Appendix A
Stakeholder and Public Input Summary

This Plan was developed by the Mohawk Valley Planning Consortium, the Planning Team, Working Group Members and public stakeholders throughout the region.

I. Consortium and Planning Team Participation:

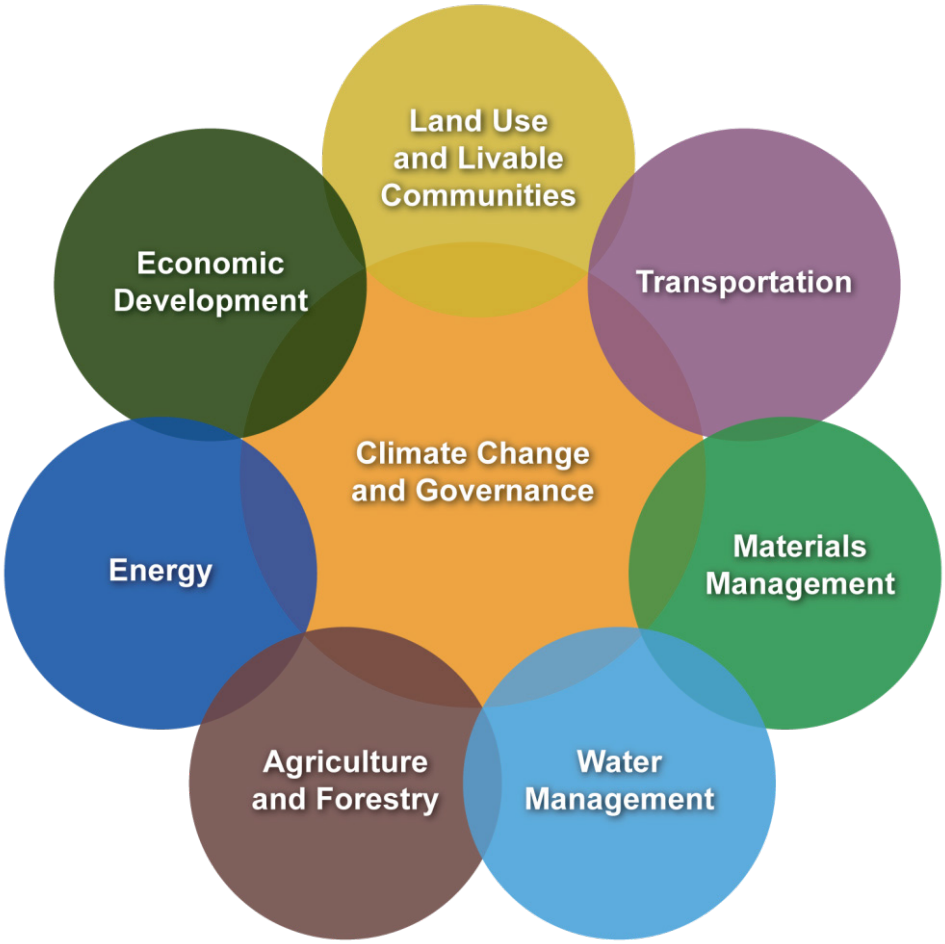
The Consortium was composed of planning professionals and representatives from the Mohawk Valley's six county government agencies and the communities of Utica, Rome, Cooperstown, Oneida, and Oneonta. Otsego County took the lead and recruited members for the Consortium to provide direction and oversight 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.

The Planning Team that included primary contractor, Ecology and Environment, Inc. (E & E) and specialized public outreach subcontractors, including The Genesis Group, the Mohawk Valley Economic Development District (MVEDD), and the Otsego County Conservation Association (OCCA) provided technical, leadership and advisory support to the Consortium in developing the Plan. Biweekly Consortium meetings via conference call were conducted to update all team members of Plan progress. Meeting minutes were created to document all topics discussed and follow-up actions to be undertaken. Minutes were distributed to all Consortium and Planning Team members following the meeting. Members of the Planning Team also participated in weekly team teleconference calls. Otsego County (Lead County) and E & E participated in bi-weekly teleconference calls with NYSERDA.

II. Working Group Schedule and Participation:

As discussed in Section 1, part of the Regional Sustainability Plan process included the formation of a Consortium and nine (9) technical Working Groups (WG) to gather critical data and knowledge from stakeholders in the region with expertise and interests in the defined topic areas. Seven groups met independently, developed their own methods, and reported to the Consortium. Two additional groups, Governance and Climate Change Adaptation, integrated information derived from all the other groups.

The Working Groups consisted of active, volunteer participants with subject matter knowledge who guided the development of the topic plan content through professionally facilitated discussions (Appendix F: Working Group Membership). Working Group knowledge and input were supplemented by outreach to other regional stakeholders through activities such as interviews, surveys, social media, public meetings, and other tools to gain broader perspective and input. The Working Groups were led and facilitated by two staff members of Ecology and Environment, Inc. These Technical Leads were chosen based on their technical knowledge and their proven leadership ability. Each of the seven Working Groups met in person for three meetings. In addition, numerous calls were held to discuss topic related matters.



Technical Working Group Focus Areas

The following reflects the topics at each of the in-person meetings for each Working Group:

Working Group Meeting 1: Week of October 22, 2012;
Various Locations in the Mohawk Valley.

- Project Introduction: Reviewed and validated goals, scope of the study, and specific objectives.
- Discussed regional issues and opportunities.

Working Group Meeting 2: December 6th, 2012;
Kunsela Hall, SUNY IT, 9:30am - 3:30pm; All Working Groups.

- Reviewed NYSERDA indicator list, identified indicators and data sources.
- Reviewed GHG inventory (preliminary results).
- Established Sustainability Targets for selected indicators.

Session 1: 10-12:30pm (Working Group Meeting 2)

- Members continued conversations from WG Meeting 1 (held the week of October 22, 2012); and discussed Goals, Sustainability Targets & Project Strategies related to their working group topic area for the MV Sustainability Plan.

Session 2: 1:30-2:30pm (Integrated Working Group Session)

- In Session 2, Working Group members were split up into various integrated groups to meet with other working group members to have region-wide discussions on all topic areas and to discuss strategies to be implemented in the MV Sustainability Plan.

Session 3: 2:30-3:30pm (Topic Working Group Sessions):

- In Session 3, WG members reconvened with their individual working groups to share with each other knowledge gained from other working group members (during Session 2), related to their topic area.

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

Working Group Meeting 3: January 30, 2013
Kunsela Hall, SUNY IT, 9:30am-12:30pm; All Working Groups.

- Developed 2-4 ***Implementation Actions*** per Working Group (WG) relevant to Mohawk Valley
- Discussed final sustainability plan conclusions.

Working group members used this meeting to develop specific *Implementation Actions* for their working group topic area, to include in the MV Sustainability Plan. Specifically, the following topics and actions were discussed at the meeting.

  - Provide a description of 2-4 *Implementation Actions*
  - Why is the chosen Action an important strategy for Mohawk Valley?
  - What theme does it fit into? Education/Efficiency/Economics.
  - Linkages:
    - *The WG Goals:* How does the recommended implementation action relate to your WG goals? State the goal?
    - *Other WGs Goals* that relate to this action: How does the recommended *Implementation Action* relate to other goals from other WGs?
    - *Climate Adaptation:* How is the chosen goal impacted by climate adaptation or how does it affect climate adaptation?
    - *Governance links:* Are there any incentives, tax credits, etc. that will help the recommended implementation action?
    - *Proponents/Stakeholders /Groups* needed to implement actions?
    - *Costs / Emissions* – try to provide estimated costs and estimates of GHG emissions.
    - Case Examples – Provide examples of successful implementations of the action.

The three Working Group meetings were organized by the sub-contractors as assigned to each Working Group and summarized below. Any working group member that was unable to attend these meetings due to previous commitments was asked to review the notes thoroughly and be current for the next meeting. E & E provided two Technical Leads for each Working Group (as detailed in the Executive Summary). In addition, as part of the Planning Team, the following local agencies (Regional Liaisons - subcontractors) provided local assistance in each of the following assigned geographic and topic areas:

- **The Genesis Group**
  - Oneida and Herkimer Counties
  - Working Groups: Transportation and Waste Management
- **Mohawk Valley Economic Development District** (MVEDD)
  - Fulton and Montgomery Counties
  - Working Groups: Economic Development and Agriculture/Forestry
- **Otsego County Conservation Association** (OCCA)
  - Otsego and Schoharie Counties
  - Working Groups: Energy, Water Management and Land Use

The subcontractors supported the Working Group process in the following ways:

- Identified and recruited Working Group members.
- Oversaw meeting logistics for their assigned Working Group.
- Attended meetings and coordinated discussions.
- Prepared draft meeting notes that were finalized and distributed by E & E. The draft meeting notes included summaries of the Working Group consensus on sustainability indicators, targets, inventory, and implementation strategies.
- Outreach to data sources and related preliminary research required for the collection of GHG and indicator data.
- Public communications and outreach for each of their assigned counties.

The E & E Technical Leads assigned to each Working Group served as the primary point of contact regarding overall Working Group technical content and management. The Regional Liaison sub-contractor served as the point of contact for any logistical support needs.

III. Public Engagement: Outreach and Involvement

In addition to Working Group membership responsibilities, the Regional Liaison sub-contractors were also responsible for providing geographic coverage of the public outreach effort through delivering recruiting assistance and services in regards to stakeholder and public engagement. In addition to members of the Consortium and Working Groups, stakeholders included other groups and individuals who were interested and influenced by the project but did not have the time or subject matter expertise to participate as Working Group members.

Figure 3. Mohawk Valley Consortium lead Karen Sullivan and Project Manager Bob Singer discuss the MV Sustainability Plan on "Green Local 175" radio talk show.

