs are provided in Appendix E.

- Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD)
- Cornell Local Roads Program, the Federal Highway Administration's Authority's Local Technical Assistance Program provider for NYS

Next Steps:

- The regional Superintendents Association is aware of this need and is the likely group to organize and implement this action. They can consult and identify appropriate stakeholders (including existing transportation efficiency/management interest groups) and convene a meeting to discuss development of a regional transportation infrastructure inventory management plan and alternative ways to address this action.

- Research available software programs to determine the best option. Consult with Cornell Local Roads Program and superintendents associations to better understand current issues and barriers.

Case Example: Herkimer County Sign Inventory and Maintenance System

Finding ways to increase efficiency in government is critical when departmental budgets are reduced and managers are expected to do more with less. The Herkimer County Highway Department (HCHD) changed its process and used supportive technology to improve the efficiency of its traffic sign maintenance program, reducing the amount of staff time as well as vehicle miles and fuel required to maintain the county's 9,000 plus traffic signs.

3.1.6 Develop transportation-oriented land use planning technical assistance programs for municipalities

Transportation planning is most effective when long-term impacts of land use decisions are fully understood. Development of technical assistance and training programs would focus on the transportation component of existing and planned future land uses such as new developments, main street revitalization, zoning, recreational trails, directional signs, access to waterfront areas, and improved pedestrian links to downtown and waterfronts from transportation hubs.

Providing municipalities with technical assistance tools and education to better assess both short- and long-term costs and benefits of the coordinating of transportation and land use planning will result in more sustainable development because the full costs and benefits of projects are enumerated. Although the typical separation between capital and operating budgets does present a challenge for life cycle cost-benefit analysis, evidence suggests implementation of sustainable development is often economically advantageous. For example, the initial costs for incorporating green infrastructure elements when modifying or constructing a road can often be more than justified when offset against long-term cost savings as a result of reduced maintenance and environmental benefits, such as reduction of pollution. This is particularly evident when green infrastructure costs and benefits are compared with the costs of constructing and maintaining conventional storm water management structures. Providing relevant education and assistance will contribute to favorable long-term outcomes in terms of both monetary and environmental costs and benefits.

Climate Adaptation and GHG Impact:

Improving long-term transportation and land use planning should contribute to more sustainable development, including the reduction of single occupant vehicle trips and miles traveled, as jobs, housing, and services are more conveniently and closely located. This will contribute to reducing regional GHG emissions, associated from the reduction of vehicle miles and fuel use.

Potential Costs:

Costs include developing, marketing, and running the program. If regional municipalities partnered together to develop such a program, the region would be more likely to be able to obtain funding and develop programs that individual municipalities would not be able to undertake on their own.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following:

- NYS Growth Public Infrastructure Policy Act of 2010
- New York Department of State Local Government Efficiency Grant Program

Additional details of these programs are provided in Appendix E.

Next Steps:

- Work with regional entities such as the Northern Oneida County Council of Governments and Tug Hill Commission to consider the feasibility of expanding current programs to include transportation components. The examples provided in Appendix C: Case Examples can also be distributed to various stakeholders to encourage innovation.

Case Example: Cooperstown Transit Center
Linden Avenue Gateway, Otsego County.
Summertime parking for buses and transient visitors was inaccessible near the Baseball Hall of Fame. A parking area with pedestrian and shuttle service was designed by CLA SITE on a former landfill. Innovative storm water design features were incorporated.

3.1.7 Appointment of a non-point pollution prevention Regional Trainer to extend erosion and sediment control training for small construction and repair businesses

Surface runoff from construction activities is a significant source of water pollution in the region. NYSDEC requires "trained contractors" and "Inspectors" to perform certain work under the State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity. To satisfy this training requirement, NYSDEC has partnered with county soil and water conservation districts across the state to make erosion and sediment control training available. However, this training has not been undertaken by many regional operators because training programs generally take place in Albany and because the requirement can be met by having a trained and registered staff member review the work without being on site during actual construction. Furthermore, many construction activities and road repairs fall below the 1-acre impact threshold that triggers the requirement for a SPDES permit. Consequently, a substantial portion of construction activity in the region is being undertaken without the implementation of water pollution prevention measures.

Training is also need to ensure appropriate design, installation, and subsequent inspection of septic systems. Although plans must be reviewed by a professional engineer, it is not uncommon for generic plans to be used for system installation without careful reviews of local site conditions. This can result in inappropriate design and construction and eventual water pollution. Local soil and water conservation professionals report a need to train public works and private contractors. One of the most effective ways to do this is actual field training— talking to equipment operators and foreman in the field.

Each county has a County Water Quality Coordinating Committee (WQCC) to coordinate educational, monitoring, and control efforts. By organizing a cooperative cost-sharing agreement, the reach of existing programs can be extended. There has already been enthusiastic support from the local SWCDs to implement this action. A committee has already been formed to initiate plans for this action which includes members from SWCDs from Schenectady, Herkimer, and Otsego counties.

If septic inspections and plan reviews are included, functions normally conducted by a code enforcement officer would be taken on by a SWCD professional.

Climate Adaptation and GHG Impact:

Best management practices reduce the potential for damaging erosion during peak rainfalls events. There would be no associated GHG emission reductions.

Potential Costs:

Depending on the organization of the job, costs can be shared by all the counties, but a small amount of additional funding, on the order of $30,000/year (1 half-time equivalent), would cover the extra costs of providing training that currently is not taking place.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following:

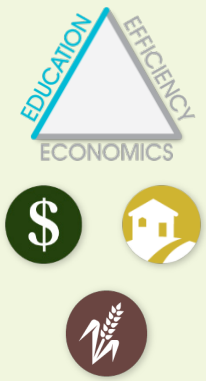
- Nonpoint Source program under Section 319 of the Clean Water Act set guidelines.
- The 1996 Farm Bill and the 1996 Amendments to the Safe Drinking Water Act highlighted the need for better non-point management practices.
- The New York Non-point Source Coordinating Committee (provides support to resolve non-point source issues).
- The NYS Soil and Water Conservation Committee and the NYSDEC-organized WQCCs.
- The Clean Water / Clean Air Bond Act passed by voters in November 1996.
- The Environmental Protection Fund (EPF), which has supplemented Clean Water Act Section 319 funding since 1995.

Additional details of these programs are provided in Appendix E.

Next Steps:

- Convene monthly calls with the County Water Quality Coordinating Committee.

3.1.8 Integrate agricultural and forestry curricula into K-12 education



Because of the abundance of natural resources in the Mohawk Valley, agriculture and forestry are core industries that support the local economy. However, many citizens lack basic knowledge about where their food and wood products come from and the effort required to sustain farming and forestry to protect the regional economy and environment. In addition, many children and youth are likely unaware of the diverse agriculture and forestry career opportunities that could be pursued in the Mohawk Valley region and that these jobs require technical skills and advanced training. As the average age of farm and forestry operators increases in the region, there is a critical need for a greater number of qualified young people to continue entering the workforce to sustain these industries over time.

The action would include the development and integration of K-12 curricula focused on agriculture and forestry. Early engagement of young people with agricultural and forestry opportunities in the region will help encourage them to pursue agriculture and forestry vocational training or academic degrees at the region's colleges and universities and then enter these professions. Providing children with this type of exposure educates young consumers—and other consumers through their parents and guardians— about the impacts their personal choices have on the health of their community and environment. Programs such as "Agriculture in the Classroom" and "Project Learning Tree (PLT)," if implemented in the existing school curriculum, within study of science, history and other relevant subjects, would expose all students to the basic concepts, importance, science, and role of agriculture and forestry products. This can also provide impetus at the local level for national efforts to fight obesity through healthy food choices, of which selecting locally produced unprocessed food is an important aspect.

This action would increase the implementation of existing established educational programs with proven effectiveness. Students from pre-K through 12th grade can learn more about how farms and forests are integral parts of communities, economy, and ecosystems, thereby also introducing an appreciation of possible career paths they may not have considered otherwise.

Climate Adaptation and GHG Impact:

Climate change can affect, or interrupt, food production and the maintenance of healthy forests. Effective adaption to a changing climate will require developing new policies and implementing new technologies or management approaches to food and wood production. This would not have a direct impact on GHG emissions.

Potential Costs

PLT does not charge to train teachers and provide teaching materials to teachers. NYSDEC staff and volunteer facilitators conduct the training; NYSDEC purchases the training materials for the participants; teachers must attend prescribed training. Total program cost for implementation for each year, assuming one full-time educator and two work-study students, is $41,000-$51,000.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following:

- USDA Farm to School Grant Program
- USDA Agriculture in the Classroom Excellence Grants Program (ACE)
- USDA Farmers Market Promotion Program (FMPP)
- USDA Sustainable Agriculture Research and Education (SARE) Program grants.
- New York Agriculture in the Classroom (NYAITC)
- PLT – NYSDEC and the Empire State Forestry Foundation.
- Other not-for-profit and private sources:
  - DonorsChoose.org is an online charity that funds projects posted by K-12 teachers
  - Captain Planet Foundation
  - Braitmayer Foundation Grants
  - Lowe's Charitable & Educational Foundation Grants

Additional details of these programs are provided in Appendix E.

Next Steps

- Identify all efforts in the region to develop agricultural and forestry curricula and look for opportunities to coordinate, share resources, search for financial resources
- Support applications for ACE funding in all schools
- Support farm-to-school grant applications in schools
- Support applications for PLT funding in all schools
- Communicate this need to a Regional Sustainability Coordinator to receive additional coordination of this Action

Case Example: **Hudson Valley Farm to School (HVFS)** is a part of the national farm- to-school movement to promote student wellness by encouraging the use of fresh, local farm produce in the cafeteria and offering classroom-based nutrition and food system education. HVFS partners with local farms, chefs, and food educators to bring hands-on nutrition and agriculture education into the classrooms, incorporate local farm produce into the school lunch menu, and establish school vegetable gardens with the goal of helping young people understand where their food comes from and how it gets on their plate. The goal of HVFS program is to engage children about food and give them the tools to make healthful decisions about what they eat so they can grow up to become food literate adults.
http://www.hvfs.org/

Case Example: **Project Learning Tree (PLT) program.** Since 1985, PLT in New York State has trained 15,000 teachers in the PLT curriculum. In 2012 alone, 960 teachers were trained statewide. Among those trained are students from Paul Smith's College who are now working in community schools using their training and the PLT materials.
http://www.dec.ny.gov/education/1908.html

Summary of Implementation Actions: THEME: EDUCATION

Implementation Action	Proponents/Stakeholders/Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transportation	Land Use	Water	Materials	Energy	A & F
FIRST ACTIONS								
3.1.1 - Coordinate a regional "one-stop-shop" of existing technical assistance programs through the REDC.	➤ REDC ➤ Cornell Cooperative Extension ➤ Otsego 2000 ➤ Otsego County Conservation Association ➤ Northern Oneida Council of Governments ➤ County Executives, Mayors, Municipal leaders ➤ Relevant Local College/ University programs such as Rust 2 Green	ED-5		LULC-2				
		• Northern Oneida County Council of Governments (NOCCOG) Coalition. • Mohawk Valley Main Street Program, Otsego County • City of Utica Harbor Point Project						
3.1.2 - Improve public awareness of effective energy conservation behavior by publicizing successful projects, implementing school education programs and sponsoring public workshops.	➤ NYSERDA and the Energy Smart Communities Coordinators for Central New York and Southern Tier regions ➤ National Grid ➤ Griffis Utility Services Corporation ➤ Rome Clean and Green ➤ Academic Institutions including colleges (SUNY IT, Mohawk Valley Community College, Hartwick College), and local school districts (Mohawk Central, Utica City, Mayfield Central, etc.)	ED-3	T-4		WM-1	MM-3	E-1 E-2 E-3 E-4	
		The Syracuse City Schools Green Schools Program (Green SCSD) team.						

Implementation Action	Proponents/Stakeholders/Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transportation	Land Use	Water	Materials	Energy	A & F
	➢ Hospitals such as Bassett, St. Elizabeth and St. Luke's Cornwall Hospital ➢ Businesses such as ConMed, Chobani Yogurt, Farmers and Agriculture ➢ Homeowners Associations							
3.1.3 - Promote, incentivize and provide technical assistance for the development of small scale composting facilities for institutions and businesses. 	➢ Contactor identified in the Waste Audit Implementation Action ➢ Collaboration from each of the region's three solid waste management Planning Units (MOSA, OHSWA, Fulton SWA.) ➢ Large institutions such as academic institutions and hospitals		T-2	LULC-3		MM-1 MM-2 MM-4	E-1 E-2	
		Mohican Farm Composting Facility						

Implementation Action	Proponents/Stakeholders/Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transportation	Land Use	Water	Materials	Energy	A & F
FUTURE ACTIONS								
3.1.4 - Enhance collaboration between training programs, economic development organizations and businesses throughout the region.	➤ Colleges: Fulton-Montgomery Community College; Herkimer Community College; SUNY IT – Center for Computer Chip Integration; Mohawk Valley Community College Brownfields Training, SUNY Oneonta, Hartwick College, SUNY Cobleskill ➤ Business and economic development groups: EDGE, MVEDD, Genesis ➤ Public primary and secondary schools: Milford Central School's CORE (Opportunities in Rural Education) community program. ➤ Parent - teacher groups	ED-2		LULC-2	WM-1	MM-1	E-2	A&F-1 A&F-3
		Fulton-Montgomery Community Center Workforce Training Program						
3.1.5 - Train and equip municipal highway departments to better manage transportation assets.	➤ County highway departments ➤ Highway superintendents associations, e.g. Oneida County Highway Superintendents Association ➤ New York State Department of Transportation regional engineering departments, which could provide technical assistance ➤ Cornell Local Roads Program	ED-5	T-2	LULC-2	WM-3			
		Herkimer County Sign Inventory & Maintenance System						

Implementation Action	Proponents/Stakeholders/Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transportation	Land Use	Water	Materials	Energy	A & F
3.1.6 - Develop transportation-oriented land use planning technical assistance programs for municipalities.	➢ Herkimer- Oneida Counties Transportation Studies ➢ Otsego County Planning Department ➢ Fulton County Planning Department ➢ Montgomery County Department of Economic Development, Planning and Tourism ➢ Schoharie County Planning and Development Agency ➢ NYSDOT ➢ Local Planning Boards ➢ Local Highway Departments	ED-3 ED-4 ED-5	T-2 T-3 T-5	LULC-2	WM-3			
		Cooperstown Transit Center, Linden Avenue Gateway (Otsego County)						
3.1.7 - Appointment of a non-point pollution prevention Regional Trainer to extend provision of erosion and sediment control training to encompass small construction firms and minor construction and repair activities.	➢ County Water Quality Coordinating Committees from all six counties, ➢ Soil and Water Conservation District			LULC-2	WM-2			

Implementation Action	**Proponents/Stakeholders/Groups** *(Entities that would play a part in the development and implementation of this action)*	**Focal Area Linkages and Associated Goals** *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transporta-tion	Land Use	Water	Materials	Energy	A & F
3.1.8 - Integrate agricultural and forestry curricula into K-12 education. 	➤ School Districts ➤ Teachers/Parents ➤ Academic Institutions ➤ County Farm Bureaus ➤ Cornell Cooperative Extension ➤ NYS Department of Ag. and Markets ➤ County Soil and Water Conservation Districts ➤ NYS DEC ➤ Business (farms and wood producers/processors)	ED-1 ED-2 ED-3 ED-4 ED-5 ED-6		LULC-3				A&F-1 A&F-3

- Hudson Valley Farm to School (HVFS) program
- Project Learning Tree (PLT) program

Summary of Sustainability Goals:

The goals in each of the focal areas below correspond with the associated focal goals mentioned in each Implementation Action in the preceding table.