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 and e-bulletins were prepared and distributed via various outlets such as eco-bulletins, list serves, events and radio talk shows (Green Local 175, TownSquare Media and Radio WUTQ). Planning Team members also participated in group meetings at the regional chambers of commerce, and other venues such as the Otsego County Water Quality coordinating Committee meetings, Otsego County Natural Gas meetings, etc. to introduce the MV Plan to the community.

To ensure knowledge sharing networking and transparency in the development of the MV Plan, the Planning Team held two public meetings at Herkimer County Community College, Herkimer, NY in December 2012 and March 2013 to encourage public input from Mohawk Valley residents, business owners and other stakeholders. About 100-150 stakeholders from the region showed up to both meetings.

Public Meeting 1: December 5th, 2012 (Attachment A1**);**

The first project Public Stakeholder Meeting was held from 6:30-8:00 PM on Wednesday, December 5th, 2012 at Robert McLaughlin College Center Auditorium, Herkimer County Community College in Herkimer, NY**.** The meeting agenda included an introduction to the CGC program and MV Plan, discussion of regional issues and opportunities, presentation of some baseline information, project progress and discussion of goals by focal areas. Additionally, project contact cards (Attachment A2) and Project Brochure (Attachment A3) were created for the meeting and handed out to the public.

- Attachment A1 – Public Meeting Announcement 1
- Attachment A2 – Project Contact Card
- Attachment A3 – Project Brochure

Public Meeting 2: March 7th, 2013 (Attachment A4)**;**

The second Public Stakeholder Meeting was held on Thursday, March 7th, 2013, 6:30-8:00 PM at Robert McLaughlin College Center Auditorium, Herkimer County Community College in Herkimer, NY. The meeting offered an overview of the Draft Sustainability Plan and provided an opportunity for public to comment. Additionally, residents of Mohawk Valley were encouraged to provide feedback and submit written comments on the Plan progress and deliverables via a public website that was set up for the project (www.sustainablemohawkevalley.com).

- Attachment A4 – Public Meeting Announcement 2
- Attachment A5 – MV Plan Public Feedback Comments Response Matrix

The Public-Feedback Comments Response Matrix attachment details all the comments that were received and addressed during the public comment period to develop the final Sustainability Plan.

Mohawk Valley and SharePoint Websites:

A public website was created to provide updates and summaries of the Plan process (www.sustainablemohawkevalley.com). All deliverables approved by NYSERDA were released to the public for comments through this website. In addition to the public website, a password-protected SharePoint Website was also created by E & E for internal communication between Working Group members, the Planning Team and the Consortium. The SharePoint website also allowed all Working Group and Consortium members to review, comment and post documents and share supporting material with other working group members.

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Attachment A1
Public Meeting Announcement 1

PUBLIC OUTREACH MEETING

THE PUBLIC IS INVITED TO ATTEND A PUBLIC OUTREACH MEETING FOR THE
NY State Cleaner, Greener Communities (CGC) Mohawk Valley Regional Sustainability Plan:

WHEN: Wednesday, December 5th, 2012

WHERE: Herkimer County Community College

WHY: Request for public participation in the development of the Mohawk Valley's comprehensive sustainability plan under the Cleaner, Greener Communities Planning Grant Program

- The Public Outreach Meeting on Wednesday, December 5th, 2012, 6.30 pm will be at **Robert McLaughlin College Center Auditorium**, **Herkimer County Community College** in Herkimer, NY.
- A Free buffet dinner will be provided from 5:30- 6:30PM for those who **RSVP by Friday, November 30th to Greg Eisenhut** at Mohawk Valley Economic Development District, 315-866-4671 or mvedd@twcny.rr.com
- More information on the project is available on www.sustainablemohawkvalley.com

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Project Background:

The Cleaner, Greener Communities program was announced by Governor Cuomo in 2011 as a $100 million competitive grant program to encourage communities to develop regional sustainable growth strategies. The program is intended to provide the necessary resources for each region, as defined by the boundaries of the Regional Economic Development Councils, to develop a comprehensive sustainability plan. The plans that result from this program will:

- Establish a statewide sustainability planning framework that will aid in statewide infrastructure investment decision making
- Outline specific and tangible actions to reduce greenhouse gas emissions consistent with a goal of 80% carbon reductions by the year 2050
- Inform municipal land use policies
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- Serve as a basis for local government infrastructure decision making
- Help guide infrastructure investment of both public and private resources
- Provide each region with a sustainability plan that will enable them to strategically identify and prioritize projects they submit for consideration to the Phase II Implementation Grant stage.

In Phase II of the Cleaner, Greener Communities program – the Implementation Grant stage – up to $90 million will be provided on a competitive basis statewide for implementation of specific projects that provide the greatest opportunities for achieving carbon reductions, energy efficiency savings, and renewable energy deployment consistent with a region's sustainability and REDC strategic plans. Other actions identified in the plan may be eligible for funding from other sources. Phase II is planned to start in 2013.

Public outreach and input is an integral aspect of this Cleaner, Greener Communities project. The first project Public Stakeholder Meeting is scheduled for 6:30-8:00 PM, Wednesday, December 5th, 2012 at Robert McLaughlin College Center Auditorium, Herkimer County Community College in Herkimer, NY. The meeting will offer more details on the program, present some baseline information, and provide opportunity for public comments.

A buffet dinner will be provided at 5:30 PM for those who **RSVP by Friday, November 30th** to Greg Eisenhut at Mohawk Valley Economic Development District, 315-866-4671 or mvedd@twcny.rr.com

More information on plan progress is available on www.sustainablemohawkvalley.com or by contacting:

Karen Sullivan, Otsego County Planning Dept. sullivank@otsegocounty.com, (607)547-4225
Ray Durso, Genesis Group, Rdurso@thegenesisgroup.org, (315) 792-7187 (Oneida and Herkimer Co.)
Greg Eisenhut, MVEDD, gregmved@twcny.rr.com, (315) 866-4671 (Montgomery and Fulton Co.)
Travis Sauerwald, OCCA, programdirector@occainfo.org, (607) 282 4087 (Schoharie and Otsego Co.)

Attachment A2
Project Contact Card

Thank you for attending the Mohawk Valley Sustainability Public Outreach meeting. We appreciate your time.

Questions and concerns can be directed to any of the following Project Team members:

Karen Sullivan, Otsego County Planning Dept.
sullivank@otsegocounty.com

Ray Durso, Genesis Group
Rdurso@thegenesisgroup.org

Greg Eisenhut, MVEDD
gregmved@twcny.rr.com

Travis Sauerwald, OCCA
programdirector@occainfo.org

Bob Singer, Ecology and Environment, Inc.
rsinger@ene.com

Nischint Sundar, Ecology and Environment, Inc.
nsundar@ene.com

Consortium
(607)547-4225

Oneida and Herkimer Co.
(315) 792-7187

Montgomery and Fulton Co.
(315) 866-4671

Schoharie and Otsego Co.
(607) 282-4087

Project Technical Lead
(716) 684-8060

Stakeholder Outreach
(212) 742-1713

NYSERDA's Cleaner, Greener Communities program was announced by Governor Cuomo in his 2011 State of the State address as a $100 million competitive grant program to encourage communities to develop regional sustainable growth strategies. The Regional Sustainability Planning program is the first stage of the Cleaner, Greener Communities program and is intended to provide the necessary resources for each region in New York State to develop a comprehensive sustainability plan. The Mohawk Valley Plan will provide regional guidance for many diverse efforts to stimulate growth in an environmentally sustainable manner. The Mohawk Valley region includes Oneida, Herkimer, Fulton, Otsego, Montgomery, and Schoharie Counties.

For updates on plan progress visit www.sustainablemohawkvalley.com

Call for Participation

The sustainability working groups are currently seeking examples of specific actions that meet the goals of the sustainability plan. These actions will exemplify the combination of public education, energy efficiency and economic development that are the cornerstones of the Mohawk Valley plan. These actions will provide the foundation for future support of many projects that include grants and tax incentives for the region.

We need your help to identify and describe in detail the actions. Do you have an idea for:

- An industrial development?
- An educational program?
- A combination of government functions that can be operated with greater efficiency?
- Do you know of case studies of innovative industrial, commercial or governmental planning activities that should be highlighted?

Information must be provided by February 8, 2013 to be incorporated into the Plan, which will be completed in March, 2013.

Information Forms are available for download at ***www.sustainablemohawkvalley.com***

EE-003772-0001-05TTO

For further information contact :

Karen Sullivan - Otsego County Planning Department
sullivank@otsegocounty.com • (607) 547-4225

Erik Scrivener - Otsego County Planning Department
scrivenere@otsegocounty.com • (607) 547-4225