Economic Development (ED)

- Goal ED-1: Enhance regional concentrations to retain and create business in key growth sectors (REDC Goal – GROW).
- Goal ED-2: Align the region's workforce with the appropriate education and training to increase the supply of skilled workers (REDC Goal – BUILD).
- Goal ED-3: Create innovation enabling infrastructure that will drive entrepreneurialism (REDC Goal – CREATE).
- Goal ED-4: Restore infrastructure and increase spatial efficiencies that will revitalize existing urban and town centers (REDC Goal – REVIVE).
- Goal ED-5: Strengthen government and civic effectiveness to produce a more vibrant economy (REDC Goal – FORGE).
- Goal ED-6: Promote unique regional assets through a unified identity and campaign.

Transportation (T)

- Goal T-1: Align transportation and land use planning and investment.
- Goal T-2: Improve efficiency in maintenance of transportation infrastructure.
- Goal T-3: Improve and connect regional multi-use trails.
- Goal T-4: Increase public transportation ridership.
- Goal T-5: Promote transportation alternatives.

Land Use and Livable Communities (LULC)

- Goal LULC-1: Redevelop main streets, waterfronts, and brownfields.
- Goal LULC-2: Provide technical assistance and collaboration opportunities.
- Goal LULC-3: Identify, Preserve, and Protect Lands suitable for viable agriculture.
- Goal LULC-4: Invest in existing infrastructure and housing stock.

Water Management (WM)

- Goal WM-1: Conserve water and related energy consumption.
- Goal WM-2: Maintain water quality.
- Goal WM-3: Improve existing infrastructure.
- Goal WM-4: Establish watershed planning.

Materials Management (MM)

- Goal MM-1: Reduce solid waste generation.
- Goal MM-2: Increase the regional market for recycled goods.
- Goal MM-3: Reduce energy costs associated with materials and solid waste management.
- Goal MM-4: Expand effective existing projects and promote new regional strategies.

Energy (E)

- Goal E-1: Reduce consumption of electricity and heat generated by fossil fuels.
- Goal E-2: Increase energy efficiency.
- Goal E-3: Increase renewable local energy generation and use for electricity and heat.
- Goal E-4: Evaluate life-cycle impacts of energy generation and use.

Agriculture and Forestry (A&F)

- Goal A&F-1: Promote education.
- Goal A&F-2: Enhance efficiencies.
- Goal A&F-3: Promote sustainable agricultural and forestry economic development for individuals, families, and the region to help sustain the current workforce and encourage others to join the workforce.

3.2 EFFICIENCY

The theme of Efficiency includes embracing efficiency via better operations, maintenance, changes in behaviors, and the installation of technology that reduce consumption of natural resources and energy as well as the conservation of energy associated with avoiding the use of these resources. The following *Implementation Actions* focus on avoiding or minimizing the use of natural resources or energy.

FIRST ACTIONS

3.2.1 Develop a regional transit marketing program to increase public awareness and use of rural transit services and rideshare programs

Currently, independent non-profit agencies and for-profit companies are not generally collaborating on transit provision, although it appears there is interest in and openness to this concept. Rideshare programs can be instituted within single employers or groups of employers. While buses run reliably and on time, current and potential riders do not have the benefit of a single source of information to identity current routes, schedules, and fares. Cooperation between the region's transit operators to market their services under a unified regional campaign and make it easier for riders to identify transit options has the potential to improve customer experience and increase ridership across all operators.

Specific projects and activities will focus on shared branding, improved signs, establishing new formal bus stops on flag-stop routes, development of "One Call-One Click" services, mobility management approaches, on-line trip planning, general advertising campaigns, travel training, among others. Increasing communication and collaboration between transit providers and regional employers will help to better align services and routes with travel needs of workers.

If they can attract strong ridership, rural public transportation services have the potential to reduce transportation costs and increase mobility for residents, increase the efficiency of vehicles, and reduce fuel consumption and GHG emissions. Because rural transit routes can be expensive to maintain and difficult to sustain without adequate ridership, cooperation among service providers has the potential to improve service and increase marketing reach.

A regional transportation services marketing program has the potential to create other regional branding efforts. Large companies can provide incentives for using public transportation with the direct benefit of reduced costs for provision of employee parking.

Climate Adaptation and GHG Impact:

Increased use of public transit should reduce use of private single-occupancy vehicles, resulting in a decrease in vehicle miles and associated fuel use, which directly reduces transportation GHG emissions. Improved awareness of transit options could increase travel options during and after extreme weather events.

Potential Costs:

Costs of a regional marketing program would depend on the specific activities taken to create such a program. Costs would be offset by additional revenues on rural routes that typically run at a loss.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional detail about the programs is provided in Appendix E.

- Cleaner, Greener Communities Phase II funding
- NYS Department of Transportation Section 5311, Non-urbanized Area Formula Grant Program
- NYS Department of Transportation Rural Transportation Assistance Program

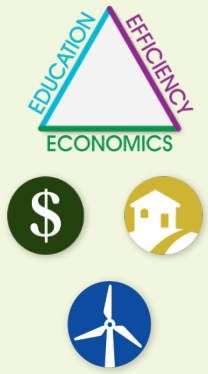
Next steps:

- Convene a meeting of transit providers and regional economic development groups to identify opportunities, barriers, and linkages to other regional efforts.
- Initiate applications for appropriate funding that could be secured for creation of a regional, six-county program.
- Reach out to the larger regional employers and recommend rideshare programs.

Case Example: Ecology and Environment, Inc. Corporate Rideshare Program

Ecology and Environment, Inc. is an international consulting firm with headquarters in Western New York. Some urban offices are accessible by public transportation and some are most accessible by private car, but all the offices reward employees for using public transit or car-pooling. Each month, $500 is raffled to one employee participating in the program, and at the end of the year, $1,000 is raffled. This is in addition to the $1 a day (or $1.50 a day for walk/bike or carpool with 2 or more) that is paid to all participants. The program reduces the corporate carbon footprint and limits the necessity to provide parking.

3.2.2 *Increase participation in residential, commercial, institutional, and municipal energy incentive programs*



The energy consumption of existing buildings represents 43% of total regional GHG emissions in the region. Energy usage also represents a significant expense for residents, businesses, and governments. There are many programs and businesses available in the region to help residents and business owners reduce energy use. Increasing participation in energy-auditing programs will result in reduced energy use, costs, and GHG emissions.

NYS has set a goal of achieving a 15% reduction in energy use through energy-efficiency improvements by 2015 compared to levels projected for that year in 2010. Retrofitting existing buildings represents the greatest opportunity to increase energy efficiency and reduce energy use associated with buildings in the region. Energy efficiency programs that evaluate and educate households and businesses can be an effective way to reduce energy consumption. This action would increase the number of energy audits performed and thereby increase identification and implementation of energy efficiency projects. It would also contribute to local energy independence and economic development activity.

Energy audits provide valuable information to residents, businesses, and government representatives that can be used to make decisions to reduce the energy footprint of a building. Actions can include a range of options and investments; weatherization measures, replacement of appliances, upgrade to mechanical and lighting systems, or structural and longer term retrofits like window replacement. Increasing the energy efficiency of existing building in the U.S. could offset a significant amount of growing demand for energy.

Successful implementation of an energy efficiency strategy would require the continuation and expansion of existing programs directed at improving energy efficiency, enhancing the rate and scale of energy retrofits, and improving efficiency standards. Programs would need to engage and educate residents and local businesses and be integrated with contractor training to build support for energy efficiency. This *Action* intends to use the discussions and reach provided by this Sustainability Plan, and the committees, stakeholders, website, and communications established during this process to expand the role of the many existing incentive programs in the Mohawk Valley region.

Climate Adaptation and GHG Impact:

Reducing energy required for buildings provides the best opportunity to reduce associated costs and GHG emissions. Every kWh of electricity, gallon of fuel oil, or cubic foot of natural gas saved equates directly to GHG emission reductions in the region. Insulated residences and businesses are more prepared for extreme weather conditions, either winter storms or summer heat waves.

Potential Costs:

Capital costs associated with the installations and repairs will vary, but projects can be designed to offset costs with energy cost savings, and pay-back time can be reduced even further with available subsidies and tax credits. Reducing energy use in buildings provides the best opportunity to reduce costs and GHG emissions.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional details about these programs are provided in Appendix E.

- NYSERDA Programs
  - Residential
    - **New York ENERGY STAR Certified Homes:** Homes certified under this program will have a lower total cost of ownership because of energy savings. Homes certified through this program must pass rigorous performance standards. Single family and multi-family homes can qualify. http://www.nyserda.ny.gov/Residential/Programs/New-Construction/Certified-Homes.aspx
    - **Home Performance with ENERGY STAR: Home Performance with ENERGY STAR** connects homeowners with contractors qualified to complete comprehensive energy efficiency upgrades. To qualify for incentives and low-interest financing, consumers are required to hire participating Home Performance with ENERGY STAR contractors that are accredited by the Building Performance Institute (BPI). http://www.nyserda.ny.gov/Residential/Builder-Contractor/Existing-Home-Renovations.aspx?sc_database=web
    - **Assisted Home Performance with ENERGY STAR**: Like the Home Performance with ENERGY STAR program, homeowners begin with a comprehensive home energy assessment, and then make energy efficiency upgrades with the help of a participating Home Performance contractor. With Assisted Home Performance with ENERGY STAR, income-eligible households can qualify for a grant up to $5,000 to pay up to 50 percent of an energy efficiency project. Two-to-four unit residential buildings with additional income-eligible households can qualify for a grant up to $10,000. http://www.nyserda.ny.gov/Residential/Programs/Existing-Home-Renovations/Assisted-Home-Performance-with-ENERGY-STAR.aspx
    - **EmPower New York:** Focuses on cost-effective electric reduction measures for low- and moderate- income New Yorkers. On-site energy use education provides customers with additional strategies for managing their energy costs. http://www.nyserda.ny.gov/Residential/Programs/Low-Income-Assistance/EmPower-for-Residents.aspx?sc_database=web. A parallel program is in place for landlords: http://www.nyserda.ny.gov/Residential/Programs/Low-Income-Assistance/EmPower-for-Landlords.aspx?sc_database=web
  - Commercial
    - **Flex Tech:** The FlexTech Program seeks customers interested in receiving cost-shared analysis of energy efficiency technical evaluations, process improvement analysis, energy master plans, retro-commissioning, and development of peak-load curtailment plans (PLCPs) of their existing facilities as well as combined heat & power (CHP) feasibility studies for implementation within existing facilities.http://www.nyserda.ny.gov/BusinessAreas/Energy-Efficiency-and-Renewable-Programs/Commercial-and-Industrial/CI-Programs/FlexTech-Program.aspx

- **Existing Facilities Program:** Offers a broad portfolio of incentives to help offset the costs of implementing energy efficiency improvements in existing commercial facilities across New York State, Equipment Change-out grants to $60,000 and Large, Custom Improvements to $2 million are included. http://www.nyserda.ny.gov/BusinessAreas/Energy-Efficiency-and-Renewable-Programs/Commercial-and-Industrial/CI-Programs/Existing-Facilities-Program.aspx

- **Industrial and Process Efficiency (IPE) Program:** Provides performance-based incentives to manufacturers and data centers implementing energy efficiency and process improvements which will reduce your costs. Incentives are available for: new construction and existing facilities, manufacturing facilities and data centers, and electricity and natural gas savings. http://www.nyserda.ny.gov/BusinessAreas/Energy-Efficiency-and-Renewable-Programs/Commercial-and-Industrial/CI-Programs/Industrial-and-Process-Efficiency.aspx

- **The New Construction Program:** Commercial/industrial businesses can receive assistance when incorporating energy-efficiency measures into the design, construction, and operation of new and substantially renovated buildings. Incentives are available for the purchase and installation of energy-efficient equipment that reduces electric energy consumption in new and substantially renovated buildings. http://www.nyserda.ny.gov/BusinessAreas/Energy-Efficiency-and-Renewable-Programs/Commercial-and-Industrial/CI-Programs/New-Construction-Program.aspx

- **Green Jobs Green NY**: Offers New Yorkers free or low-cost energy audits to identify areas of potential energy savings—along with low-interest financing to help pay for the improvements to their home or business. As consumers add to their homes' energy efficiency—and long-term value—their neighbors will be learning the skills needed to install and maintain new green technologies. Green Jobs Green NY workforce training will help them qualify for the jobs created by New York businesses certified to conduct audits and install energy-saving equipment and improvements. http://www.nyserda.ny.gov/Features/Green-Jobs-Green-New-York.aspx?sc_database=web

- Other NYS Agencies

  - Home and Community Renewal (HCR) Weatherization Assistance Program (WAP): Assists income-eligible families and individuals by reducing heating/cooling costs and improving the safety of homes through energy efficiency measures. http://www.nyshcr.org/Programs/WeatherizationAssistance/

  - Office of Temporary and Disability Assistance (OTDA) Home Energy Assistance Program (HEAP): HEAP is a federally funded program that issues heating benefits to supplement a household's annual energy cost. HEAP also offers an emergency benefit for households in a heat or heat related energy emergency. Additionally, HEAP offers a heating equipment repair and/or replacement benefit for homeowners with inoperable heating equipment. http://otda.ny.gov/programs/heap/

- Federal Programs

  - Energy Star for Home Improvement: Resource for DYI assessments and improvements, tax credits, connections to contractors http://www.energystar.gov/index.cfm?c=home_improvement.hm_improvement_index

- Utility Company Programs

  - NYPA Energy Services: NYPA Energy Services include audit, design, construction and complete project closeout. NYPA's has energy services programs for K-12 schools; colleges/Universities; local government; state government; water & wastewater treatment facilities; health care; not-for-profit organizations. http://www.renewnewyorkstate.org/nypasrvcs.html

  - National Grid: large and small business programs provide technical assistance and incentives to help you with efforts to improve energy efficiency, lower energy costs, and enhance your facility. Programs include net metering for renewable energy projects. https://www.nationalgridus.com/niagaramohawk/business/energyeff/energyeff.asp

Next Steps:

- Use the awareness generated by this Sustainability Plan to provide useful and specific information to residents and businesses and encourage participation in energy-efficiency efforts and funding programs.

- Proceed with energy performance contracts in government offices. Specifically, proceed with Energy Performance Contracts in government offices, such as that proposed by the Flextech provider Wendel for the energy study in Otsego County buildings in October 2012. This project can serve as an example and learning opportunity for other governments in the region.

The following examples illustrate organizations within the region that have demonstrated implementation of successful projects and are poised for continued progress and new actions.

Case Examples

"**Renew" Websites:** **www.Rome13440zone.org;** Blue Springs Energy provides communities with local outreach and project support for energy efficiency and renewable energy incentives available from federal, state, utility, or other sources on the local website, "ask the expert" resource, and workshops/events. More than 1,100 home and business owners attended events with approximately 40% taking the first step towards an energy audit.

City of Rome Energy Management Plan, March 2012. Multi-faceted strategy to incorporate long-term, high-impact investments in public infrastructure to reduce operating expenses while reducing local impact on the environment and natural resources. The Plan established three broad goals: reduce energy costs, reduce GHG emissions, and improve the public's understanding of energy management and sustainability as it relates to life in the City of Rome.

Energy Performance Contracting and Energy Service Providers (ESCO): NYSERDA provides lists of Flextech providers for energy-efficiency audits, where NYSERDA will pay 50% of the cost of the audits.