Robert Singer - Ecology and Environment, Inc.
RSinger@ene.com • (716) 684-8060

Nischint Sundar - Ecology and Environment, Inc.
NSundar@ene.com • (212) 742-1713

Ray Durso - Genesis Group
Rdurso@thegenesisgroup.org • (315) 792-7187

Steve Smith - MVEDD
doozmved@twcny.rr.com • (315) 866-4671

L. Travis Sauerwald - OCCA
programdirector@occainfo.org • (607) 282- 4087

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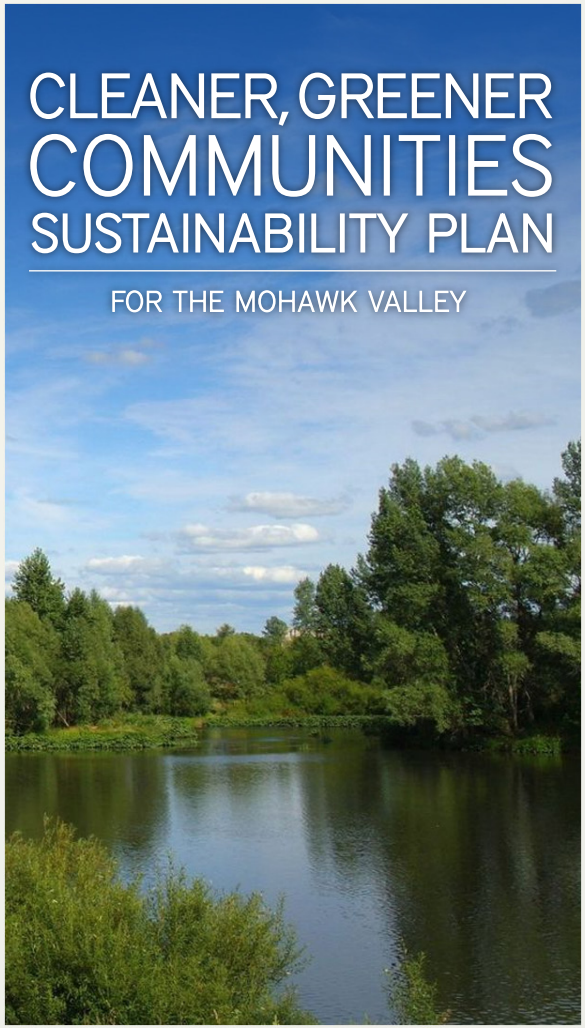
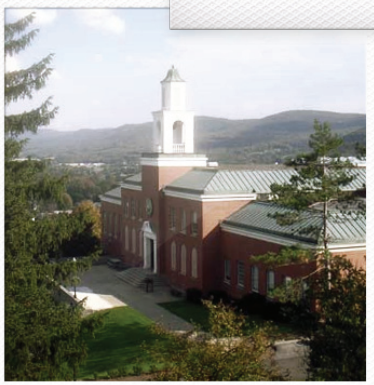


nyserda
Energy. Innovation. Solutions.

CLEANER GREENER COMMUNITIES
NY WORKS

Town of Otsego, NY

Otsego County, NY



Hartwick College,
City of Oneonta, NY

Cleaner, Greener Communities Sustainability Plan for the Mohawk Valley

The Cleaner, Greener Communities (CGC) program was announced by Governor Cuomo in his 2011 State of the State address as a $100 million competitive grant program to encourage communities to develop regional sustainable growth strategies. The Regional Sustainability Planning program is the first stage of the program and is intended to provide the necessary resources through the New York State Energy Research Development Authority (NYSERDA) for each region in New York State, as defined by the boundaries of the Regional Economic Development Councils (REDC), to develop a comprehensive sustainability plan. The Mohawk Valley region includes Oneida, Herkimer, Fulton, Otsego, Montgomery and Schoharie Counties.

The plans that result from this program will:

- Establish a statewide sustainability planning framework that will aid in statewide infrastructure investment decision making
- Outline specific and tangible actions to reduce greenhouse gas emissions consistent with a goal of 80% carbon reductions by the year 2050
- Inform municipal land use policies
- Serve as a basis for local government infrastructure decision making
- Help guide infrastructure investment of both public and private resources
- Provide each region with a sustainability plan that will enable them to strategically identify and prioritize the projects they submit for consideration to the Implementation Grant stage.

In stage two of the CGC program – the Implementation Grant stage – $90 million will be provided on a competitive basis State-wide for implementation of specific projects that provide the greatest opportunities for achieving carbon reductions, energy efficiency savings, and renewable energy deployment consistent with a region's sustainability and REDC strategic plans. Other actions identified in the plan may be eligible for funding from other sources.

For updates on plan progress visit
www.sustainablemohawkvalley.com

Mohawk Valley
Working Group meeting

Town of Otego, NY

Mohawk Valley
Regional Sustainability Plan
Cleaner Greener Communities
Sustainability Plan
Announcement

Attachment AП
Public Meeting Announcement H

STAKEHOLDER MEETING

The Public Is Invited To Attend a Stakeholder Meeting on The NY State Cleaner, Greener Communities (CGC) Mohawk Valley Regional Sustainability Plan:

WHEN: Thursday, March 7, 2013

WHERE: Herkimer County Community College

WHY: Request for public participation in the review of the Mohawk Valley's DRAFT Sustainability Plan under the Cleaner, Greener Communities Planning Grant Program

- The Public Stakeholder Meeting **Thursday, March 7, 2013**, 6.30 pm will be at **Robert McLaughlin College Center Auditorium**, **Herkimer County Community College** in Herkimer, NY.
- A Free buffet dinner will be provided from 5:30- 6:30PM for those who **RSVP by Monday, March 4 to Steve Smith** at Mohawk Valley Economic Development District, 315-866-4671 or mvedd@twcny.rr.com
- More information on the project is available on www.sustainablemohawkvalley.com

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Project Background:

The Cleaner, Greener Communities program was announced by Governor Cuomo in 2011 as a $100 million competitive grant program to encourage communities to develop regional sustainable growth strategies. The program is intended to provide the necessary resources for each region, as defined by the boundaries of the Regional Economic Development Councils, to develop a comprehensive sustainability plan. The plans that result from this program will:

- Establish a statewide sustainability planning framework that will aid in statewide infrastructure investment decision making
- Outline specific and tangible actions to reduce greenhouse gas emissions consistent with a goal of 80% carbon reductions by the year 2050
- Inform municipal land use policies
- Serve as a basis for local government infrastructure decision making
- Help guide infrastructure investment of both public and private resources
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- Provide each region with a sustainability plan that will enable them to strategically identify and prioritize projects they submit for consideration to the Phase II Implementation Grant stage.

In Phase II of the Cleaner, Greener Communities program – the Implementation Grant stage – up to $90 million will be provided on a competitive basis statewide for implementation of specific projects that provide the greatest opportunities for achieving carbon reductions, energy efficiency savings, and renewable energy deployment consistent with a region's sustainability and REDC strategic plans. Other actions identified in the plan may be eligible for funding from other sources. Phase II is planned to start in 2013.

DRAFT Sustainability Plan:

Public outreach and input is an integral aspect of this Cleaner, Greener Communities project. The second Public Stakeholder Meeting is scheduled for 6:30-8:00 PM, Thursday, March 7th, 2013 at Robert McLaughlin College Center Auditorium, Herkimer County Community College in Herkimer, NY. The meeting will offer an overview of the Draft Sustainability Plan, and provide opportunity for public comments.

A buffet dinner will be provided at 5:30 PM for those who **RSVP by Monday, March 4** to Steve Smith at Mohawk Valley Economic Development District, 315-866-4671 or mvedd@twcny.rr.com

More information on the Draft Plan is available on www.sustainablemohawkvalley.com or by contacting:

Karen Sullivan, Otsego County Planning Dept. sullivank@otsegocounty.com, (607)547-4225
Ray Durso, Genesis Group, Rdurso@thegenesisgroup.org, (315) 792-7187 (Oneida and Herkimer Co.)
Steve Smith, MVEDD, doozmved@twcny.rr.com , (315) 866-4671 (Montgomery and Fulton Co.)
Travis Sauerwald, OCCA, programdirector@occainfo.org, (607) 282 4087 (Schoharie and Otsego Co.)

Attachment A5
Mohawk Valley Regional Sustainability Plan - Public Stakeholders Comment/Response Matrix

General Comments/Paragraph	Page #	Chapter #	Section #	Proposed Solution or Change	Response/Status
Executive Summary and CHAPTER 1 - Introduction					
Include CGC definition of Sustainability to Introduction	--	Exec. Summary & Ch 1	--	Sustainability Definition of Cleaner Greneer Communities; Sustainability: Improving Our Quality of Life with Smart Growth Practices from CGC website	Definition included in Executive Summary (Pg 2) and Introduction Section (Pg 1-2)
City of Oneonta was not listed under Partner Cities and Villages.	12	Ch 1	1-12	---	Updated in Final Plan - added to figure
Non-Profit Organizations was not listed under Working Group Membership	12	Ch 1	1-12	---	Updated in Final Plan - added to figure
There is a figure missing in paragraph two, “xx-000.”	14	Ch 1	1-14	Add the oureach number	Updated in Final Plan
On page 1-15, references to the three themes (i.e. Education, Efficiency and Economics)-- the first mention of these three themes in the document -- are inconsistent. The left hand column refers to “economics” while the right hand column refers to “the economy."	15	Ch 1	1-15	Change "economy" to "economics"	Updated in Final Plan
General Comment: The Plan lacks a prioritization scheme. This is a significant weakness that impairs usability; it may ultimately hinder implementation. Ideally, each action would be ranked in order according to a set of criteria, which, in turn, would reflect the issues, vision, goals, and public input. In an environment characterized by scarce resources with which to implement the Plan's actions as well as increasing competition for these resources, users of the Plan should be able to identify which actions are highly necessary to achieve sustainability goals and targets and, therefore, should be given more weight in this environment. It is also likely that a prioritization scheme would make funding applications based on this plan as part of Phase II more competitive.	--	--	--	---	The actions have been prioritized into First and Future Actions for each of the three themes of Education, Economics and Efficiency.
General Comment: Who is responsible for implementation? Although REDC support will be critical for many of these actions, it does not appear that they will be charged with implementation of the Plan. Will there be an implementation committee developed? If so, who will serve on it?	--	--	--	---	It is anticipated that a Mohawk Valley Implementation Plan Committee will be formed (lead by Otsego County Planning department) to execute the plan and actions. Details of the committee will be determined in due course. Please contact Karen Sullivan from Otsego County Planning department for more information.