Case Example: City of Rome Housing Rehabilitation and Redevelopment Programs

Rome is approaching neighborhood revitalization with a series of housing rehabilitation and redevelopment programs that focus on energy efficiency, durability, and affordability.

Eight new homes were constructed using the standards prescribed by the NYS Division of Housing and Community Renewal's Green Building Initiative. Canal Village includes 33 units of affordable housing that are equipped with Energy-star windows, foam insulation, on-demand hot water, cement-board siding, and hardwood floors. Furnaces that are at least 95% efficient are standard in every unit.

Rome was awarded $555,000 in HUD funding to redevelop foreclosed and abandoned and vacant properties to be renovated and sold to low-income families. Energy efficiency and sustainability were the focus in the re-development of these Neighborhood Stabilization Program (NSP) properties.

Case Example: Bassett Hospital Green Team

In the early 1990s Basset hospital in Cooperstown became one of the first hospitals in the nation to take a strong look at its environmental impacts. This environmental focus continued in 2007, when the hospital formed a Green Team made up of employees from various departments: Housekeeping, Facilities, Food Service, Laboratory, and Corporate Communications. The Green Team has set a number of goals that include reducing waste and the hospital's ecological footprint as well as increasing efficiency wherever possible. The Green Team's work has led to a savings of 373,008 sheets of paper annually or roughly $7,000 a year; and invest $4,500 in the purchase of reusable non-skid trays that did not require mats, which now saves the hospital more than $6,900 annually in paper tray mat costs.

In 2009, Basset received a NYSERDA incentive that covered approximately $500,000 in retrofits that included everything from a computer system upgrade that allows settings to adjust themselves automatically for day and night, to motion-sensitive lighting using T8 high-efficiency fluorescent bulbs. In total the hospital expects their energy savings from this investment to save $259,700 annually.

Case Example: Covington Private Home Retrofits

A project located in the village of Gilbertsville illustrates the potential economic and energy benefits of energy retrofits. Having purchased a Victorian home, the homeowners found their cost of utilities amounted to almost $500 per month or $6,000 per year, mostly due to high heating costs.

A local Home Performance Contractor performed a NYSERDA-funded free energy audit and identified a set of improvements that would work to reduce those costs. The project qualified for NYSERDA's Home Performance with ENERGY Star incentive program as well as Green Jobs Green New York financing. The project was completed and results are shown in the following table:

	Yearly Consumption Before Retrofit	Yearly Cost Before Retrofit	Yearly Consumption After Retrofit	Yearly Energy Savings	Yearly Savings
Fuel Oil	1255 Gallons	$3,812	495 Gallons	759 Gallons	$1,974
Propane	465 Gallons	$1,380	249 Gallons	216 Gallons	$641
Electricity	6985 kWh	$613	9,443 kWh	-2,458 kWh	-$216
Total Energy	239,547 MBtu	$5,805	123,351 MBtu	116,196 MBtu	$2,399
Total Project Cost			$25,466		
Financed Project Cost (GJGNY)			$13,000		
10% NSERDA HPwES Incentive			$2,547		
Savings Per Month			$200		
GJGNY Financing Per Month			$110		

3.2.3 Provide farm energy audits and implementation of efficiency measures

Farmers in the Mohawk Valley, as elsewhere, are always under pressure to manage the cost of doing business. One of the primary ways farmers can be financially successful is to reduce costs and maximize productivity. Productivity per unit of energy input, i.e. energy efficiency, requires knowledge by the farmer of how much energy is used by each production process along with knowledge of alternative ways to achieve the same functions using less energy, time, and money. Farm energy audits conducted by qualified specialists quantify current energy use by function. Farm energy management plans start with energy audits, but also identify comprehensive cost-effective alternatives to current equipment and practices. Audits and energy management plans provide the specific information farmers need to achieve greater energy efficiency and reduce costs.

This action would accelerate adoption by farmers of energy or management plans and result in installation of energy-efficient equipment and implementation of efficiency practices. Farm headquarters operations use large amounts of energy, especially for dairy and other farm animal operations. Dairy farms, for example, use electricity to milk cows, cool milk, and ventilate barns; they also use propane to heat large quantities of water for washing the milking equipment. Farm field operations also use large amounts of energy in the form of diesel and other fuels and commercial nitrogen fertilizers, which require large amounts of energy to produce. There are multiple technologies that can reduce energy consumption while carrying out the necessary functions of the operation. Typical savings for a New York dairy operation are shown below:

Recommended Energy Saving Equipment	Estimated Annual Electricity Savings (kWh)	Estimated Annual Energy Cost Savings (a)	Estimated Cost to the Farm (b)	Estimated Payback in Years (b/a)
1. Lighting	5,400	$567	$1,400	2.5
2. Milk Harvesting	16,427	$1,725	$6,800	3.9
3. Ventilation	3,854	$405	$2,000	4.9
4. Milk Cooling	10,801	$1,134	$6,997	6.2
5. Water Heating	15,750	$1,654	$12,480	7.5
Totals	**52,231**	**$5,484**	**$29,677**	**5.4**

A multi-agency initiative to raise awareness by farmers of the opportunities to save energy and reduce costs would save money and energy while reducing GHG contributions. Providing financial assistance to overcome barriers to implementing energy management plans is a necessary component of this *Action*.

Energy audits and management plans are existing programs that can be expanded as farmers learn of their availability and understand the application process. Once through the audit, farmers can take advantage of other programs that provide cost-support for implementing energy-saving actions. NYSERDA, USDA, NRCS, soil and water conservation districts and the Cornell Cooperative Extension (CCE) could all play important roles in informing farmers about opportunities to reduce energy use, save money, improve soil health, and protect water quality through energy management plans. Any of the above agencies could lead the effort.

This action would stimulate business for farm equipment vendors and service personnel. It would also help protect water quality and improve soil health/productivity. Energy efficiency can also be thought of as "energy productivity." In other words, how much product can be generated per unit of energy or per dollar spent on energy. The costs of initiatives, both for developing and implementing plans, are barriers. Effective plans may require farmers to change important aspects of field operations and purchase or retrofit equipment. Awareness of current programs and services is not extensive and there appears to be a lack of knowledge of the real potential for the reduction of operating costs. This may be due to lack of experience with energy management on the part of federal and other agency field staff and the limited number of staff within the region.

Climate Adaptation and GHG Impact:

More efficient use of energy inputs would reduce GHG emissions. Field equipment and practices that produce crops with greater energy efficiency also tend to increase soil health (increase soil fertility, moisture-holding capacity of soil, resistance to erosion, increase infiltration rates, reduced runoff, etc.), which will be advantageous as temperatures increase and precipitation becomes more sporadic.

The estimated average GHG reduction per farm that implements an agricultural energy management plan (AgEMPs) is approximately 14.5 tons of CO_2e. Each participating farm would continue to net these savings, so the additional annual emission reductions from new participating farms would add to those already in the program.

Additional Information

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided in Appendix E.

- NYSERDA Agriculture Energy Efficiency Program (http://www.nyserda.ny.gov/Agriculture.aspx)
- USDA NRCS Environmental Quality Incentives Program (EQIP) On-Farm Energy Initiative (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/)
- USDA RD Rural Energy for America Program REAP (http://www.rurdev.usda.gov/BCP_Reap.html)

Potential Costs:

Programs in NYS that assist farmers in improving the efficiency of energy use include the NRCS EQIP On-Farm Energy Initiative and the NYSERDA Agriculture Energy Efficiency Program. These programs are similar but take somewhat different approaches to achieve energy savings.

USDA NRCS Environmental Quality Incentives Program (EQIP) On-Farm Energy Initiative (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/)

This program funds energy audits of either farm headquarters or farm field operations, or both. The audit becomes the basis for AgEMPs. The AgEMP evaluates all major energy uses and provides cost-effective recommendations for reducing energy use while maintaining farm productivity. The USDA NRCS pays eligible farmers part of the cost of AgEMPs. The USDA NRCS reimbursement amount for an AgEMP for a farm's headquarters, which covers barns, milk house, poultry sheds, etc., ranges from approximately $1,150 to $2,400 for farms with livestock. The USDA NRCS reimbursement amount for an AgEMP for farm field operations ranges from approximately $1,245 to $1,930 for farms without irrigation. AgEMPs for irrigated farms are reimbursed at

a higher rate due to their more complex nature. A farmer would receive a fixed amount from NRCS that is approximately one-half the total cost.

The farmer is responsible for implementing the plan. The cost of some energy-efficiency measures may be shared with the USDA NRCS. Implementation costs can vary widely, depending on whether the measure requires purchasing new equipment or is a management practice that can cost anywhere from very little to thousands of dollars per year. The estimated cost for the USDA NRCS to cost-share ten AgEMPs per year in each Mohawk Valley county would be on the order of $100,000 to $120,000 per year. USDA NRCS cost-sharing funds for implementing AgEMP recommendations would be significantly higher.

NYSERDA Agriculture Energy Efficiency Program (from http://www.nyserda.ny.gov/Agriculture.aspx)

NYSERDA offers assistance to identify and implement electric and natural gas energy efficiency measures for eligible farms and on-farm producers, including but not limited to: orchards, greenhouses, vegetables, vineyards, grain dryers, and poultry/egg. Farms must be a customer of a New York State investor-owned utility and contribute to the System Benefits Charge (SBC).

Through the Agriculture Energy Efficiency Program farmers can request an energy audit, project implementation services, or both. NYSERDA will assign a FlexTech Consultant to perform an energy audit at no cost for audits up to $2,500. For more complex energy audits, exceeding $2,500, cost-sharing by the applicant will be required. NYSERDA provides up to 75% of eligible product costs up to $250,000. The farm must contribute at least 25% cash cost-sharing toward the project.

USDA RD Rural Energy for America Program REAP (http://www.rurdev.usda.gov/BCP_Reap.html)

The Rural Energy for America Program (REAP) provides assistance to agricultural producers and rural small businesses to complete a variety of projects. Offering both loan guarantees and grants, the REAP program helps eligible applicants install renewable energy systems such as solar panels or anaerobic digesters, make energy efficiency improvements such as installing irrigation pumps or replacing ventilation systems, and conduct energy audits and feasibility studies. The REAP program is comprised of:

1. The Renewable Energy System and Energy Efficiency Improvement Guaranteed Loan and Grant Program;

2. The Energy Audit and Renewable Energy Development Assistance Grant Program; and,

3. The Feasibility Studies Grant Program.

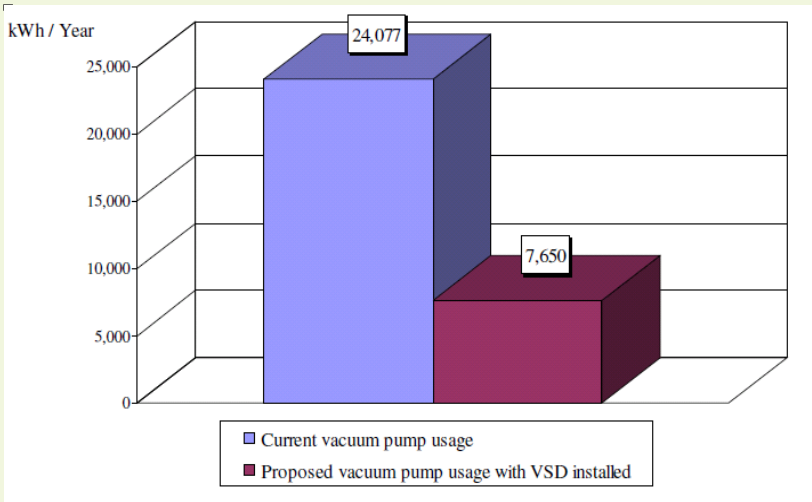
Next Steps:

- NRCs and RD program managers hold a meeting with NYSERDA, SWCDs, and CCE to identify common goals and complementary program features, develop plans for coordinated promotions that will reach the maximum number of farmers with information that clearly demonstrates the potential for reducing costs while saving energy.

- The above agencies meet with regional utilities, equipment suppliers and installers, county farm bureaus, dairy cooperatives, and other farm producer organizations to publicize energy efficiency/cost saving opportunities.

Case Example: Agricultural Energy Management Plans (AgEMPs):

USDA Natural Resources Conservation Service's (NRCS) Environmental Quality Incentives Program (EQIP) cost-shares development of AgEMPs. AgEMPs quantify a farm's current energy use and cost by use category, such as lighting, cooling, heating, pumps and motors, etc. The AgEMP provides recommended alternatives to the current equipment and management that are cost-effective and estimates the pay-back period for each recommendation. In this example, the recommended measure is installation of a variable speed drive (VSD) on the vacuum pump used for milking cows.



Recommended Equipment	Estimated Annual Electricity Savings(kWh)	Estimated Annual Energy Cost Savings	Estimated Cost to the Farm	Estimated Payback in Years
Vacuum Pump Variable Speed Drive	16,427	$1,725	$6,800	3.9

Figure and table source: EnSave, Inc.

FUTURE ACTIONS

3.2.4 *Create a Regional Geographic Information System (GIS) Water Infrastructure Database*

Pro-active asset management is often hindered by a lack of knowledge among regional water board members, municipal staff, and the public pertaining to the location, condition, and extent of a community's water infrastructure. Generally, there are only a handful of individuals in each community who have a comprehensive knowledge of the municipality's water assets. Communities are increasingly at risk of losing this knowledge as the operators retire or leave the municipal workforce. Hardcopy records of water infrastructure lines are usually the only alternative to operator knowledge but are difficult to use for asset management.

This action would create a regional GIS infrastructure database that would be used to develop long-term maintenance and asset management plans for existing water distribution and wastewater collection lines. The database can be developed in phases, and a regional approach allows municipalities to more efficiently manage costs and repairs by providing locations of potential interconnections, supply system redundancy, and allow for programmatic maintenance with the cost shared between cooperating authorities. Efficiently managed infrastructure is less costly to maintain and more energy-efficient because operational equipment can be maximized and leaks and inflow minimized.

A GIS database can contain such information as clean-outs, manholes, backflow valves, meters, hydrants, abandoned/unused areas, and system pressure. It can be used to prepare work orders, isolate system components during repair, identify leaks and inflow, track customer meters and replacement, evaluate areas for potential expansion, and plan for routine inspections and maintenance. During routine maintenance and repairs, maintenance staff can easily identify impacted areas, identify materials and parts needed, and determine temporary solutions for continued operations. Repair staff can be deployed sooner and more easily locate areas in need of repair.

Climate Adaptation/GHG Emissions:

GIS-based system management can help mitigate the consequences associated with severe weather events with faster response times and improved decision making capabilities. GIS can also enable more efficient allocation of staff during a storm or other emergency events. GIS systems combined with supervisory control and data acquisition (SCADA) capabilities can be used to determine water levels, system pressures, and other information that may help detect leaks, breaks, and locations of flooding. This action will have no impact on GHG emissions.

Potential Costs:

Funding opportunities are limited, but costs can be very low. The cost of developing a regional resource is a matter of data access and sharing. This can be done with inter-agency cooperation. The largest cost is the digital archiving of material from the individual municipalities. Municipalities often must find their own funds, which can be difficult with tight budgets and other necessary services to support (police, fire, plant operation, etc.). Costs vary widely depending on the level of services and the size of system. Municipalities and counties can share resources to reduce the cost. As part of this Sustainability Planning effort, GIS specialists in the region have been discussing this issue, and as the municipal data become available a real commitment to data sharing is evolving. Task items for the municipal systems would include:

- Needs assessment
- Digitizing hard copy as-builts (paper copies of plans made based on actual construction)
- Database development
- Integration of web interface with municipal intranet
- Web interface maintenance and updates
- Infrastructure surveys using global positioning system (GPS) points or ground penetrating radar (GPR)
- Purchase of hand-held GPS units
- Training for municipal engineers, operators, and maintenance staff on the use of hand- held units and software
- Training and implementation steps to incorporate GIS into overall asset management and system maintenance programs

Additional Information

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided in Appendix E.

- NYS Local Government Records Management Improvement Fund Act;
- Municipal budgets.

Next Steps:

- Identify regional municipal partnerships that can pool funds to develop a county-level or regional GIS needs assessment.
- Identify existing GIS databases and hold discussions with stakeholders to evaluate the integration of them into one central system.
- With the support of a regional effort, GIS specialists in the municipalities and county planning departments will encourage resources to be allocated to filling in the data needs in the list above. This will be an ongoing and long-term effort, but as technology improves and the costs of information go down it will become easier to implement.

3.2.5 *Increase the development and use of anaerobic digesters to recover energy from biomass during wastewater treatment*

Wastewater treatment requires considerable amounts of energy, and energy costs at wastewater treatment plants (WWTPs) are 20-40% of the wastewater plant's operating budgets. Wastewater treatment produces organic matter as a byproduct. This sludge is rich in energy and is conventionally dried and landfilled. The potential exists to extract additional energy from the sludge by allowing microbes to feed on the sludge. Under conditions of very low oxygen, the microbes release methane (the principle component of natural gas) and water. This process is called anaerobic digestion. The energy in the methane can be released through combustion and used to generate electricity. Two examples of where this is already being implemented are the Johnstown-Gloversville Wastewater Treatment Plant (see case example below and Appendix C) and at the Matt Brewing Company, which uses wastes from the beer brewing process to generate methane.

Installation of the anaerobic digester at Matt Brewing Co., Utica, NY.

This action is to increase the development and use of anaerobic digesters at WWTPs within the region. Historically, the low value of methane produced, the expensive airtight tanks, and ability to accommodate changing inputs has limited their adoption. Now, with energy costs forecast to increase from current low levels, anaerobic digesters can not only save energy but the diversion of methane to energy generation reduces emissions of this potent greenhouse gas.

These financial and technical issues have restricted installation to systems large enough to support full-time operators, which is why some of the smaller systems have not been upgraded with digesters. A source of high-strength biosolids is also required, but in a region rich with food manufacturing that generates biological wastes (e.g. solids from yogurt production), proponents believe the biosolids will be available to anyone considering an upgrade.

A special opportunity to re-think WWTP designs and operations can be found in Otsego County. Most of this county drains to the Susquehanna River. This area is part of the Chesapeake Bay watershed, which is under EPA orders to reduce nutrient inputs. Consequently, permitted discharge limits are being reduced for the Oneonta, Cooperstown, Owego, and Richfield Springs WWTPs. These facilities will upgrade their treatment and sludge handling, but energy recovery is not mandated, and although energy-efficiency measures will be incorporated, direct digester gas facilities are uncertain. Michael Long, City Manager of the City of Oneonta has reported that Oneonta is considering this technology, and the choice of technology for the needed upgrades will be largely driven by costs.

Climate Adaptation and GHG Impact:

The development of technology and methods to reduce waste going to landfills, while capturing the methane for energy production, will help reduce reliance on fossil fuels. It will lower the risk of contamination from waste disposal sites, which may become more of a risk as storm surges and flooding become more frequent. GHG emissions are reduced directly through the replacement of fossil fuel use for energy. By establishing this technology on-site, transportation expenses and impacts are also avoided.

GHG emissions will be reduced indirectly by avoiding electricity from the grid, and the projects would prevent the direct emissions of methane, which is 21 times more GHG-intensive than CO_2. Other GHG emissions are avoided because these wastes do not need to be transported to landfills.

Potential Costs:

Costs depend on the size of the facility**.** The addition of a digester would generally be a plant-wide improvement project. For the 13.8 million gallons per day (mgd), Johnston Gloversville system, costs were $7,000,000 and savings are $500,000/year.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the NYSERDA Distributed Generation/Combined Heat and Power program. Additional details about this program are provided in Appendix E.

Next Steps:

- Approach DPW representatives and communities to undergo engineering studies. This has already been initiated by the City of Rome, which currently captures biogas but lacks the generators to utilize all its gas, so about half the gas is flared to the atmosphere.

Case Example: Gloversville-Johnstown Joint Wastewater Treatment Facility: Energy User to Energy Source

The Gloversville-Johnstown Joint Wastewater Treatment Facility (GJJWTF) set a goal to become a net-zero energy facility. They made energy-efficient upgrades over several years, which reduced operating costs and provided the ability to accommodate high-strength wastewater from the Fage yogurt facility, which came to the area in 2008. The upgrades resulted in the facility generating more than 90% of its required electricity each day, resulting in savings of more than $500,000 annually.

3.2.6 Develop a regional waste minimization and recycling audit program

Oversight and guidance of solid waste management in the Mohawk Valley is provided by Solid Waste Management Planning Units (SWMPUs). SWMPUS are regional organizations that that are responsible for developing and implementing Local Solid Waste Management Plan (LSWMP) for their jurisdictions. These organizations have developed and made available a wide range of recycling and reuse options for most of the common materials disposed of by businesses and institutions. However, as a result of lack of awareness, these options are largely underused by businesses and institutions.

This action would create a "waste minimization and recycling audit program" similar to that of NYSERDA's "energy audit program" where the SWMPUs would provide recycling audits for medium- to large- scale businesses, institutions, hospitals, and universities, free of charge. The audit program would aim to assist each facility in establishing a waste reduction and recycling program, including a cost benefit analysis to measure the environmental and cost savings of keeping recyclables out of the solid waste stream and better use of reusable and recyclable materials.

Through a collaborative effort by the Mohawk Valley SWMPUs and any primary funding organization(s) (see Additional Information below); a request for proposals (RFP) will be developed for a contractor (or non-profit organization acting as such) to administer the tasks under the audit program as described above. In addition the auditor will serve as coordinator between the targeted waste producers, waste/materials haulers, and the recycling and disposal facility operators in order to help develop an intra-regional materials management network. The purpose of the network will be to assist all parties in identifying reuse, recycling and cost saving opportunities. These opportunities include reducing the amount of waste by changing rate structures to include incentives for recycling and passing on costs for waste by charging by the volume or weight of waste ("Pay as You Throw").

The program would inform businesses and institutions about the recycling options that are available and which approaches can be implemented to reduce solid waste generation, resulting in cost savings. The current level of participation in recycling and the types of recycling options available in the six counties of the Mohawk Valley region is extremely varied. By creating a regional approach this program levels the playing field, increasing the number of recycling options available and strengthening the market for recyclers.

The biggest challenge to successful implementation of the program is likely to be the funding of this program (in terms of set-up and operational costs). A qualified consultant or host organization will be needed to implement the program, along with the development of incentives for businesses that partner with other businesses (e.g., waste haulers and private recycling facilities). Success will also depend on effective marketing of the program to businesses and institutions and sustained monitoring and evaluation of the program and participating businesses and institutions on an ongoing basis.

The market for recycled material exists. The Northeast Recycling Council (NERC) has conducted multiple studies and evaluations of the Recycling market it the Northeast region. According to NERC[3] there were 251 industries reliant on recycling, and 1,304 reuse and remanufacturing industries. Examples of industries reliant on recycling are:

[3] http://www.nerc.org/documents/recycling_economic_information_study_update_2009.pdf

- Glass Container Manufacturing Plants
- Glass Product Producers
- Nonferrous Secondary Smelting and Refining Mills
- Nonferrous Product Producers
- Nonferrous Foundries
- Paper and Paperboard Mills/Deinked Market Pulp Producers
- Paper-based Product Manufacturers
- Pavement Mix Producers (asphalt and aggregate)
- Plastics Product Manufacturers
- Rubber Product Manufacturers
- Steel Mills
- Iron and Steel Foundries
- Examples of Reuse and Remanufacturing industries include:
- Computer and Electronic Appliance Demanufacturers
- Motor Vehicle Parts (used)
- Retail Used Merchandise Sales
- Tire Retreaders
- Wood Reuse
- Materials Exchange Services

Climate Adaptation and GHG Impact:

A reduction in waste will also result in the reduction of GHG generated from the processing of raw/virgin materials, transportation of waste materials, and decomposition of those materials in landfills. Conservative estimates of the impacts that this program would have on the Mohawk Valley region are a 20% reduction in MSW generation and a 40% increase in recycling by the year 2020. This would have an estimated GHG reduction of over 177,700 $MTCO_2e$ annually, based on waste emissions and life cycle impact analysis of the recycled materials as calculated using the EPA's Waste Reduction Model. This is the equivalent of removing the annual emissions from 23,000 passenger vehicles or conserving 13,198,000 gallons of gasoline.

Potential Costs:

These estimates of potential cost assume a two-year contract for a company and/or a recycling specialist that acts as the recycling inventory agency:

- Two-year contract for a recycling inventory program manager: $ 100,000 per year (salary, overhead, materials, and supplies etc.)
- Average cost of audit per institution, assuming an average of 35 to 50 audits per year (3 to 4 per month) with an average cost of $2,000 to $3,000 per audit: $70,000 to 150,000 per year.

Total estimated cost for a two-year program: $300,000 to $340,000.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following:

- NYSDEC for Municipal Waste Reduction and Recycling Programs (MWR&R)
- Empire State Development, Environmental Investment Program (EIP)
- New York State Pollution Prevention Institute (NYSP2I)
- USDA Rural Development Program
- NYS Solid Waste Management Act of 1988

Additional details of these programs are provided in Appendix E.

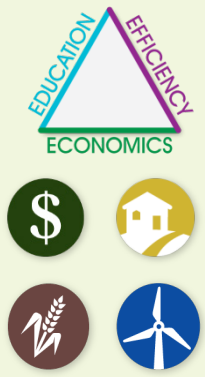
Next Steps:

The director of Otsego County Planning and Solid Waste will organize a work session with representatives from each of the Mohawk Valley solid waste planning units to develop a scope of work for input into a RFP for a regional waste auditor. Upon award of the contract, the auditor will work with the regional planning units and their existing recycling coordinators to develop an auditing protocol and identify the region's largest waste-producing institutions and businesses.

Case Example: Oneida-Herkimer Solid Waste Authority:

With the assistance of the OHSWA Recycling Coordinator, the Oriskany School System developed a comprehensive school recycling program that resulted in a 26% savings of more than $2,600 annually in their solid waste collection and disposal contract. These savings occurred because the school is charged about $70/ton for solid waste and $0/ton for recycled material.

3.2.7 Install and increase availability of local renewable energy at the residential, commercial, institutional, and municipal levels



The challenge of identifying and choosing energy options based on all the advantages and disadvantages of individual generation technologies, not just GHG emissions, is of critical importance to long term sustainability. This action would evaluate, develop, and install local renewable energy projects of all types and sizes. This action connects several related actions including residential, commercial, and industrial application of renewable energy depending on different implementation requirements such as scale, cost, and space available.

Current successful projects in the region demonstrate applications of anaerobic digesters, solar PV, wind turbines, landfill gas generation, biomass and biofuel projects. Mohawk Valley's agricultural business and commerce present opportunities to develop biomass and biofuel projects as a way to expand local use of renewable local energy and the businesses that support it. Institutional and commercial clients can install renewable energy technologies, taking advantage of incentives and tax credits, to lower their costs and GHG emissions. Residential applications currently include some solar PV; however, there is an opportunity for community-based renewable energy in the region. Property owners in rural townships would like to participate in grid-tied renewable energy, such as wind or PV, to increase the region's generation and use of renewable energy.

Various funding and services support installation of renewable energy systems. For example, with a combination of financial help and the availability of biomass collection and delivery services, a digester could create gas as fuel for small turbines and produce electricity. These would include renewable energy credits or emission offset credits that may generate an additional revenue stream.

The successful development of renewable energy projects often requires large capital investments. Currently there is a lack of adequate financial incentives, an unclear supply chain for residential and commercial providers, and challenges in connecting to the electrical grid. (For example, Oneonta has an existing anaerobic digester that is no longer operating.) In addition, there is community concern about potential adverse environmental impacts associated with renewable energy, such as disturbance and dust from construction, noise, effects on bird populations and visual impacts. The challenge of identifying and choosing energy options based on all the advantages and disadvantages of individual generation technologies, not just GHG emissions, is of critical importance to the Mohawk Valley and long term sustainability. The application of life-cycle analysis is recognized as a new science necessary for effective choices on renewable energy.

Climate Adaptation and GHG Impact:

By replacing electricity from the grid with renewable energy, each project would reduce indirect GHG emissions that result from electricity generation from fossil fuels. In thermal renewable energy applications, direct fossil fuel use would be avoided, reducing associated direct GHG emissions.

Potential Costs:

Costs are proportional to the size and type of project, although funding and tax credits can offset many of the up-front capital costs, and other loans can be established to ensure project costs are offset by energy cost savings. For example, the cost to install thermal solar systems on the Springfield Community Center project in Otsego County, which would also include improved insulation and replacement of existing windows, would be approximately $100,000-$200,000, depending upon engineering assessment of the strength of the existing roof to carry additional snow load.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided *Implementation Action* 3.2.2 and in Appendix E.

- NYSDEC's Municipal Landfill Gas Management Program
- NYSERDA PROGRAMS
  - Economic Development Growth Extension Program
  - Green Jobs Green New York
  - Program Opportunity Notice (PON) 2589 NY-Sun Competitive PV Program
  - PON 2112 Solar PV Program Incentives (for systems 50 kW and smaller)
  - On-Site Wind Program
  - Biomass Heating R&D and Biomass Resources Programs
- State and Federal Solar Tax Incentives

Next steps:

- Identify project proponents who want to install renewables. Some of these people have already expressed their interest during the Sustainability Plan public outreach.
- Inventory renewable energy resources, particularly wood pellets, including rates of generation, heating value, and long-term reliability.
- Install heating projects using advanced high-efficiency and low-emissions combustion boilers and bulk pellet fuel in commercial, institutional, or industrial settings in order to displace current demand for imported fossil fuels.
- Finance purchase of pneumatic wood pellet delivery trucks capable of doing residential and commercial delivery of wood pellets in Mohawk Valley Region. Work with local fuel delivery business as partner.
- Pursue solar PV projects, such as a utility-scale solar PV system on the SUNY-Oneonta property or a cooperative solar PV grid-connected farm in the Town of Otego, under the auspices of a town-sponsored authority or a Public Service Commission-sanctioned rural electric cooperative.

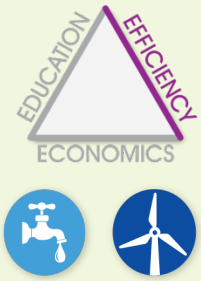
Case Example: Mohawk Fabrics Photovoltaic Array. Mohawk Fabrics (Montgomery County), a manufacturer and distributor of industrial and commercial textiles and fabrics in Amsterdam, was awarded $1.375 million by the REDC and the Homes and Community Renewal Urban Initiatives Program to expand its manufacturing facility, invest in two knitting machines, and install a 50-70 Kwh solar energy system, in order to accommodate demand for new orders and eliminate out-of-state outsourcing currently being done.