Attachment A5
Mohawk Valley Regional Sustainability Plan - Public Stakeholders Comment/Response Matrix

General Comments/Paragraph	Page #	Chapter #	Section #	Proposed Solution or Change	Response/Status
CHAPTER 2 - Goals Indicators & Targets					
General Comment regarding Economic development Goals	--	Ch 2	Ch 2 ED section	It is unclear in the Economic Development section as to whether the six sustainability goals were chosen by the Working Group to be specific to the strengths, weaknesses, opportunities and/or threats to the Mohawk Valley Region or were simply adopted as boilerplate from the REDC goals. The language does not feel in any way specific to the region.	The Economic Development goals were selected based ED Working Group members' recommendation to adopt the REDC goals and adapt it to the MV Sustainability Plan and how it relates to the various other focal group areas in the plan.
Horseback riding and snowmobile trails seem more relevant to the Land Use and Livable Communities section than Transportation. Also, there may be health and/or safety restrictions with regard to the combining of horseback riding trails with pedestrian trails.	10	Ch 2	2-10 (Goal T-3)	---	The Transportation Working Group vetted and decided the goals after a length planning process. The consensus was that snowmobiles and horseback riding should be included in conversations regarding multi-use trails.
Indicators discussed in the Transportation section only address three of the five indicators	12-15	Ch 2	2.2	---	Table 2-2 shows all 5 Transportation indicators. The missing text for the two missing indicators * Surface rating of state roads and Regional train network - miles of trails in the region) has been added to the Plan.
Town of Otsego and not Town of Cooperstown	16	Ch 2	2-3	---	Updated in Final Plan
Box at the bottom of the page reads that there are 8 food deserts in the Mohawk Valley Region, but section 3.2.11 of Chapter 3 says there are 17 food deserts.	21	Ch 2	2-3	Either one of these figures is incorrect, or a clarification is necessary.	Editing and reformatting sections of Chapter 3 resulted in this text being taken out of 2.3.11. The Chapter 2 box reads as "there are 8 food desserts".
In Table 2-4, “Water Management Indicators,” there is no indicator listed for Water Management Goal 4, “Establish Watershed Planning.”	28	Ch 2	2-4	---	All the goals do not need asssociated indicators. The goals were selected by the Water Working groups and approved by NYSERDA. Some of these goals cannot be measured (Eg: Goal 4: Establish Watershed planning) and thus don't have or do not require an indicator.
Otsego misspelled as Otsego	30	Ch 2	2-4	---	Updated in Final Plan
General Comment: regarding Tourism in MV	--	Ch 2	--	TOURISM AND GROWTH OF NATURAL RESOURCE-RELATED SECTORS SHOULD BE ADDRESSED IN THE ECONOMIC DEVELOPMENT SECTION --- In reviewing the draft Mohawk Valley Regional Sustainability Plan, I notice a glar- ing absence of any consideration of tourism and natural resource appreciation in the Economic Development Sustainability Goals. Neither tourism nor natural resource appreciation are mentioned in Chapter 2 of the plan, “Goals, Indicators, & Targets". I would recommend that tourism, agri-tourism, green tourism, eco-tourism and natural resource-related sectors be addressed in the Mohawk Valley Regional Sustainability Plan, in order to be more in keeping with the importance assigned tourism and natural resource appreciation by the MVREDC in both its Strategic and Action plans, and in the plans written by both the Southern Tier and Mid-Hudson Regions.	The Working Group opted to not create a specific goal for each REDC target industry sector since there are several important industry target sectors in the REDC plan of which tourism is one, rather we created the PROMOTE goal as a new goal that is being considered by REDC and referred to the “unique assets” within it rather than just one or to list them all. Natural assets are also intertwined through other sections such as water and forestry. There is also a specific reference to tourism on page two and we have re-inserted the tactic specific to this under PROMOTE, thank you for pointing this out.

Attachment A5
Mohawk Valley Regional Sustainability Plan - Public Stakeholders Comment/Response Matrix

General Comments/Paragraph	Page #	Chapter #	Section #	Proposed Solution or Change	Response/Status
CHAPTER 3 - Implementation Actions					
Please strike the sentence beginning with "The ideas are out there…" and ending with "…implement these ideas."	1	Ch 3	Last sentence of last paragraph of Introduction	Please strike off. Awkward wording.	Addressed. Sentence deleted.
Implementation Action Table	4	Ch 3	--	MVEDD misspelled	Addressed - correction made.
Implementation Action Table: No mention of SUNY Oneonta, Hartwick College, SUNY Cobleskill or any of the area BOCES programs.	4	Ch 3	3.1.1	Add these institutions to the list.	Updated in Final Plan
Implementation Action Table: Under the Focal Area Linkages and Associated Goals, Land Use attribute, include reference to LULC-3. Reuse and redevelopment conserves open space (including agriculture), thereby linking it to the "Limit development on high quality farmland" bullet on page 2-17.	4	Ch 4	3.3.1	Add LULC 3 to table	Updated in Final Plan
Implementation Action Table: Otsego Conservation Association	6	Ch 3	--	Should be Otsego County Conservation Association	Updated in Final Plan
SPDES should be State Pollutant Discharge Elimination System	16	Ch 3	3.1.5	---	Updated in Final Plan
It says on this page that "building energy use is the largest source of GHG emissions." However, the graph on page 3 of the Executive Summary ("Mohawk Valley GHG Emissions, 2010) indicates that transportation leads at 44%. Is the title of the graph wrong?	19	Ch 3	3-1-6	---	Addressed. Building energy is the sceond largest source of GHG emissions in the region
Please don't use Syracuse/Onondaga County-related projects as Case Studies in our plan.	20 (and throughout plan)	Chapter 3	3.1-6	The case study is helpful and relevant, but Syracuse isn't in our REDC region.	Case studies from out of the region are included in the plan when case studies (related to the implementation action) were not present in the region. These case studies chould be used as examples that can be replicated in the region.
Odesaga Hotel	23	Ch 3	3.1.7	Correct the spelling - Otesaga Hotel	Updated in Final Plan
Implementation Action #X missing	26	Ch 3	3.1.7	Add the number	Updated in Final Plan
"Improve" may imply a deficiency in the system, which has a primary function of safety; consider "Explore the potential to improve... " or "Commission an analysis of traffic signals to identify any opportunities for improvement...".	29	Ch 3	3.2.1	---	Changed to "Explore the potential to imporve…"
Add "eliminating unnecessary signaling" to Section 3.2-2 title	29	Ch 4	3.2.2	You mention this as part of the action, but it should be in the title as well.	Updated in Final Plan
The savings from the wastewater treatment facility are listed as more than $500,000 here and $450,000 in case study.	36	Ch 3	3.2.5	---	Updated in Final Plan
What agency would perform the recycling audits and inventories?	37	Ch 3	3.2.6	---	The SWMPUs would perform the recycling audits
Section 3.2.9 - Increase participation in in residential, commercial, institutional, and municipal energy audit programs	47	Ch 3	3.2.9	In Action title, delete repeated word "in".	Updated in Final Plan

Attachment A5
Mohawk Valley Regional Sustainability Plan - Public Stakeholders Comment/Response Matrix

General Comments/Paragraph	Page #	Chapter #	Section #	Proposed Solution or Change	Response/Status
Any ideas/suggestions as to who would coordinate the development of food hubs? Who would carry out the required assessments with regard to what products and services to focus on? What would be the cost?	56	Ch 3	3.2.11	---	As mentioned in this section, any established entity with agricultural and economic development expertise to coordinate development of food hubs in the wider region including the Mohawk Valley and beyond. The required assessments with regard to what products and services to focus on, the cost associated and other related issues could be determined by an entity like the Central New York Agriculture Council.
Add a sentence that emphasizes the “Made in the Mohawk Valley” idea.	66	Ch 3	3.3.3	---	Added to Introduction in section 3.3.3
Please add “all municipal fleets” to Section 3.3.9	81	Ch 3	3.3.9	I think the feasibility study should examine the feasibility of fuel conversion for all publicly funded fleets and vehicles.	Added to Implementation Action title as well as in text.
Who would hire the energy consultant to conduct the feasibility study and develop the implementation plan? Where would the money come from? What would it cost?	82	Ch 3	3.3.9	---	The approximate cost to implement this action is $35,000 to $50,000. The Consortium or entity that takes over the implementation of this plan could decide on the energy consultant. Some of the funding opportunities are listed in Appendix E
General Comment: Page numbering style is not consistent throughout the different sections of the plan, e.g. Executive Summary, Introduction, Chapter Two and Chapter Three, making it difficult to recognize the different sections as part of a whole document.	--	Ch 3	--	---	The Draft MV Plan shared during this public comment process was not formatted for page numbering or other relared graphics. The Final Plan addresses this issue.
General Comment: The use of periods after bullet points, lists, etc. is inconsistent throughout.	--	Ch 3	--	---	Updated in Final Plan
General Comment: Should be Fort Plain and not "Fort Plains".	--	Ch 3	--	Correct spelling.	Updated in Final Plan
General Comment (related to Ch 2 tourism comment): I feel that natural resource appreciation and promotion of the growth of natural resource-related sectors – other than agricultural lands and forestry – are under represented in this plan. Yet among the goals of the REDC Strategic Plan Strategy 4, Increase Spatial Efficiency, is “leveraging physical and natural assets. From the REDC Strategic Plan, key components of Strategy 4 are: c. Promote use of the region’s natural resources in an environmentally sound manner d. Optimize the character of rural areas and region’s available agricultural lands	--	Ch 3	--	---	The Working Group opted to not create a specific goal for each REDC target industry sector since there are several important industry target sectors in the REDC plan of which tourism is one, rather we created the PROMOTE goal as a new goal that is being considered by REDC and referred to the “unique assets” within it rather than just one or to list them all. Natural assets are also intertwined through other sections such as water and forestry. There is also a specific reference to tourism on page two and we have re-inserted the tactic specific to this under PROMOTE, thank you for pointing this out.
General Comment: Has there been any attempt to calculate the GHG emissions, fuel consumption, costs, etc. associated with all the additional meetings and/or programs suggested as a result of the actions suggested in this Sustainability Plan	--	Ch 3	--	---	Given that the suggested actions (next steps meetings, programs, etc) are future actions, there are many unknown variables (such # of people in attendance, their individual transportation/fuel consumption costs based on distance travelled, meeting location, etc.) related to these future actions that make calculating associated GHG emissions very difficult. The GHG emissions calculated and provided in Appendix D, with data collected for MV, is for 2010.