Case Example: Old Forge District Heating. Old Forge Properties, Inc., (Herkimer County) is the owner and operator of large amusement parks in Old Forge. They received a $1 million award from NYSERDA to install a biomass (woodchip) district heating system for multiple properties, including the Enchanted Forest/Water Safari and Water's Edge Inn and Conference Center. The project will eliminate the use of #2 heating fuel at these properties for space heating and water heating.

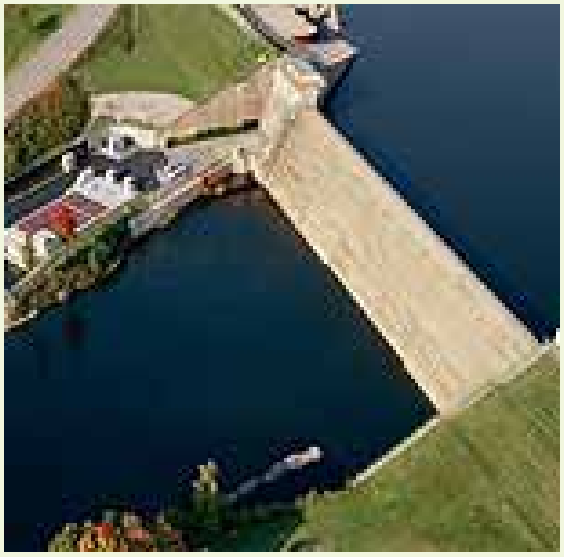
Case Example: Canal Village

Eight new homes were constructed using the standards prescribed by the NYS Division of Housing and Community Renewal's Green Building Initiative. Canal Village includes 33 units of affordable housing that are equipped with Energy-star windows, foam insulation, on-demand hot water, cement-board siding, and hardwood floors. Furnaces that are at least 95% efficient are standard in every unit.
http://www.rome13440zone.org/index-1.html

3.2.8 Develop low head and small hydropower facilities



More than 300 hydropower facilities, some large but most very small, supplied 5 million MWh of electricity for NYS in 2010 (NYSDEC, http://www.dec.ny.gov/energy/43242.html). Thirteen of those plants operate in the Mohawk Valley region, providing 98% of the region's electricity generation, or almost one-half million MWh in 2010 (see Greenhouse Gas Inventory, Appendix D). This represents about 4% of the total amount of electrical consumption in the region; the remainder is purchased from the grid. This action would identify opportunities for the installation of more low head and small hydropower facilities on natural waterways, as well as some other innovative hydropower resources such as within municipal water lines (see Case Example: Gloversville Water Department Hydro Turbine Project). Energy generated by this *Action* can be utilized on site or sold on the grid through net metering agreements.



Small-scale hydropower can decrease the cost of energy in communities and increase the region's generation of renewables. Energy expenditures for water and sewer represent 9% to 20% of the budgets of local communities. If water treatment uses half of this, and half the energy cost of water treatment could be recovered, this would save communities 2% to 5% of their operating budgets.

In the past, small-scale hydropower was not economically viable due to high installation costs with no opportunity for payback over time. Now that net-metering is in effect in the region, the cost of installation can be offset by returns from selling excess power back to the grid. Without incentive programs to offset capital outlays, payback periods are in the 10 to 15 year range. Many communities will hesitate to undertake this expense. There are also physical constraints which must be identified and resolved, such as an inadequate pressure gradient or proximity to an electric transmission line.

Climate Adaptation and GHG Impact:

This implementation of this action would reduce GHG emissions directly in proportion to the amount of energy produced. By replacing electricity from the grid, which is largely non-renewable fossil fuel, each project would reduce indirect GHG emissions from conventional electricity generation. For example, the Gloversville Water Authority hydropower generator produces 40 MWh of electricity per year, which would equate to GHG emissions savings of 9 MT CO_2e.

Potential Costs:

Costs are proportional to the size of the resource. For the Gloversville water supply (Appendix C), the payback period on the capital investment was about 17 years, without any subsidies. Since the water is already diverted at the source and in a pipe, these systems are much less costly than new systems that require a dam, forebay (buffer reservoir), and piping.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided in Appendix E.

- Renewable energy tax credits, renewable portfolio standards, and other programs are available only for larger producers (>150 kW) or for investor-owned utilities, or provide tax credits not relevant to a tax-exempt utility
- Federal Energy Regulating Commission (FERC) required review
- NYSERDA provides Renewable Portfolio Standard (RPS) funding

Next Steps:

- Develop specific hydropower projects in conjunction with the regional community Department of Public Works.

Case Example: The Gloversville Water Department began their **Hydro Turbine project** in September 2008. This project was intended to generate electricity while also supplying potable water. Currently 2 million gallons a day flows from Jackson Summit to the Rice watershed and through the turbine at a rate of 1,390 gallons per minute. The system was put into service during August 2011. The turbine is an 18kW Turgo style turbine, currently running at 7kW 208 volts (Gloversville Water Department).

The total cost of this project was $70,000. This project was financed with internal funds. The Gloversville Water Department has cut electric purchases in half since the turbine became operational, from 4500 kWh to 2200 kWh per month. This saves about $345 per month and represents a payback on investment over 17 years. If operations were increased to full capacity these figures would double.

3.2.9 Create a food hub for enhanced food production and distribution efficiency, and consumer education

There is an opportunity for an established entity with agricultural and economic development expertise to coordinate development of food hubs[4] in the wider region including the Mohawk Valley and beyond. Food hubs are innovative business models emerging across the country specifically to provide infrastructure support to farmers. While food hubs are a nascent industry, and many operational food hubs are less than five years old, they are based on a time-proven business model of strategic partnerships with farmers, distributors, aggregators, buyers and others all along the supply chain. The models rely on cooperation instead of competition, and ensure that the regional small and midsize producers get access to the infrastructure they need.

Currently there are currently no food hubs in the region. There are, however, a number of mechanisms for the retail sale of whole or processed foods, including direct farm sales, community-supported agriculture (CSA) farms, and a limited number of farm-to-school programs. While each of these mechanisms contributes to the consumption of regional food, they require each producer or processor to produce, transport and market their own products. In addition, individual regional producers must compete with pricing of non-regional wholesale products by educating consumers individually on the health, economic, and environmental benefits of buying regional food. In addition, a food hub would increase prices paid to farmers by more direct sale of their products and efficiently absorb marketing and management costs currently assumed by individual farmers and processors, which will allow them to increase production.

A food hub would also provide a larger centralized forum to educate consumers on the economic and health benefits of purchasing local foods, helping people to understand and influence food production and distribution systems and to realize the environmental impacts of growing and shipping food, particularly the intensity of energy inputs. It would also increase demand for regional food products, creating a more vibrant regional economy by keeping more of the region's economic resources within the region by linking producers/processors and consumers more directly than with traditional distribution mechanisms. By providing access to healthy food for an underserved population and providing a single location for purchase of diverse products it can ultimately generate demand for new food processing facilities within the region and also reduces the number of miles food is shipped before being consumed.

Recently (February 2013) the Governor Cuomo announced the establishment of a $3.6 million fund to establish food hubs.[5] This announcement not only supports the concept of food hubs but it provides a tangible mechanism for implementation.

To ensure success, the strengths of the region's agricultural economy, processing infrastructure, and land base would need to be assessed to determine what products and services to focus on. Regional prices would need to be competitive with foods sold through existing systems (e.g., California/Florida/Washington produce in supermarkets) through consumer marketing.

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[4] Food hub; a centrally located facility with a business management structure facilitating the aggregation, storage, processing, distribution and/or marketing of locally/regionally produced food products. USDA.

[5] http://www.governor.ny.gov/press/cuomo-announces-3-6-million-cfa

Climate Adaptation and GHG Impact:

A reduction in GHGs through more efficient food transportation would occur. In addition, changes in climate can impact the kinds of farm products grown, requiring that consumers must be educated to be flexible with purchasing regional products while provided with access to a diversity of selection.

As an example, assume the average producer/processor currently transports their products 50 miles to a point of sale in a diesel truck with a fuel consumption rate of 5.9 miles/gallon 20 times per year. They can expect to spend $1,424 on fuel at the current rate of $4.20/gal and produce GHG emissions equal to 3.5 MT CO_2e emissions per year. If this distance is reduced to 30 miles with the same number of trips to a food hub the cost would be reduced to $853 with 2.1 MT CO_2e emissions for a savings of $569 and 1.4 MT CO_2e per food producer. Locating a hub to eliminate a food desert[6] would add further benefits by decreasing the travel distances for consumers to buy the products.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided in Appendix E.

- NYS Department of Agriculture & Markets (NYSDAM)
  - The Farmers' Market Nutrition Program and WIC Vegetables and Fruit Checks Program (these sources may be applicable but they have not actually supported a food hub).
  - Technical assistance from NYSDAM's Pride of New York and Farm to School program
- USDA provides matching funds to NYSDAM to administer the Federal-State Marketing Improvement Program (FSMIP)
- Empire State Development Grant, New York Healthy Food & Healthy Communities Fund, administered by the Low Income Investment Fund through a contract with ESD and in coordination with NYSDAM. Only a retail grocery store component would qualify.
- Community Development Financial Institutions (CDFI) Fund (Department of the Treasury/Agriculture and HHS)

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[6] There are many ways to define a food desert or to measure access to food. ERS's Food Desert Locator is based on a definition developed by USDA, Treasury, and HHS. Low-income census tracts with a substantial number or share of residents with low levels of access to retail outlets selling healthy and affordable foods are defined as food deserts. A census tract is a small, relatively permanent subdivision of a county that usually contains between 1,000 and 8,000 people but generally averages around 4,000 people.

Census tracts qualify as food deserts if they meet low-income and low-access thresholds:

- **Low-income**: a poverty rate of 20 percent or greater, or a median family income at or below 80 percent of the statewide or metropolitan area median family income;
- **Low-access**: at least 500 persons and/or at least 33 percent of the population lives more than 1 mile from a supermarket or large grocery store (10 miles, in the case of rural census tracts)."

- Department of Health and Human Services' Community Economic Development (CED) Program.
- CFA Funding for Food Distribution Hubs. Press Release: http://www.governor.ny.gov/press/cuomo-announces-3-6-million-cfa

Potential Costs

Setup costs of a food hub will likely be a challenge because capital investment requirements in a facility and product aggregation, storage, handling, and logistics systems could be high. However, initial startup can be done through on-line marketing and donated or public space. Some minimal funding for public outreach and marketing would also be needed. Purchase or rent of an initial permanent facility and first year operating costs is estimated to be approximately $50,000 with at least $10,000 provided through grant funding. The newly announced Consolidated Funding Application through the Governor's office can help with start-up funding.

Next Steps:

The Central New York Agriculture Council will take ownership of this issue:

- Determine the status of food hub initiatives in the wider central and eastern New York region.
- Determine which products to focus on and which niches are not sufficiently served
- Develop a strategy to coordinate existing and future food hubs to avoid significant overlaps in the areas to be served to avoid an undersupply of products
- Determine potential markets for various products and appropriately sized facilities and to avoid over-committing resources
- Encourage regional publicly owned facilities (schools, prisons, etc.) to give preference to local farm and wood products
- Pursue funding made available for buy local marketing and incentives, regional food system grants, and entrepreneurial investment
- Consider applying through the CFA process for support.

Case Examples

The **Central New York Regional Market Authority** is a food hub located in Syracuse. According to its website, http://cnyrma.com/, the mission of the Central New York Regional Market Authority is to provide facilities, programs and service to promote opportunities for Agriculture and commerce in Central New York. The vision of the Central New York Regional Market is to maintain the reputation of a safe and trusted community landmark, providing economic, social, and nutritional value to the area.

Regional Access Ithaca (http://regionalaccess.net/wordpress/history-of-regional-access/) is a community-oriented, grassroots company. It was built on a vision of providing ecologically responsible, locally grown food in upstate New York. It has been in existence for 20 years, beginning in its founder's garage and is now in a modern warehouse. According to the company's website, http://regionalaccess.net/wordpress/history-of-regional-access/, sales in 2008 exceeded $5 million.

Summary of Implementation Actions: THEME: EFFICIENCY

Implementation Action	Proponents/Stakeholders /Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transporta-tion	Land Use	Water	Materials	Energy	A & F
FIRST ACTIONS								
3.2.1 - Develop a regional transit marketing program to increase public awareness and use of rural transit services.	➤ Participation of transit agencies and bus operators such as Birnie Bus, Centro of Oneida, Gloversville Transit, Otsego Express, Brown Coach. ➤ Assistance of county and municipal planning departments. ➤ Assistance from regional groups such as The Genesis Group & Mohawk Valley Economic Development District ➤ Cooperation with other transportation service providers	ED-5	T-4				E-1 E-2	
		Ecology and Environment, Inc. Corporate Rideshare Program						

Implementation Action	Proponents/Stakeholders /Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transportation	Land Use	Water	Materials	Energy	A & F
3.2.2 - Increase participation in residential, commercial, institutional, and municipal energy incentive programs.	➢ Blue Springs Energy ➢ City of Rome ➢ Energy Performance Contracting and Energy Service Providers	ED-5		LULC-4			E-1 E-2	
	• City of Rome Energy Management Program • "Renew" Website for energy efficiency & renewable energy local outreach and project support • Energy performance Construction and Energy Service Providers • City of Rome housing rehabilitation and redevelopment programs • Bassett Hospital Green Team • Covington Private Home Retrofits							
3.2.3 - Farm energy audits and implementation of efficiency measures.	➢ USDA NRCS (agency staff and Technical Service Providers) and USDA Rural Development (RD) ➢ County SWCD's and Cornell Cooperative Extension ➢ NYSERDA ➢ Dairy cooperatives ➢ American Farmland Trust ➢ New York Farm Bureau	ED-3		LULC-3	WM-2		E-2	A&F 1 A&F 2 A&F 3
	Agricultural Energy Management Plans							

Implementation Action	Proponents/Stakeholders /Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transporta-tion	Land Use	Water	Materials	Energy	A & F
3.2.4 - Create a Regional GIS Water Infrastructure Database.	The following areas were identified as having GIS in place for their jurisdictions: ➤ City of Rome, NY ➤ Mohawk Valley Water Authority ➤ City of Little Falls, NY ➤ Oneida County, NY ➤ Herkimer County, NY	ED-4		LULC-4	WM-1 WM-3 WM-4		E-2	
3.2.5 - Increase the development and use of Anaerobic Digesters to recover energy from biomass during wastewater treatment.	➤ Wastewater treatment plant operators in the region				WM-1		E-1 E-2 E-3	

Gloversville-Johnstown Joint Wastewater Treatment Facility: Energy User to Energy Source

Implementation Action	Proponents/Stakeholders /Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transporta-tion	Land Use	Water	Materials	Energy	A & F
3.2.6 - Develop a regional waste minimization and recycling audit program.	Entities that would be a part of the development and implementation of this action are: ➤ Collaboration from each of the Region's three Planning Units (MOSA, OHSWA, Fulton SWA) ➤ Regional waste haulers and management companies (Casella Waste Systems Inc., Waste Management Inc. etc.) ➤ Municipal and private waste and recycling management facilities ➤ Qualified contractor or consultant Entities that would be a part of the implementation of this action, including those listed above, are: ➤ Academic Institutions including colleges (SUNY IT, Mohawk Valley Community College, Hartwick College), and local school districts (Mohawk Central, Utica City, Mayfield Central, etc.) ➤ Hospitals such as Bassett, St. Elizabeth, St. Luke's Cornwall Hospital ➤ Businesses such as ConMed, Chobani Yogurt, Farmers and Agriculture	ED-3	T-2			MM-1 MM-2 MM-4		
		Oneida-Herkimer Solid Waste Authority						

Implementation Action	Proponents/Stakeholders /Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transportation	Land Use	Water	Materials	Energy	A & F
FUTURE ACTIONS								
3.2.7 - Install and increase availability of local renewable energy at the residential, commercial, institutional, and municipal level	➤ Local communities ➤ Developers ➤ major landowners ➤ agricultural community ➤ Hometown Energy ➤ Gelston Energy ➤ New England Wood Pellet ➤ Hi Peaks Solar	ED-1		LULC-4			E-1 E-3	A&F 3
		• Mohawk Fabrics Photovoltaic Array, Montgomery County • Old Forge District Heating, Herkimer County • Canal Village Composting Facility						
3.2.8 - Develop low head and small hydropower facilities.	➤ Departments of Public Works that might be able to utilize this technology include Johnstown (Fulton Co.); Little Falls (Herkimer Co.); Amsterdam (Montgomery Co.); Cooperstown and Oneonta (Otsego Co.) ➤ Other communities may be possible candidates				WM-1		E-1 E-2 E-3	
		Gloversville Water Department Hydro Turbine Project						

Implementation Action	Proponents/Stakeholders /Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transporta-tion	Land Use	Water	Materials	Energy	A & F
3.2.9 - Create a food hub for enhanced food production and distribution efficiency, and consumer education.	➢ Entrepreneurs ➢ Local businesses (i.e. processors, supermarkets, restaurants, institutions) ➢ County Farm Bureaus ➢ NYS Department of Agriculture and Markets ➢ Local planning boards ➢ Educated consumers	ED-1 ED-2 ED-3 ED-5 ED-6	T-1	LULC-3			E-2	A&F 1 A&F 2 A&F 3

- Central New York Regional Market Authority http://cnyrma.com/
- Regional Access Ithaca (http://regionalaccess.net/wordpress/history-of-regional-access/)

Summary of Sustainability Goals:

The goals in each of the focal areas below correspond with the associated focal goals mentioned in each Implementation Action in the preceding table.