Appendix B
Mohawk Valley Sustainability Plan
Baseline Assessment

March 2013

Prepared for:

NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY

OTSEGO COUNTY

and

THE MOHAWK VALLEY SUSTAINABILITY PLAN CORSORTIUM

Prepared by:

ECOLOGY AND ENVIRONMENT, INC.
368 Pleasant View Drive
Lancaster, New York 14086

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List of Abbreviations and Acronyms

ACS	American Community Survey
BOA	Brownfield Opportunity Area (program)
CBESC	commercial building energy consumption survey
C&D	construction and demolition
CDP	census-designated population
CFA	consolidated funding application
CGC	Cleaner, Greener Communities (program)
CMP	Coastal Management Program
CNG	compressed natural gas
CNT	Center for Neighborhood Technology
CNYRTA	Central New York Regional Transportation Authority
CO_2e	carbon dioxide equivalent
Consortium	Mohawk Valley Region Consortium
CSA	community-supported agriculture
DEC	Department of Environmental Conservation
DOS	Department of State
E & E	Ecology and Environment, Inc.
EIA	U.S. Energy Information Administration
EDMS	Emission and Dispersion Modeling System
EDWG	economic development working group
EFP	Existing Facilities Program
ERS	Economic Research Service
FC-DSW	Fulton County Department of Solid Waste
FEMA	Federal Emergency Management Agency
GHG	greenhouse gas
GIS	geographic information system
GRP	gross regional product

List of Abbreviations and Acronyms (cont.)

kWh	kilowatt hours
H+T	housing and transportation
HDD	heating degree day
HOCTS	Herkimer/Oneida Counties Transportation Study
ISTEA	Intermodal Surface Transportation and Efficiency Act of 1991
LEED	Leadership in Energy and Environmental Design
LGTE	landfill gas-to-energy
LNG	liquefied natural gas
LSWMP	local solid waste management plan
LWRP	local waterfront revitalization programs
MMBTU	million British thermal units
MMR	mandatory reporting rule
MOSA	Montgomery-Otsego-Schoharie Solid Waste Management Authority
MPO	metropolitan planning organization
MRF	materials recovery facility
MRLC	Multi-resolution Land Characteristics Consortium
MSA	metropolitan statistical area
MSW	municipal solid waste
MT	metric ton
MVEDD	Mohawk Valley Economic Development District
MWh	megawatt hours
NAICS	North American Industry Classification System
NCP	New Construction Program
NEI	National Emissions Inventory
NFIP	National Flood Insurance Program
NYGHG	New York Greenhouse Gas (Protocol Group)
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
NYSEG	New York State Electric & Gas
NYSERDA	New York State Energy Research and Development Authority
OCCA	Otsego County Conservation Association
OHSWA	Oneida-Herkimer Solid Waste Authority
PEP	Project Execution Plan

List of Abbreviations and Acronyms (cont.)

Plan	Sustainability Plan
Planning Team	Otsego County Planning Department, prime contractor and subcontractors for the Mohawk Valley Sustainability Plan
PSC	Public Service Commission
REDC	Regional Economic Development Council
RHRF	recyclables handling and recovery facility
RIBS	rotating integrated basin studies
RPS	renewable energy portfolio
SART	State Agency Resource Team
SEDS	state energy data system
SPDES	State Pollutant Discharge Elimination System
stakeholders	Mohawk Valley Region stakeholders
STEM	science, technology, engineering, and mathematics
SOV	single-occupancy vehicle
TEA-21	Transportation Equity Act for the 21st Century
TMDL	total maximum daily load
USDA	U.S. Department of Agriculture
VMT	vehicle miles traveled
WI/PL	waterbody inventory/priority waterbodies list
WTE	waste-to-energy
WWTP	wastewater treatment plant

1 Introduction

A major goal of the Cleaner, Greener Community (CGC) program is to assess the current status of the region with respect to the sustainable use of resources. "Sustainable" for the purposes of this project is defined as the use of resources so that they will be replenished and available for future generations.

This CGC program is being conducted in parallel with the Regional Economic Development Council (REDC) effort to measure, stimulate, and guide the region towards strong sustainable economic growth.[1] The REDC effort has channeled resources toward projects that meet the economic goals of the region. Governor Cuomo, in his 2011 State of the State address, recognized that environmental sustainability must be included as part of any sustainable economy. The CGC program was developed to focus funding on initiatives and projects that met both the region's and REDC's environmental and economic sustainability goals. The first step in determining how to stimulate environmental sustainability must be the measurement of the existing status (baseline) of the region. The purpose of this document is to summarize the current status of the region.

This baseline assessment first identifies the indicators, or metrics, that were used to measure sustainability, and then presents data that characterize the region. In addition, preliminary targets for the future that measure the region's progress toward developing a vibrant economy that does not exhaust its abundant natural and human resources are introduced. The next step in the CGC program will be to present the implementation strategies that will help transform the Mohawk Valley region to achieve its sustainability future.

The indicators described in this document meet several criteria:

1. **Measurable across the entire region.**
   A useful indicator must represent the entire region. A detailed study of one community, or one area, provides a useful and valuable case study, but it would not be a useful regional indicator. This results in a "lowest common denominator" approach that requires simplifying assumptions, widely available data, and data that are collected routinely as part of other efforts. An example of a robust data source that meets this criterion is the U.S. Census data.

[1] http://regionalcouncils.ny.gov/content/mohawk-valley

2. **Repeatable in the future without a large effort.**
   An indicator must be regularly measured so that progress toward meeting the goals of the CGC program can be assessed. To avoid the burden of collecting new types of data, only existing datasets that are routinely measured and assessed over time were chosen.

3. **Relevance.**
   Many important issues faced by the Mohawk Valley region will not be resolved by the region. Issues like air and water quality standards, disposal of nuclear waste, and development of high speed rail are important to the region but are outside the direct influence of this sustainability planning effort. Indicators that measure such activities were not included.

The New York State Energy and Research Development authority (NYSERDA) provided guidance to the planning team with a series of memos that described required, recommended/common, and additional indicators. The required indicators will allow NYSERDA to collect information from all ten regions of the state to develop state-wide indicators that are calculated identically. The guidance also provides the flexibility for the planning team to select indicators that are specific to the region.

The CGC Consortium and its planning team, which consists of the prime contractor, Ecology and Environment, Inc. (E &E) and three subcontractors (The Genesis Group, the Mohawk Valley Economic Development District, and the Otsego County Conservation Association), organized nine working groups (see Figure 1-1. These groups include technical experts, specialists in each subject area, and interested stakeholders who together have developed the indicators described in the following sections. Seven of the working groups meet separately. Two of the groups (Governance and Climate Adaptation) are composed of technical experts from E & E who collected data from the other seven groups to develop indicators, where appropriate.

The working groups met in October and December of 2012 and also interacted via telephone and e-mail. These two working group meetings set goals and identified the indicators that are described in the following sections. The working group meeting held December 6, 2012, at SUNY Institute of Technology (SUNY IT) included sessions where working group members moved to other groups to compare indicators and goals. Similarities between goals and potential tensions between goals were identified at this day-long workshop meeting. Preliminary indicator targets for 2015, 2025, and 2050 for each of the topic areas were also discussed at this meeting.

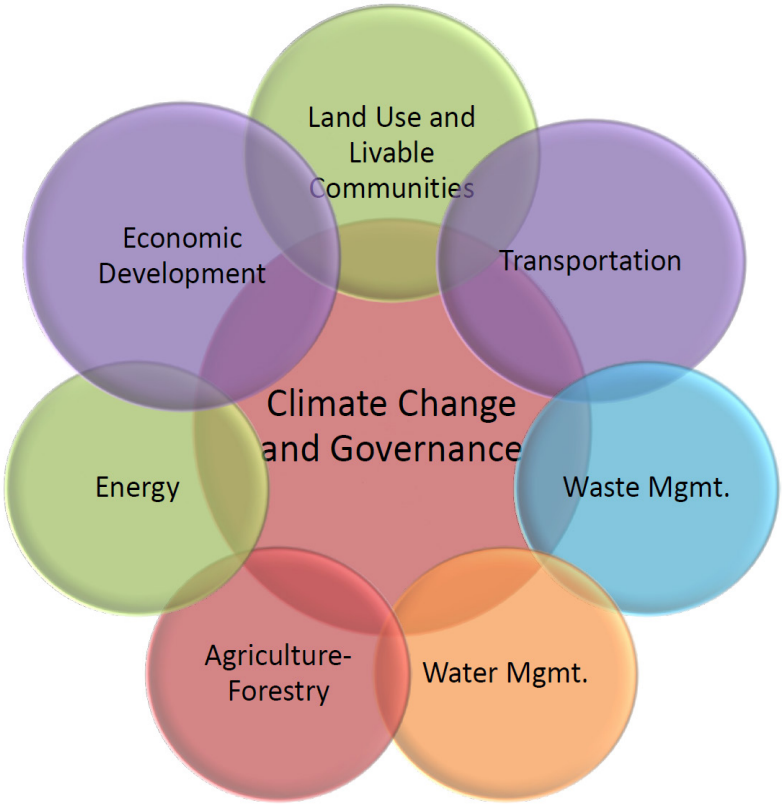

Figure 1-1 Organization of the Working Groups

The remainder of this document is organized according to the various working group focal areas. Each chapter characterizes the Mohawk Valley region from the perspective of each working group subject. The current performance of the region is presented for each indicator followed by future performance - draft targets for the years 2015, 2025 and 2050. Wherever possible, large datasets are compiled into simplifying tables and graphics. The raw data will be available in the appendix to the final sustainability plan.

The greenhouse gas (GHG) emissions inventory template for the region is included in the appendix section. The effort to quantify the GHG emissions has been ongoing and coordinated with the other regions. The GHG inventory deliverable has been presented as a separate document to NYSERDA earlier.

Subsequent to approval of this memorandum by NYSERDA, implementation strategies for each focus area based on the indicators chosen will be prepared.

2 Economic Development

2.1 Introduction

The Mohawk Valley region is both the geographic epicenter of New York State (NYS) and a socioeconomic cross section of demographics and economic conditions. The Mohawk Valley Regional Economic Development Council's Strategic Plan[2] (REDC Plan) and 2012 Action Plan[3] (Action Plan) provide a detailed summary of these conditions and serve as a primary reference for this section.

The Mohawk Valley's population of 500,155 is static, with the third-slowest growth rate in New York State (NYS) between 2000 and 2010. Despite an unemployment rate of 8% in the Utica-Rome metropolitan area alone, which is below the November, 2012 NYS rate of 8.3% and only slightly higher than the national of 7.8%[4], the regional poverty rate in 2011 was 14.4%, higher than the 2011 NYS rate of 13.8%. Median household income in 2011 for the region was $44,366, lower than the national median ($51,425) and the state median ($55,233). However, the cost of living and affordability of the region would have to be considered before any definitive conclusions or comparisons can be drawn. The unemployment statistics suggest that a diverse economic base exists that is not deeply impacted by national economic peaks and downturns. However, the wage and poverty rates indicate that many of the existing jobs are at a lower wage scale, indicating the need for higher levels of training to improve access to living-wage job opportunities.

Health care and social assistance is the highest employment sector, with 40,062 jobs, followed by educational services. Educational services provide 23,122 local jobs and $899 million in local wages at an average annual wage of $38,908, ranking seventh in the region.[5] The region hosts six State University of New York (SUNY) campuses with an enrollment of more than 25,000 and several thousand more students in six private colleges. The median age of the region is 40.9 years; the state median age is 37.7 years.

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2 Mohawk Valley Regional Economic Development Council's Strategic Plan. November 2011. http://regionalcouncils.ny.gov/themes/nyopenrc/rc-files/mohawkvalley/MVREDCStrategicPlanFinal11142011.pdf

3 Mohawk Valley Regional Economic Development Council. 2012 Action Plan.

4 U.S. Department of Labor. January 4, 2013.

5 NYS Department of Labor. 2011 (see the Mohawk Valley REDC 2011 Plan).

Target 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

The economic development goals for the Mohawk Valley Regional Sustainability Plan (Plan) are a combination of the goals in the existing REDC Plan and Progress Report goals, and additions and adjustments made by the economic development working group (EDWG). The strategies included below are preliminary and will be developed further for the implementation strategy.

Goal #1: GROW Business: Enhance regional connections to retain and create business in key growth sectors with high growth potential.

- Educate the public on the need for growth to achieve long-term economic resilience that is not subject to boom/bust 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 region.

- Consider life-cycle costs and benefits of economic growth rather than short-term gain.

Goal #2: BUILD Workforce: Increase the supply of skilled workers by providing education and training that is aligned with existing and future market needs.

- Attract new residents and business to the area to increase the population.

- Provide training for new workers needed in agriculture and forestry production to grow and sustain this sector.

- Create local solutions and systems to avoid the fragility and risk created by outside influence and markets.

Goal #3: CREATE Pathways to Innovation: Create innovation-enabling infrastructure that will drive entrepreneurialism.

- Educate the public both children and adults about the positive regional economic aspects of the forestry industry.
- Invest in maintaining existing public infrastructure required for economic development.
- Create pathways and opportunities for regional wealth retention through energy conservation (import substitution model for economic growth).
- Grow businesses for recycled goods.

Goal #4: REVIVE Infrastructure: Increase spatial efficiencies that will revitalize existing urban and town centers.

- 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).
- Improve bottom line for businesses and municipalities through waste reduction and energy conservation; use waste and energy audits.

Goal #5: FORGE Partnerships: Strengthen government and civic effectiveness to produce a more vibrant economy.

- Create partnerships between industries such as agriculture and food processing in order to develop centralized and shared systems that improve economies of scale.
- Encourage smart growth and transportation planning at the local level.
- Create public/private partnerships that create jobs.
- Instill a public ethos of conservation, efficiency, and local energy independence.
- Expand existing, effective local recycling programs in the region.

Goal #6: PROMOTE Regional Assets: Promote unique regional assets through a unified identity and campaign.

- Educate the public on the multiple benefits of local food production and consumption.

- Create public campaigns to change the stigma associated with public transit and improve the rider experience to expand public transit use; create more options for walking, biking, and carpooling to work.

- Undertake multi-use trail development to create a more complete trail network.

- Encourage telecommuting as a viable option for many in today's economy (and provide necessary broadband infrastructure to support it).

- Expand the use of local renewable energy sources.

2.2 Economic Development Sustainability Indicators

The following economic development indicators add value to the region's planning efforts and serve as a sustainability-oriented supplement to the existing REDC economic indicators and data being collected. Also considered in the selection was the ongoing availability of data and relevance to priority regional issues and the ability to collect the data within the timeframe and scope of this project.

The two indicators chosen for tracking economic development are as follows:

- Housing + Transportation Index: Transportation / Housing Affordability (NYSERDA-Required Indicator 6A), developed by the Center for Neighborhood Technology (CNT)[6]

- Relationship of Wages to Changes in Employment

2.2.1 Housing and Transportation Index

This indicator provides information about the true affordability of housing by including the transportation costs associated with a home's location. The H+T Affordability Index uses American Community Survey (ACS)[7] data and adds to this the impact of transportation costs on household income. ACS 2009 data used in the index methodology only considers standard housing costs of principle, interest, taxes, and insurance. Most lenders have traditionally recommended that housing costs should not exceed 28% of total monthly income while all debt should not exceed 36% of total monthly income.[8] Costs such as transportation, utilities, medical premiums, food and other household expenditures are traditionally considered to be part of the other 64% of household income.

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[6] http://htaindex.cnt.org/about.php

[7] "Fully Utilizing Housing Cost Data in the American Community Survey PUMS Data: Identifying Issues and Proposing Solutions." Keith E. Wardrip and Danilo Pelletiere. National Low Income Housing Coalition. City Scape: A Journal of Policy Development and Research, Volume 10, No. 2, 2008.

[8] Modern Real Estate Practice. Filmore W. Galaty, Wellington J. Allaway, and Robert C. Kyle. Dearborn Real Estate Education. 2010.

The H+T Index segregates and looks specifically at the full cost of transportation, which often varies based on housing location and access to transit. It is modeled as three components of transportation behavior— auto ownership, auto use, and transit use—which are combined to estimate the cost of transportation. The H+T Index includes two measures of transit access, the Transit Connectivity Index and the Transit Access Shed. Data used in the construction of these indices are a compilation of publicly available General Transit Feed Specification (GTFS) data as well as GTFS data provided to CNT by transit agencies and GTFS data created by CNT.[9]

Based on research in metropolitan areas, ranging from large cities with extensive transit to small metropolitan areas with extremely limited transit options, CNT has found 15% of income to be an attainable goal for transportation affordability. The H+T Index provides a new view of affordability by combining CNT's recommended 15% transportation affordability goal with its 30% housing affordability standard for a combined H+T recommended total of 45% or less of household income.

2.2.1.1 Baseline Status of Indicator

The H+T Index average for the Mohawk Valley Region is 53% (see Figure 2-1). The region ranges from a low of 50% in Oneida County to a high of 57% in Otsego County (summarized for all counties in Figure 2-1). Housing costs are constant across the region at an average of 20%, which is well below the national standard for financing threshold of 28%.

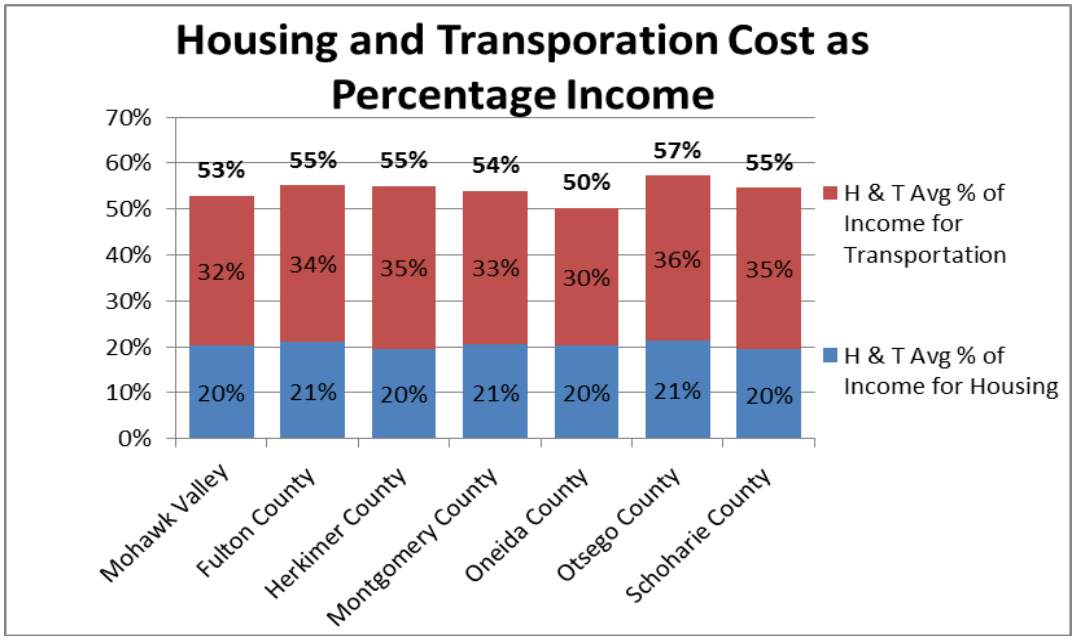


Figure 2-1 Housing and Transportation Costs in the Mohawk Valley Region

[9] http://htaindex.cnt.org/about.php

However, transportation costs are nearly twice the CNT-recommended goal of 15%. This is likely due to the lack of transit options and the rural and less dense land use patterns. Transportation and related land use patterns are clearly the place to focus strategies to reduce the H+T affordability index for this region.