Economic Development (ED)

- Goal ED-1: Enhance regional concentrations to retain and create business in key growth sectors (REDC Goal – GROW).
- Goal ED-2: Align the region's workforce with the appropriate education and training to increase the supply of skilled workers (REDC Goal – BUILD).
- Goal ED-3: Create innovation enabling infrastructure that will drive entrepreneurialism (REDC Goal – CREATE).
- Goal ED-4: Restore infrastructure and increase spatial efficiencies that will revitalize existing urban and town centers (REDC Goal – REVIVE).
- Goal ED-5: Strengthen government and civic effectiveness to produce a more vibrant economy (REDC Goal – FORGE).
- Goal ED-6: Promote unique regional assets through a unified identity and campaign.

Transportation (T)

- Goal T-1: Align transportation and land use planning and investment.
- Goal T-2: Improve efficiency in maintenance of transportation infrastructure.
- Goal T-3: Improve and connect regional multi-use trails.
- Goal T-4: Increase public transportation ridership.
- Goal T-5: Promote transportation alternatives.

Land Use and Livable Communities (LULC)

- Goal LULC-1: Redevelop main streets, waterfronts, and brownfields.
- Goal LULC-2: Provide technical assistance and collaboration opportunities.
- Goal LULC-3: Identify, Preserve, and Protect Lands suitable for viable agriculture.
- Goal LULC-4: Invest in existing infrastructure and housing stock.

Water Management (WM)

- Goal WM-1: Conserve water and related energy consumption.
- Goal WM-2: Maintain water quality.
- Goal WM-3: Improve existing infrastructure.
- Goal WM-4: Establish watershed planning.

Materials Management (MM)

- Goal MM-1: Reduce solid waste generation.
- Goal MM-2: Increase the regional market for recycled goods.
- Goal MM-3: Reduce energy costs associated with materials and solid waste management.
- Goal MM-4: Expand effective existing projects and promote new regional strategies.

Energy (E)

- Goal E-1: Reduce consumption of electricity and heat generated by fossil fuels.
- Goal E-2: Increase energy efficiency.
- Goal E-3: Increase renewable local energy generation and use for electricity and heat.
- Goal E-4: Evaluate life-cycle impacts of energy generation and use.

Agriculture and Forestry (A&F)

- Goal A&F-1: Promote education.
- Goal A&F-2: Enhance efficiencies.
- Goal A&F-3: Promote sustainable agricultural and forestry economic development for individuals, families, and the region to help sustain the current workforce and encourage others to join the workforce.

3.3 ECONOMICS

A consistent theme in all the planning sessions that produced this Sustainability Plan was that *Implementation Actions* have to be economically viable to be sustainable. Likewise, actions have to be environmentally sustainable to be economically viable for the long-term. These next groups of *Implementation Actions* are primarily smart planning and business plans that meet economic planning goals, as described in the REDC, and that exemplify good use of energy and natural resources. Close coordination of these *Implementation Actions* with the proposed and approved projects in the REDC reports was maintained. In some cases, the actions presented here are already in the REDC plans.

FIRST ACTIONS

3.3.1 Conduct building stock inventory to identify priorities for redevelopment and reinvestment of housing stock and promote home-ownership

Mohawk Valley's current housing stock does not meet the needs of modern demographics (older populations, smaller families). Older populations and smaller families generally prefer smaller, attached units such as townhouses, condominiums and lofts, rather than large single-family homes. There is no current inventory of vacant structures. Low- and very low-income households often have to choose between housing costs and other necessary services such as medication and healthy food.

The region would conduct an inventory to identify all vacant structures, including those that could be ideal targets for investment as owner-occupied housing units. This inventory would allow the region to assess vacancy problems while identifying potential adaptive reuses that will align the region's housing stock with current trends and identify targets for energy efficiency retrofitting. This would work to make the region more attractive to businesses and individuals with a range of housing needs.

The information collected through the preparation of the inventory can be used to support grant applications to fund housing redevelopment efforts. The large number of vacant buildings in the region will make preparing an inventory time-consuming and potentially labor intensive. In addition, a key challenge identified as part of the University at Albany study (see below) is to coordinate governments programs to match potential homeowners with vacant properties.

Climate Adaptation and GHG Impact:

This action will help support redevelopment in city/town cores, which can reduce vehicle miles traveled. Redevelopment of property would likely incorporate energy efficiency measures. Redevelopment of sites with existing services close to employment and other services will reduce greenhouse gas emissions by reducing vehicle miles traveled and reduce extension of infrastructure to greenfield land.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided in Appendix E.

- NYSHCR; multiple programs regarding housing affordability including HOME Program; RESTORE for emergency repairs; Urban Initiatives Program
- Regional Economic Development Council Awards
- NYS Community Development Block Grant Program
- New York Main Street Program
- HOME Program
- Neighborhood Preservation Companies Program
- Urban Initiatives Program
- HOME Program
- Residential Emergency Services to Offer (Home) Repairs to the Elderly (RESTORE)
- Home Performance with ENERGY STAR
- Weatherization Assistance Program (WAP)

Potential Costs:

It is difficult to ascertain costs for such an analysis because of the number of unknown variables such as data availability and the overall size of the region. The case examples noted below focus on assessing city regions rather than regional projects.

Next Steps:

- Convene a meeting with all six County Planning Departments and other relevant groups to discuss the implementation of this action.

Case Examples

- **Vacant Buildings Survey, City of Albany,**: In 2002, the University at Albany's Master in Urban Planning program completed an analysis of vacant and abandoned buildings in the City of Albany. The survey provided the city with city-wide data and information to direct resources in a more coordinated approach.

- **47 Main Street Project - Fort Plain, New York**, example of the type of project that could result from completion of a building stock inventory. The project is working to redevelop an intact 19th century building in a Main Street corridor and incorporate energy saving upgrades while maintaining historical integrity. The project has used more than 1,000 volunteer hours and raised more than $20,000 over the last four years.

- **Hartwick Hamlet Commercial Buildings - Otsego County**: This project is redeveloping two key buildings with energy efficiency and water management features to help manage storm water on Main Street.

- **Mohawk Valley Main Street Program - Otsego County.** See Appendix C for more information.

- **Canajoharie 2000**. A not-for-profit organization purchased a building from the Village of Canajoharie and returned it to productive use for the community. The building currently contains offices and community services.

3.3.2 Conduct an inventory of lands suitable for agricultural production

This action is to conduct an inventory to identify all land suitable for agriculture (based on soil type). The inventory would highlight geographic areas of agricultural value based on soil type and water rights availability. Identifying the increased value as agricultural land would be addressed through the "next steps" portion of the study. The initial objective would be to first quantify the number and location and, secondarily, to assess the financial opportunities offered by active agriculture in comparison with existing uses.

Local food production can provide added economic value to a region by providing value-added processing employment and less expensive transportation costs. The Mohawk Valley is becoming well known for its dairy and yogurt facilities, and having an adequate supply of grazing land maintains that industry. Having an inventory of viable agriculture land will aid future research on the cost benefits to keeping land in agriculture. Identifying key locations for loss of prime agricultural land will help the region to consider the development of secondary actions such as the prioritization of preservation/protection and the ability to market this land to potential farmers as a way to create small start-up farms and maintain its viability as farmland and agricultural land.

Climate Adaptation and GHG Impact:

As climate change produces temperature and rainfall changes in traditional farming regions, there may be an increased reliance on production from areas like Mohawk Valley. Increase agricultural production in the region could reduce the demand for imports from other regions and states, reducing vehicle miles traveled for food distribution. This study will provide information on the quantity and availability of agricultural land amounts, and this information can be used within further research to address the associated costs of maintaining agricultural land for open space. GHG emissions could be reduced by reducing vehicle time traveled to import or export food.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided in Appendix E.

- NYSOPRHP, Community Grant Opportunities
- Empire State Development, New York Healthy Food & Healthy Communities Fund
- NYS Department of Agriculture & Markets, Agricultural Districts Program
- NYS Department of Agriculture & Markets, Farmland Protection Program

Potential Costs:

Development of a Regional Agricultural Land Assessment is estimated at approximately $5,000.[7]

Next Steps:

Although no direct implementation of this action has been noted in the region, a number of programs in the community highlight the need for local food sources. These case examples could be used in the next steps of the analysis.

Case Examples

- **Rust 2 Green (R2G) Mohawk Valley Food System** - R2G, Utica NY is engaging in food system research and action projects that work to engage food system activating and leveraging food system assets, ensuring food access, security, quality, and justice and increasing community and individual health and well-being.

- **For the Good Community Garden Initiative** - New program in development by the Utica Community Gardens designed to support additional development of raised bed organic gardens for the community.

[7] Sample desktop analysis costs from E&E GIS Department. Costs include: data gathering/analysis: 8 hours; data table development: 8 hours; map development: 8 hours (160 maps); revisions: 8 hours for a total of 32 hours of staff time. Eight hours for administrative/senior review for a total of 40 hours at $125 per hour. NOTE: Assume that GIS data will be available from jurisdictions directly. No data costs, project administration, or report development included in estimate.

3.3.3 Create an identity and branding for the region

The Mohawk Valley region, as newly defined by the REDC process, has traditionally been included in parts of other promotional boundaries such as the Adirondack Park, which includes most of Herkimer and Fulton counties and a small part of Oneida County. The "I LOVE NY" tourism organization divides the Mohawk Valley region between Central New York and Capital-Saratoga tourism regions. This has made it difficult for the region to have an identity of its own. This action is intended to create a unique brand that one can identify with the Mohawk Valley region and its many assets. An example could be a region-wide "Made in the Mohawk Valley" brand stamp for any goods, products or packaging exported out of the region. The branding, packaging, and promotion of this region's assets for economic development purposes would attract visitors, new business, and residents to the region. It would also instill a sense of unity, pride, and identity for those who currently live and work in the region. This objective is so important that the Mohawk Valley REDC is also considering adding it under their "Forge" goal with the next plan update.

This action is integral to the economic growth and prosperity of the entire region. Developing a regional brand and identity will also improve overall efficiency and effectiveness by coordinating varied existing or competing images and messages for the region. The branding and identity will achieve the following benefits:

- Raise awareness of the region's many assets.
- Align with and get leverage from national campaigns such as "Made in America" – "Made in the Mohawk Valley"
- Instill community pride and confidence in the future – especially the young and business and governmental leaders.
- Attract business investment, new residents, and visitors to the region.

In addition, existing programs designed to brand the Mohawk Valley region will benefit from this action including the NYS Agricultural Commission program to "buy local" as well as working to attract and retain businesses and young families to continue to live and relocate to the region.

Climate Adaptation and GHG Impacts:

A regional identity that is tied to the value of its natural resources will raise overall awareness of the importance of protecting these resources, especially resources such as water quality, forests, and farmland that are integral to the region's natural beauty and uniqueness. Additionally, the overall economic success of the region, through business attraction and retention strategies, affects wage rates and other quality of life indicators that often directly correlate with the ability of the region to invest in smart growth approaches and infrastructure improvements that in turn will make the region more resilient.

There is no direct impact to reducing GHG emissions; however GHG emissions may actually rise due to the potential growth in the local economy. The focus on growing a green economy discussed throughout this Plan will help to offset this potential increase in GHG emissions.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided in Appendix E.

- Empire State Development, Urban and Community Development Program
- NYS Department of State, Local Government Efficiency Grant Program (LGE)

Potential Costs:

The cost of this action as envisioned would involve a high level branding and marketing campaign. If coordinated with other state and local campaigns the overall efficiency may reduce costs over time.

Next Steps:

- Work with existing tourism and economic development agencies to identify existing campaigns and opportunities for cross-marketing.
- Conduct a public survey to find out how the public identifies with the region.
- Conduct a business survey to determine what the market and client base is and their interests.

3.3.4 Support the development of a Mohawk Valley Brownfield Opportunity Area Fund (BOA). Develop a regional revolving loan fund for private investment in the region's brownfields administered through the REDC; tie to NYS BOA, LWRP and Main Streets Programs or other pre-planning

Brownfields, which are concentrated along our waterfronts and in our urban cores, represent a huge barrier to economic development in both urban and rural communities. High costs associated with environmental contamination often make farmland and open space a more attractive alternative to developers. While funding is available for planning redevelopment of brownfield sites, very little funding is available to assist with actual remediation of contaminated sites.

The Mohawk Valley REDC or an economic development agency like the Mohawk Valley Economic Development District (MVEDD) would create and manage a revolving-loan program for cleaning up brownfield sites in the Mohawk Valley region. MVEDD already manages a revolving loan fund for economic development activities and could add this to their project inventory. Projects would need to have a developed plan in place before being eligible for funding. Creation of a funding mechanism to support site remediation would increase the potential for brownfield redevelopment, providing economic benefits for developers taking on contaminated properties and also creating an incentive for revitalizing abandoned areas in local communities.

Climate Adaptation and GHG Impact:

Using developed land reduces pressure on redevelopment farther from city/town cores, which in turn reduces vehicle miles traveled and extension of infrastructure such as roadways and water services. A recent EPA study found that, on average, vehicle miles traveled and carbon dioxide emissions associated with brownfield redevelopment projects are 32% to 57% lower than typical "greenfield," suburban development patterns[8].

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided in Appendix E.