Figure 2-2 further details the H+T Affordability Index by county. Based on this summary, Schoharie County is the only county with its households below 60% of its income being spent on housing and transportation costs. Of this, 30% of households are below the 45% CNT H+T recommended goal, whereas more than 90% of Otsego County and Montgomery County households are spending more than 50% of their income on H+T costs. In future tracking of this indicator, it would be useful to understand the demographic profile, commuting patterns ,and location of those households in the less than 45% (red and blue) and more than 50% (purple and light blue) ranges to compare and develop strategies that address the high transportation costs that are prominent in most of this region.

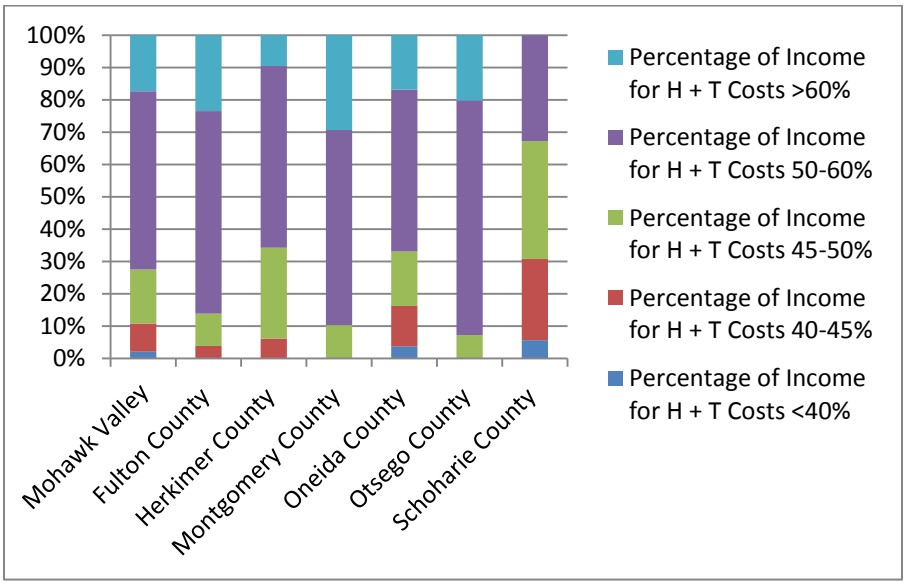


Figure 2-2 H+T Affordability Index by Percentage County Households

To further understand the implications and limitations of the H+T Index and its methodology, Figure 2-3, compiled by the Center for Housing Policy and the Center for Neighborhood Technology for U.S. Metropolitan Statistical Areas (MSA),[10] shows housing (dark blue) and transportation (light blue) costs as a share of income for families earning between 50% and 100% of the median income in their city.

For example, housing costs in Washington D.C., San Francisco, Boston, and Greater New York City are commonly considered among the highest in the na-

[10] "Where the Middle Class Spends 75 Percent of Its Income on Housing and Transport." Dereck Thompson, Atlantic Cities – Place Matters. November 29, 2012.

tion. However, the H+T does not reflect this because it is based on cost related to income. These regions also have ample transit options that, along with high incomes, result in an H+T Affordability Index at the lower end of the scale for this segment of households located in these metropolitan regions. This example illustrates the need to ensure that future tracking of the H+T Affordability Index indicator for the Mohawk Valley region should take into consideration any rise in household income and rise in housing values that may skew the actual reduction in transportation costs and impacts that are achieved.

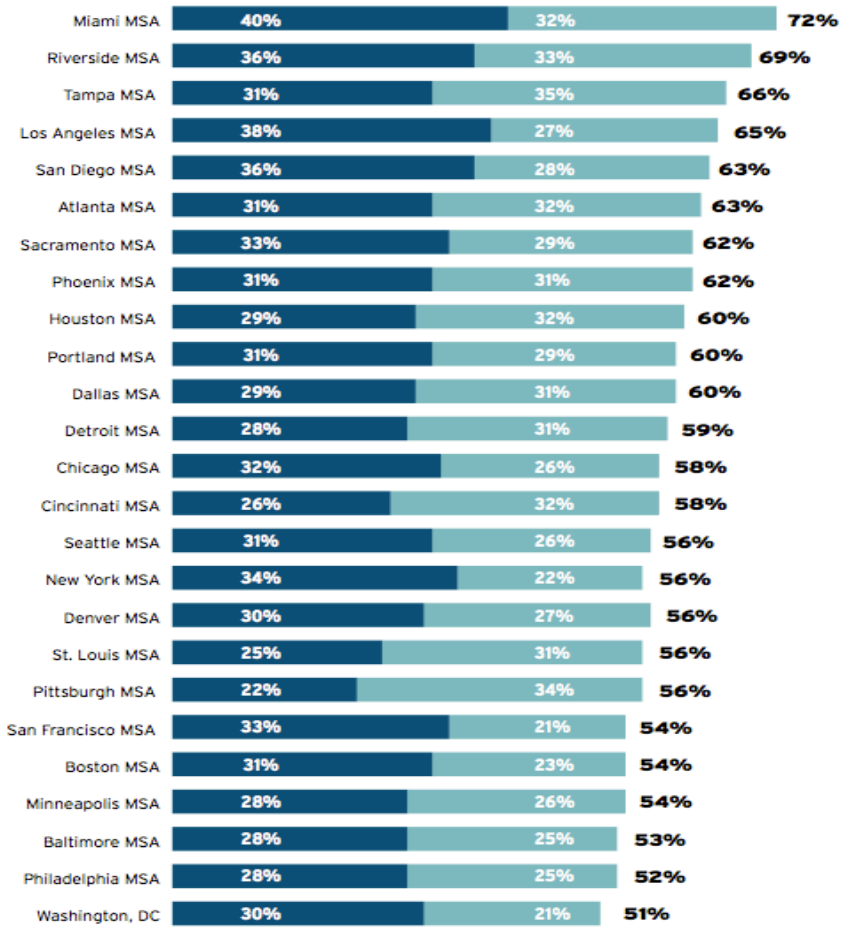


Figure 2-3 Housing and Transportation Costs as Percentage of Income
Source: "Where the Middle Class Spends 75 Percent of Its Income on Housing and Transport." Dereck Thompson, Atlantic Cities – Place Matters. November 29, 2012.

Current national trends (depicted in Figure 2-4) below illustrate that income levels are not keeping pace with increasing housing and transportation costs.[11] If these trends continue, and the Mohawk Valley is able to develop strategies to reduce transportation costs, the resulting low cost of living could be seen as a significant business or resident recruitment strategy.

[11] "Where the Middle Class Spends 75 Percent of Its Income on Housing and Transport." Dereck Thompson, Atlantic Cities – Place Matters. November 29, 2012.

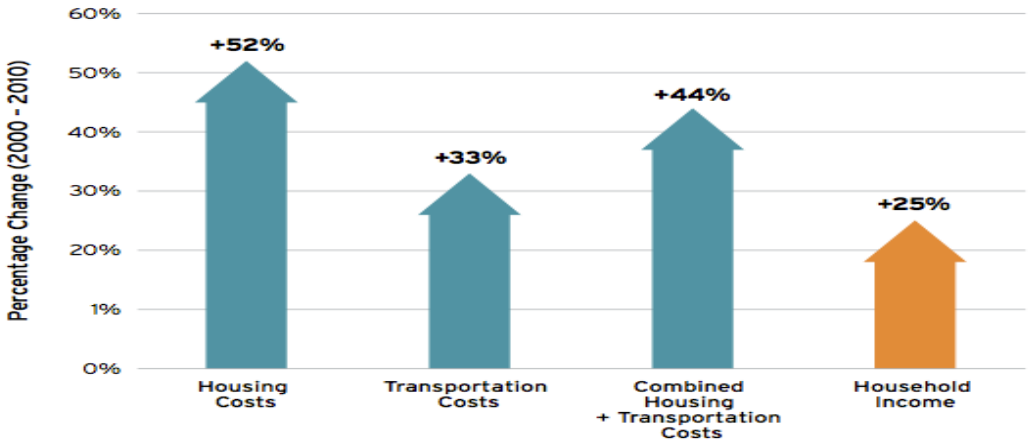


Figure 2-4 Rising Housing and Transportation Costs vs. Incomes for Median-Income Household in the Largest 25 Metropolitan Areas *(Costs and income are not adjusted for inflation.)*

2.2.1.2 Future Status of Indicator: Targets

Based on the current standards and expected trends, Mohawk Valley has established the targets below for the H+T indicator.

- **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%, which would be 2% below CNT current recommended standards that use the ACS 2009 base year. This could be done by maintaining current housing affordability and focusing on reduced transportation costs.

- **2050:** Reduce the H+T Affordability Index by 15% to 38% (7% below the CNT recommended H+T Index of 45% , using the 2009 ACS base year). This would be a stretch target attainable through both regional transportation cost reductions along with implementation of new national standards. The new national standards will cover cars and light trucks for model years 2017-2025, requiring performance equivalent to 54.5 miles per gallon in 2025 while reducing greenhouse gas emissions to 163 grams per mile.[12] This target reduction also assumes a minimal increase in housing costs, which may be difficult (and not optimal for current owners) as the economy and transportation options improve.

All targets should be adjusted for inflation.