- NYS Department of State
- NYS Department of Homes & Community Renewal
- NYS Environmental Restoration Fund
- NYS Environmental Facility Corporation – Revolving Loan Fund
- Empire State Development
- U.S. Department of Housing and Urban Development, Community Development Block Grant Program
- EPA Brownfield Revolving Loan Fund grant program

[8] U.S.EPA. Air and water quality impacts of brownfields redevelopment. September 2011

Potential Costs:

The Mohawk Valley REDC recommends approval of the Mohawk Valley Brownfield Opportunity Fund with a five-year commitment of $75.0 million. Funds would be available as follows for 2012 and for 2013-2016:

- 2012 Priority Project Funding: $2,000,000
- 2012 Economic Transformation Area Program: $3,000,000
- 2012 Consolidated Funding Application (CFA): $3,000,000
- 2013-2016 CFA/Regional Priority Projects: $67,000,000

Funding could be tied to the Brownfield Opportunity Area, Local Waterfront Revitalization Program, and Main Streets program.

Next Steps:

- Convene close coordination between REDC and MV EDGE members to foster communications regarding status of the BOA and revolving-loan program.

Case Examples

- **East Rome Business Park, Rome, New York:** The site is part of a 200-acre brownfield area that was home to the former General Cable Company. A variety of actions and public-private partnerships since 1996 have made the site a cleanup and redevelopment success story.

(Photos: NYSDEC. 2003. Brownfields Financial Resources Manual.)

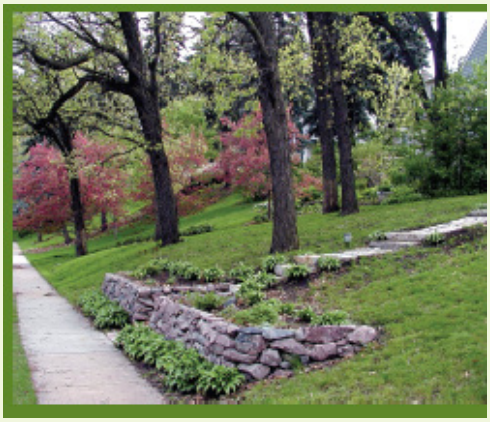
- The **City of Amsterdam in Montgomery County** was awarded a $87,982 grant from the Brownfield Opportunity Areas Program to complete a nomination for an approximately 381-acre area characterized with 28 brownfields and vacant sites that are located in the city's downtown, known as the Via Pointe project.

- **Mohawk Valley Main Street Program,** Otsego County was awarded $300,000 as part of the 2012 Regional Economic Development Council Awards. Elements of the program is to establish a Regional Main Street Coordinating Program to help revitalize communities.

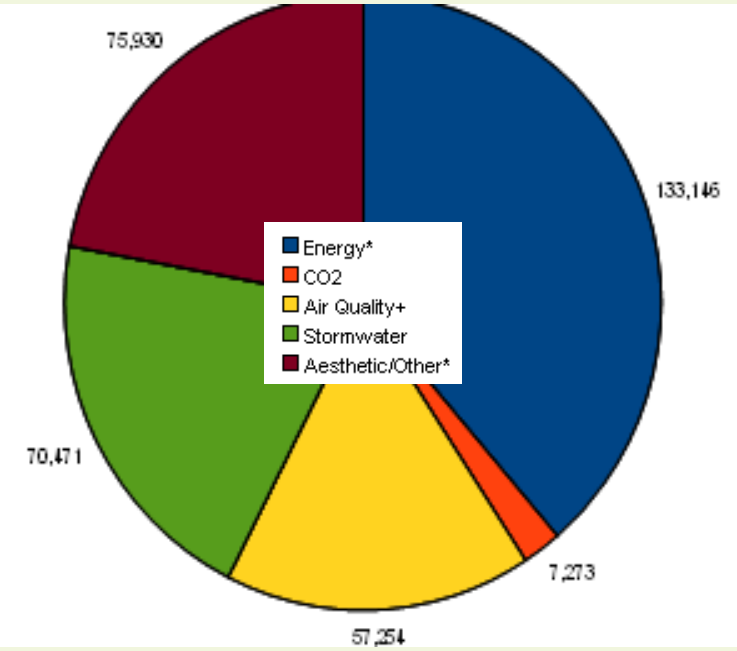
3.3.5 *Implement development of a tree inventory along with tree planting and green infrastructure and best management practices region-wide (tree planting, bio retention, permeable pavers, etc.)*

A secondary action to be considered is the use of innovative/alternative green infrastructure systems for small rural community centers and business districts

Although trees are present in many of Mohawk Valley's urban areas, there is no existing inventory of quantity, condition, and location of existing trees in most communities, with the exception of the City of Rome having completed an inventory in 2010. The development of tree inventories and management plans at the municipal level would provide these data. This action proposes the development of a regional cloud-server-based urban canopy management system to enable linking data for tracking, quantification, and reporting and a regional set of specifications for municipal street tree and parking lot projects. This could be supported by the adoption or updating of local tree ordinances for the planting, maintenance, and protection of trees. Standards would also be available for inclusion in projects on private land and would help to ensure communities are planting and replacing appropriate trees on an ongoing basis.



Few studies have quantified the beneficial effects of street trees. The City of Rome estimated that annual maintenance costs of $220,000 were offset by benefits totaling $354,000. The chart below shows how these benefits were distributed.



Using the right species, in the right location, can provide multiple benefits for a community. These include improved aesthetics, provision of habitat, soil erosion control, storm water management, and reduction of heat-island effect. Urban street trees facilitate rainwater and storm water percolation, which can minimize the need for costly upgrades to utilities via piping and other more engineered options—something that many communities are faced with in light of aging infrastructure. The development of a tree inventory can provide quantifiable data that communities can use to support grant and funding applications from state, federal and private organizations for tree-planting programs.

This action will create green space that improves aesthetics, contributes to the quality of life in communities, and increases land values. Improved Main Street streetscapes can trigger other economic development actions, as increased pedestrian use improves the market for local restaurants and shops. The inventory can also provide an example of best management practices that could be implemented throughout the region.

Climate Adaptation and GHG Impact:

The tree planting and management initiative will help offset CO_2 emissions and reduce urban heat island effect. It also would provide additional capacity for storm water management. A tree management program would also help communities to identify species that may be most appropriate for potential future regional climate changes. Installation of trees can provide increased carbon sequestration in the urban areas of the region.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided in Appendix E.

- NYS Environmental Facilities Corporation: Green Innovation Grant Program
- NYSOPRHP: Community Grant Opportunities

Potential Costs:

According to a tree inventory completed in Rome, New York, in 2010, annual benefits for street trees and park trees included a return annually of about $350,000 worth of benefits.

Next Steps:

Various stakeholders in the region such as County and Town Planning, Municipalities, Public Works and Transportation Departments, NYS Urban & Community Forestry Councils and organizations such as Keep America Beautiful should meet regularly to strategize on ways to complete tree inventories and other related BMPs in the region.

Case Examples

- **Cities of Rome and Utica, NY - Green Infrastructure and Tree Inventory & iTree Street Tree analysis, Rome NY**. In 2010, the City of Rome published findings from an analysis of the city's publically owned trees. Additionally, In 2010, the cities of Utica and Rome, working together, implemented street tree planting and downtown infrastructure improvements designed to help manage and filter storm water runoff. The project—focusing on green infrastructure —in the form of street trees and pervious surfaces – has had a direct, positive impact on the mitigation of storm water runoff in the urban core.

- **Rust 2 Green (R2G):** Multiple case examples describing a variety of green infrastructure projects developed in Utica, NY.
  - Bleeker Street project
  - Utica City Hall Parking Lot Retro-fit project
  - Green Utica City Hall Parking Lot Retro-fit project
  - Genesee Street Redesign project
  - Oneida Square Roundabout Public Greenspace project

- **Keep American Beautiful – Herkimer/Oneida County Program**: This developing program could be expanded to the six-county Mohawk Valley region. Elements of the existing program could include "Beautification and Community Greening," improving the visual aspects of our communities through programs that beautify and naturally clean our environment including:
  - Litter removal
    Community gardens
    Restoring vacant lots
  - Highway and shoreline beautification
  - Urban forests
  - Native and wildflower plantings
  - Graffiti prevention and abatement.

FUTURE ACTIONS

3.3.6 Reuse and revitalize existing sites and buildings located in or adjacent to population centers that have existing public infrastructure and services

According to the Regional Economic Development Plan (REDP) the region has nearly 8,000 acres of brownfield sites. This number does not include the many more acres that are abandoned, vacant, or underused sites that have minimal or no contamination associated with them. Those that are next to or in existing towns, or near public services and public infrastructure should be prioritized for investment that would maintain, reuse, and redevelop these existing sites. New sites that have not been previously developed should be a secondary investment option because of the additional cost of extending and maintaining infrastructure and the likelihood of vehicular only access to the site and services. The REDC REVIVE goal also addresses this action, however, additional prioritization and funding is needed to address the full scale of vacant and underutilized properties.

Existing buildings are also of great importance to sustainability in Mohawk Valley. The region has hundreds of buildings that are highly inefficient in terms of energy consumption. Numerous buildings are derelict or in poor condition and/or vacant, all of which detracts from economic growth and that can adversely affect community stability.

This action has many energy, material, and community benefits associated with it. While energy and materials benefit are the easiest to quantify, the multiplier impacts of removing blight and retaining important community heritage resources should also be factored into this action and the approach to implementation, as follows:

- Demolish or deconstruct vacant, derelict buildings of no historic or cultural significance.
- Conduct existing building energy retrofits as noted previously under efficiency actions.
- Design and construct building retrofits for the existing and future application of alternative energy systems and technologies.
- Include the economic benefits of renewable energy backup systems in building retrofit valuation.

The reuse and retrofit of existing sites and buildings reflects a significant investment by property owners who then often find they pay higher taxes on the newly assessed value of the added investment. Consistent tax relief programs, such as abatements for a period of time that are aligned with the scale of investment related to their company size, should be offered to help incentivize investment. Tax increment financing is another tool often used to stimulate private investment. Piloting these types of financing programs would add options for developers and businesses interested in investing in the region.

Additionally, predevelopment work such as existing building and site inventories, along with a central clearinghouse for properties in the region, would make available properties more readily identifiable. As part of this predevelopment activity, funds to clean up abandoned sites and deconstruct non-significant, vacant buildings would prepare sites and make the area more attractive for redevelopment and investment. These types of programs can often lead to deconstruction and site remediation business and employment, and secondary markets for sale of used building materials.

Climate Adaptation and GHG Impact:

The reuse of existing infrastructure along with improving building energy efficiency and access to transportation options will work to reduce overall GHG emissions for the region. The actions at the site level are intended to also reduce the impacts of storm water runoff, which could become more damaging because of increased intensity of storms. These building-related actions provide for alternative energy supplies that will increase renewable power generation and business resiliency during storms.

GHG emissions impacts are hard to predict and would vary depending on the scale of the project. However, energy retrofits, and reuse and expanded use of existing infrastructure is likely one of the most direct actions available to reduce GHG emissions and have extensive multiplier impacts on the broader region. Every kWh of electricity, gallon of fuel oil, or cubic foot of natural gas saved equates directly to GHG emission reductions in the region.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided in Appendix E.

- NYS, Department of State, Regional Economic Development Council awards
- NYS, Housing and Community Renewal, NYS Community Development Block Grant Program
- NYS, Housing and Community Renewal, Neighborhood Preservation Companies Program
- NYS, Housing and Community Renewal, Main Street Program
- NYS, Housing and Community Renewal, HOME Program

The REDC's continued support of these activities in plans and project prioritization will send a positive message to the importance of these issues to the region. Additionally, the Mohawk Valley Economic Development Growth Enterprises Corporation (EDGE) is a key organization in the implementation of this action.

Potential Costs:

The types of activities described above could range in size from small home-weatherization improvements of $500 to commercial energy retrofits of $5,000 to large-scale site redevelopment of $5 million or more to prepare a site for development. Programmatic cost would also be needed for support and expansion of existing agencies and programs that are advancing these types of revitalization efforts.

Next Steps:

- Expand current REDC and economic development agency collaboration in the region to include:
  - a comprehensive inventory and data base of all regional sites and attributes;
  - identification of shovel-ready sites in strategic locations that have existing services and infrastructure;

- cluster development and increase density that improves the feasibility of transit, van pools, bikeways, walking, and other alternative modes of transportation between work and live locations;
- set uniform standards for low-impact site redevelopment;
- Planning of the layout of development sites to allow for solar orientation and maximum street network connectivity.

Case Example: Delta Hardwoods Project, Boonville, New York Delta Hardwood Flooring, currently located in Lee Center, has purchased a vacant Ethan Allen plant in Boonville, Oneida County, New York and is in the process of transitioning all of its operations. For the company, the decision to reuse an existing building or build a new structure from the ground up, was a simple case of economics—the costs associated with building new, were too high when compared to reusing an existing building. Support for the success of Delta Hardwoods has come by the involvement and support of the following programs and organizations, among others:

(Photo: Delta Hardwood Flooring President Randy Bowers, Rome Sentinel)

- Oneida County Rural Development & Agri-Business Loan Program
- NYS Office of Community Renewal
- Environmental Investment Program, Empire State Development
- Mohawk Valley EDGE
- Oneida County Industrial Development Agency

3.3.7 Enhance regional governmental and civic cooperation and communication systems

The Mohawk Valley region is governed by numerous jurisdictions and agencies. Lack of coordination and cooperation among these entities can result in substantial inefficiencies at all levels of government. This action is intended to improve overall regional government and civic operating efficiency. Through these efficiencies, additional resources may be made available for programs to support the implementation of other activities, such as hiring a regional sustainability coordinator that was widely supported by working group members. This overarching action of improved cooperation and communication could lead to the following types of activities and outcomes that would improve overall regional effectiveness.

Develop consistent and equitable taxing infrastructure systems across the region. This will require coordination with multiple jurisdictions, to reduce confusion and create a positive experience for potential businesses looking to relocate to the region. It could also strengthen the negotiation position of the region for insisting on quality development that responds to sustainable development principles.

Share ideas and programs through enhanced communications and cooperative systems. Through the enhanced and expanded use of technology and databases, opportunities for sharing programs and project ideas and models can be made easier. The value becomes even greater when projects are replicated with lower start-up costs due to upfront knowledge transfer. Once systems are in place and fully operational, improved communication and knowledge transfer systems can reduce duplication and waste of resources.

Coordinate to obtain and share resources. Further collaboration in seeking funding and sharing staff or programmatic experts across jurisdictions can improve the success factor in winning project and program funding and achieve economies of scale in joint purchasing and other aggregate models. Ultimately, enhanced collaboration improves the region's ability to present a common vision and message and set of resources for business recruitment and development activities.

Expand small business development programs that increase the value and stability of the local economy. In today's volatile market, small businesses also have the potential to be more resilient. While growth of large employers remains a critical component of the regional economy, it should not be to the detriment of small business support. Small businesses are also important links in supply chains and services that support the larger companies who depend on these businesses for their growth and success.

Upgrade and expand system and access to broadband service. Broadband systems are the underlying technology framework for efficiency in today's fast-paced markets. A fast, reliable broadband system can also reduce transportation costs through telecommuting options that are critical to our new economy work force and today's home-based entrepreneurs, dual working households with children or elderly at home, and students who need access to on-line learning programs.

Climate Adaptation and GHG Impact:

Improved cooperation and communication among regional government and agencies enhances the ability to develop joint emergency response plans, and create comprehensive plans that include and implement impact avoidance measures. Increased communication systems can also improve resiliency to and recovery from natural disasters through enhanced communication networks providing emergency coordination and access to services.

The correlations between this action and reduced emissions are indirect and are associated with the potential for enhanced planning, infrastructure improvement, and project prioritization based on common sustainable economic development principles.

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided in Appendix E.

- REDC's Regional Revolving Loan Fund and microenterprise grant program.
- Empire State Development's EIP
- Empire State Development, Small Business Revolving Loan Fund
- NYS, Department of State – Local Government Efficiency Grant Program (LGE)
- NYS Department of State. Citizen Empowerment Tax Credit
- Council of Governments (COGs), already working together within counties, could be expanded across counties
- Mohawk Valley EDGE

Potential Costs:

The highest cost of enhanced regional communication and collaboration beyond improved technology systems is most often labor. This time must be shared by all who are vested in the region.

Next Steps:

- Identify a key project or program that would benefit all and provide a positive example and experience to build on for future regional cooperation.
- Build on existing regional cooperation efforts such as the case example below and the REDC process to include other areas of cooperation.

Case Example: Central New York Conservancy, Inc.

This private/public collaboration has greatly increased F.T. Proctor Park's use and has encouraged more organizations to use the park as a venue for major community celebrations (e.g., Utica Boilermaker Road Race, July 4th Celebration). Modeled after New York City's famous Central Park, (F.T. Proctor Park was also designed by the Olmsted Brothers Firm), the Central New York Conservancy, Inc. is a privately funded not-for-profit corporation that has collaborated effectively with the City of Utica on multiple restoration projects at F.T. Proctor Park, using the original Olmsted design plans and elements. Perhaps most important is that private dollars and volunteer staff have taken ownership of a key public asset that municipal government could no longer afford to manage and operate at its highest and best use – a model that can translate into greater private involvement in shared public assets across the region.

3.3.8 *Develop a feasibility study and implementation plan for all municipal solid waste and recycling vehicle fleet that operates on compressed natural gas (CNG)*

The increasing cost of diesel fuel has resulting in higher costs to transport solid waste throughout the region. Furthermore, the large amount of emissions released from the burning of diesel fuel to collect and transport waste and recyclable materials (distances as much as 160 miles one-way) contributes significantly to GHG emissions. Renewable natural gas generated from organic waste is a less costly, domestically available, cleaner fuel compared with the diesel fuel currently being used to power the majority of waste and materials management vehicles in the Mohawk Valley region.

(Photo: Energy Vision (2012), "Renewable Natural Gas (RNG), The Solution to a Major Transportation Challenge."

This action recommends developing a feasibility study, for all municipal fleet followed by the development of both short- and long-term implementation plans to support the region's solid waste and recycling transportation industry transition to renewable natural gas - refined from biogas. Implementation of this action could begin with the conversion of current municipal fleet into CNG vehicles utilizing pipeline gas, which over time would be converted to vehicles operating on renewable natural gas. NYSERDA has developed a guide book to lead fleets through just such a project.[9] This will result in reduction in energy costs associated with materials management systems and a corresponding reduction in GHG emissions. It will also generate cost savings that could be passed down to customers or re-allocated to system improvement projects and/or education initiatives. There is also the possibility of other sectors utilizing the same infrastructure (public transportation, delivery vehicles, and others).

Developing a compressed natural gas (CNG) fuel infrastructure in the Mohawk Valley region is already being considered in many organizations in the transportation, energy, and economic development sectors. The transportation sector may benefit by combining financial resources and using the same natural gas infrastructure. However, one of the greatest barriers to implementation is the high start-up costs associated with replacing diesel fuel vehicles with alternative fuel vehicles while simultaneously developing a fuel supply and maintenance infrastructure to support those vehicles.

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[9] CNG for Delivery Trucks and Refuse Haulers; NYSERDA's CNG Vehicle Program Guide for Refuse Fleets. 18 Apr 2013. http://www.nyserda.ny.gov/Energy-Innovation-and-Business-Development/Research-and-Development/Transportation/Alternative-Fuel-Vehicles/CNG-for-Delivery-Trucks-and-Refuse-Haulers.aspx

Climate Adaptation and GHG Impact:

Several of the region's landfills currently capture methane for electricity generation to be used on-site and provided to the grid. This study would evaluate if it would be more effective to use the methane for transportation purposes. GHG emissions are reduced directly through the replacement of fossil fuels for fleet uses. Replacing a typical older in-use vehicle with a new CNG vehicles provides the following reductions in exhaust emissions[10]:

- Carbon monoxide (CO) reduced by 70% to 90%
- Non-methane organic gas (NMOG) reduced by 50% to75%
- Nitrogen oxides (NOx) reduced by 75% to 95%
- Carbon dioxide (CO_2) reduced by 20% to 30%

Additional Information:

Programs, funding and information sources that may be used to help further this action include the following, additional detail about these programs is provided in Appendix E.

- EPA - SmartWay Finance Program (http://www.epa.gov/smartway/financing/govt-funding.htm)
- FTA/NYSDOT – Clean Fuels Formula Grant Program
- NYSDED – Municipal landfill Gas Management Program
- Empire State Development – Environmental Investment Program

Potential Costs:

The approximate cost to implement this action is $35,000 to $50,000. This would include the development of a scope of work and hiring an energy consultant to conduct the feasibility study and develop a comprehensive implementation plan.

Next Steps:

- Research and apply for funding sources
- Scope and undertake a feasibility study.

[10] About NGVs." NGVAmerica. Natural Gas Vehicles for America, n.d. Web. 15 Feb 2013. http://www.ngvc.org/about_ngv/index.html

Case Example: Altamount Landfill

In California, the world's largest renewable liquid natural gas (RLNG) plant uses landfill gas to fuel 300 to 400 refuse trucks. By using RLNG, among the cleanest burning vehicle fuels to date, WM eliminates close to 30,000 tons of carbon dioxide emissions every year while also enjoying significant fuel cost savings.

Case Example: Ohio Bio-Energy Digester

In Columbus, Ohio, the first in a new generation of anaerobic digesters includes vehicle fuel production as a standard feature along with electric power generation.

Case Example: Rumpke RCNG Collection Fleet Pilot Project

Rumpke Sanitary Landfill, located outside of Cincinnati, OH in Colerain Township, is the biggest landfill in Ohio by volume; it also boasts the largest landfill gas-to-direct pipeline in the world. The commercial success of RCNG vehicles has led Rumpke to convert 10 collection trucks and install an on-site RCNG fueling station. This pilot project aims to determine the potential for expanded use of RCNG trucks in its fleet of more than 1,600 vehicles.

Summary of Implementation Actions: THEME: ECONOMICS

Implementation Action	Proponents/Stakeholders /Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transporta-tion	Land Use	Water	Materials	Energy	A & F
FIRST ACTIONS								
3.3.1 - Conduct building stock inventory to identify priorities for redevelopment and reinvestment of housing stock and promote home-ownership	➤ REDC ➤ Herkimer –Oneida Comprehensive Planning Program ➤ Otsego County Planning Department ➤ Fulton County Planning Department ➤ Montgomery County Department of Economic Development and Planning ➤ Schoharie County Planning and Development Agency ➤ City of Rome Department of community & Economic Development ➤ City of Utica Department of Urban and Economic Development ➤ City of Amsterdam Urban Renewal Agency ➤ City of Oneonta Community Development ➤ City of Gloversville Planning Department ➤ City of Little Falls Urban Renewal Agency	ED-4		LULC-4			E-2	

- Vacant Buildings Survey, City of Albany, University of Albany
- 47 Main Street Project, Fort Plain, NY
- Hartwick Hamlet Commercial Buildings, Otsego County
- Mohawk Valley Main Street Program, Otsego County
- Canajoharie 2000, Village of Canajoharie, NY

Implementation Action	Proponents/Stakeholders /Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transporta-tion	Land Use	Water	Materials	Energy	A & F
3.3.2 - Conduct an inventory of lands suitable for agriculture production	➤ Cornell University ➤ Department of Landscape Architecture ➤ Rust 2 Green New York Action Research Initiative	ED-1		LULC-3				A&F-2
3.3.3 - Create an identity and branding for the region.	➤ Existing Economic Development Agencies ➤ Tourism agencies – Statewide and regional ➤ Economic development agencies ➤ Business community ➤ Elected officials	ED-6		LULC-3	WM-2	MM-2		A&F-3

- Rust 2 Green (R2G) Mohawk Valley Food System, Utica, NY
- For the Good Community Garden Initiative, Utica, NY

Implementation Action	Proponents/Stakeholders /Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transporta-tion	Land Use	Water	Materials	Energy	A & F
3.3.4 - Support the development of a Mohawk Valley Brownfield Opportunity Area Fund (BOA). Develop a regional revolving loan fund for private investment in the region's Brownfields administered through the REDC; tie to NYS BOA, LWRP and Main Streets Programs or other pre-planning	➤ REDC ➤ NYS Department of State - EPF ➤ NYS Department of Homes & Community Renewal ➤ NYS Department of Environmental Conservation ➤ Empire State Development ➤ US Department of Housing and Urban Development, Community Development Block Grant Program ➤ Local Colleges with engineering, GIS, public planning and policy programs.	ED-4 ED-5	T-1	LULC-1 LULC-4	WM-2			
		• East Rome Business Park, Rome, NY • City of Amsterdam Brownfield Site, Montgomery County • Mohawk Valley Main Street Program, Otsego County						

Implementation Action	Proponents/Stakeholders /Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transportation	Land Use	Water	Materials	Energy	A & F
3.3.5 - Implement development of a tree inventory along with tree planting and green infrastructure and best management practices region wide (tree planting, bio retention, permeable pavers, etc.). A secondary action to be considered is the use of innovative/alternative green infrastructure systems for small rural community centers and business districts.	➢ County and Town Planning, Public Works and Transportation Departments ➢ Keep America Beautiful organization ➢ NYS Urban & Community Forestry Councils ➢ Cornell University, Department of Landscape Architecture, Rust 2 Green New York Action Research Imitative	ED-4	T-1 T-5	LULC-4	WM-2 WM-3		E-1	

- Cities of Rome and Utica, NY - Green Infrastructure and Tree Inventory Program & iTree Street Tree Analysis, Rome, NY
- Multiple Case Examples from Rust 2 Green describing a variety of green infrastructure projects developed in Utica, NY
- Keep American Beautiful – Herkimer-Oneida County Program

Implementation Action	Proponents/Stakeholders /Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transporta-tion	Land Use	Water	Materials	Energy	A & F
FUTURE ACTIONS								
3.3.6 - Reuse and revitalize existing sites and buildings located in or adjacent to population centers that have existing public infrastructure and services.	➤ REDC's future support ➤ Mohawk Valley Economic Development Growth Enterprises Corporation (MV EDGE) ➤ Funding and partnership agencies within New York State. ➤ Small businesses looking for ways to reduce operation costs and improve their bottom line ➤ Local government agencies that interested in retaining existing businesses and recruiting new ones. ➤ Economic development agencies that are preparing sites and properties necessary to attract new and expanding companies.	ED-4	T-1 T-5	LULC-1 LULC-3 LULC-4	WM-3			
		Delta Hardwoods Project, Boonville, NY						

Implementation Action	Proponents/Stakeholders /Groups *(Entities that would play a part in the development and implementation of this action)*	Focal Area Linkages and Associated Goals *(numbers correspond to focal area goals)*						
		Econ. Dev.	Transporta-tion	Land Use	Water	Materials	Energy	A & F
3.3.7 - Enhance regional governmental and civic cooperation and communication systems.	➢ REDC ➢ Municipal tax payers ➢ Economic development agencies ➢ Business owners	ED-3 ED-5	T-2	LULC-2	WM-4	MM-2 MM-4	E-3	
		Central New York Conservancy						
3.3.8 – Develop a feasibility study and implementation plan for all municipal solid waste and recycling vehicle fleet that operates on compressed natural gas (CNG).	➢ Oneida Herkimer Solid Waste Management Authority (OHSWA) in collaboration with the municipal transportation and land use planning units in Oneida and Herkimer counties. ➢ Natural and NGV providers	ED-3	T-5			MM-1 MM-3		
		• Altamount Landfill Gas Project, CA • Ohio Bio-Energy Digester • Rumpke RCNG Collection Fleet Pilot Project						

Summary of Sustainability Goals:

The goals in each of the focal areas below correspond with the associated focal goals mentioned in each Implementation Action in the preceding table.

Economic Development (ED)

- Goal ED-1: Enhance regional concentrations to retain and create business in key growth sectors (REDC Goal – GROW).
- Goal ED-2: Align the region's workforce with the appropriate education and training to increase the supply of skilled workers (REDC Goal – BUILD).
- Goal ED-3: Create innovation enabling infrastructure that will drive entrepreneurialism (REDC Goal – CREATE).
- Goal ED-4: Restore infrastructure and increase spatial efficiencies that will revitalize existing urban and town centers (REDC Goal – REVIVE).
- Goal ED-5: Strengthen government and civic effectiveness to produce a more vibrant economy (REDC Goal – FORGE).
- Goal ED-6: Promote unique regional assets through a unified identity and campaign.

Transportation (T)

- Goal T-1: Align transportation and land use planning and investment.
- Goal T-2: Improve efficiency in maintenance of transportation infrastructure.
- Goal T-3: Improve and connect regional multi-use trails.
- Goal T-4: Increase public transportation ridership.
- Goal T-5: Promote transportation alternatives.

Land Use and Livable Communities (LULC)

- Goal LULC-1: Redevelop main streets, waterfronts, and brownfields.
- Goal LULC-2: Provide technical assistance and collaboration opportunities.
- Goal LULC-3: Identify, Preserve, and Protect Lands suitable for viable agriculture.
- Goal LULC-4: Invest in existing infrastructure and housing stock.

Water Management (WM)

- Goal WM-1: Conserve water and related energy consumption.
- Goal WM-2: Maintain water quality.
- Goal WM-3: Improve existing infrastructure.
- Goal WM-4: Establish watershed planning.

Materials Management (MM)

- Goal MM-1: Reduce solid waste generation.
- Goal MM-2: Increase the regional market for recycled goods.
- Goal MM-3: Reduce energy costs associated with materials and solid waste management.
- Goal MM-4: Expand effective existing projects and promote new regional strategies.

Energy (E)

- Goal E-1: Reduce consumption of electricity and heat generated by fossil fuels.
- Goal E-2: Increase energy efficiency.
- Goal E-3: Increase renewable local energy generation and use for electricity and heat.
- Goal E-4: Evaluate life-cycle impacts of energy generation and use.

Agriculture and Forestry (A&F)

- Goal A&F-1: Promote education.
- Goal A&F-2: Enhance efficiencies.
- Goal A&F-3: Promote sustainable agricultural and forestry economic development for individuals, families, and the region to help sustain the current workforce and encourage others to join the workforce.

NYSERDA DISCLAIMER

FOR GENERAL REPORT:

This report was prepared by a consortium of Mohawk Valley municipalities led by Otsego County and their planning team in the course of performing work contracted for and sponsored by the New York State Energy Research and Development Authority. The opinions and analyses expressed in this report do not necessarily reflect those of NYSERDA or the State of New York.

FOR APPENDIX:

Projects included in the appendices or within the content of this report are meant to provide examples of potential ways to address the strategies identified in the report and were submitted to the planning consortiums as part of the public outreach efforts by the consortium. These projects are in no way prioritized or guaranteed to receive funding through Phase II Implementation Funding of the Cleaner, Greener Communities Program. Projects not listed in the appendices section or content of the plan will have equal opportunity to submit an application for funding through Phase II. Regardless of being listed in the plan, a Consolidated Funding Application must be submitted in order to be considered for funding in Phase II. All projects must address the qualifications and eligibility requirements as listed in the Cleaner, Greener Communities Phase II solicitation notice.