2.2.2 Relationship of Wages to Changes in Employment

This indicator correlates changes in the number of regional jobs to the level of wages being provided. For example, if employment is increasing but wages are

[12] http://www.whitehouse.gov/blog/2011/07/29/president-obama-announces-new-fuel-economy-standards

stagnant, this may be a signal that the types and quality of employment opportunities being created are not enhancing the overall standard of living. This indicator is directly related to goal 3 - Build, which focuses on the need for a trained workforce that, in turn, 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 data and analysis provided is done at the secondary and tertiary sector definition levels using the North American Industry Classification System (NAICS) from U.S. Labor and Wage Data.[13] It looks at percentage change in weekly wages and employment by NAICS sector annually. The regional target sectors listed above in Section 2.1 do not always align with the NAICS sectors; therefore, comparisons are only made with the regional targets when the data is readily available.

2.2.2.1 Baseline Status of Indicator

Figure 2-5 and Figure 2-6 below provide a graphical overview of the Mohawk Valley workforce per sector and the average wage distribution. The most notable deviation between percent of workforce comparison to wage distribution is with the retail trade and the accommodation and food service sectors, each with 4% lower portion of wages than jobs. This is most likely due to the seasonal/part-time, entry level and lower skills required for these types of jobs.

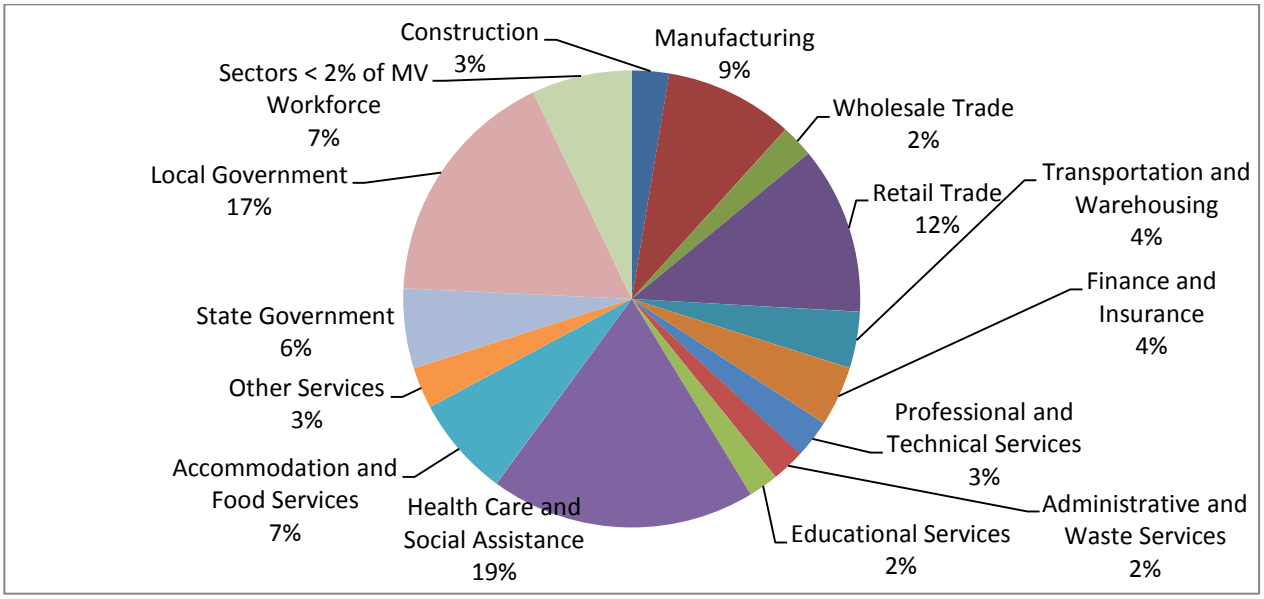


Figure 2-5 Mohawk Valley Workforce per Sector

[13] U.S. Department of Labor - http://www.bls.gov/bls/naics.htm

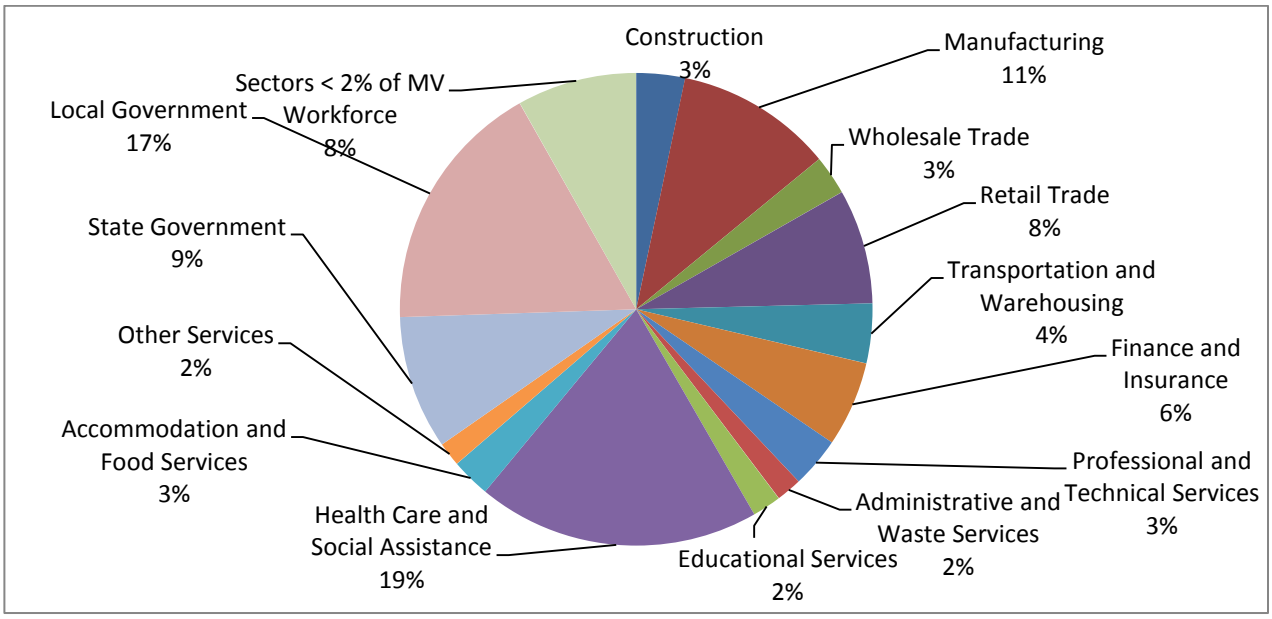


Figure 2-6 Mohawk Valley Workforce Wage Distribution

To gain a more detailed understanding of the regional job and wage trends, Table 2-1 provides a summary of percent change in wages from 2010 to 2011 for the state, the Mohawk Valley, and REDC target sectors. It shows that while the job growth has occurred in the Mohawk Valley at a pace in line with the state, it has not resulted in overall wage growth for the Mohawk Valley. However, the Mohawk Valley 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.

Table 2-1 Percentage Job Change vs. Change in Average Wages

	2010 - 2011 % Change Jobs	2010 - 2011 % Change Avg. Wage
New York State	**2%**	**1%**
Mohawk Valley Region	**2%**	**-1%**
Mohawk Valley Focus Areas		
Agriculture and Food Processing	1%	2%
Financial Services	5%	7%
Insurance	3%	3%
Tourism	2%	1%
Health Care	1%	2%
Cyber Security/Information Technology (IT)	-2%	-3%
Semiconductors/Nanotechnology	NA	NA
Clean Technology	NA	NA
Advanced Manufacturing	7%	5%
Distribution	2%	3%

Table 2-2 below presents the highest/lowest salaried industries and job sectors in the Mohawk Valley region based on the NAICS definitions. It is interesting to note that two REDC target sectors identified (finance and insurance) are in the highest salary job sectors. Telecommunications may also encompass other regional targets; however, a more detailed breakout was not available. Related industries and jobs (food services and drinking places; scenic and sightseeing transportation) in the agriculture and tourism regional target sectors are within the lowest paying in the region.

Table 2-2 Highest/Lowest Salary Industries and Job Sectors in the Mohawk Valley Region

NAICS Code	Industries	Avg. Salary	% of Work force
5 Highest Salaried Industries			
523	Securities and Commodity Contracts	$99,872	0.18%
221	Utilities	$84,820	0.36%
517	Tele-communications	$70,955	0.45%
237	Heavy and Civil Engineering Construction	$63,368	0.49%
952	State Government	$57,952	5.65%
5 Lowest Salaried Industries			
512	Motion Picture Sound Recording Industry	$8,021	3.06%
722	Food Services and Drinking Places	$12,737	6.31%
448	Clothing and Clothing Accessories Stores	$13,923	0.59%
451	Sporting Goods Hobby Book Music Stores	$15,558	0.35%
487	Scenic & Sightseeing Transportation	$16,284	0.01%
5 Highest Salary Job Sectors			
22	Utilities	$84,820	0.36%
55	Management of Companies and Enterprises	$57,821	0.70%
52	Finance and Insurance	$49,181	4.24%
54	Professional and Technical Services	$45,836	2.71%
21	Mining	$45,670	0.17%
5 Lowest Salary Job Sectors			
72	Accommodation and Food Services	$13,423	7.10%
71	Arts, Entertainment, and Recreation	$18,630	1.36%
81	Other Services	$20,247	2.91%
11	Agriculture, Forestry, Fishing Hunting	$22,424	0.34%
99	Unclassified	$22,648	0.08%

Figure 2-7 below illustrates the decline or stagnation trend of five key sectors in the Mohawk Valley. While finance and insurance dipped in 2009-2010, it also shows, along with the data in Table 2-1, a slight rebound from 2010 to 2011, which is positive for the region because this sector pays higher wages. Overall the impact of the recent recession seems to be leveling in 2011. Future indicator tracking that uses data from 2012 will show a better picture of whether the region is now experiencing a recovery and potential growth.

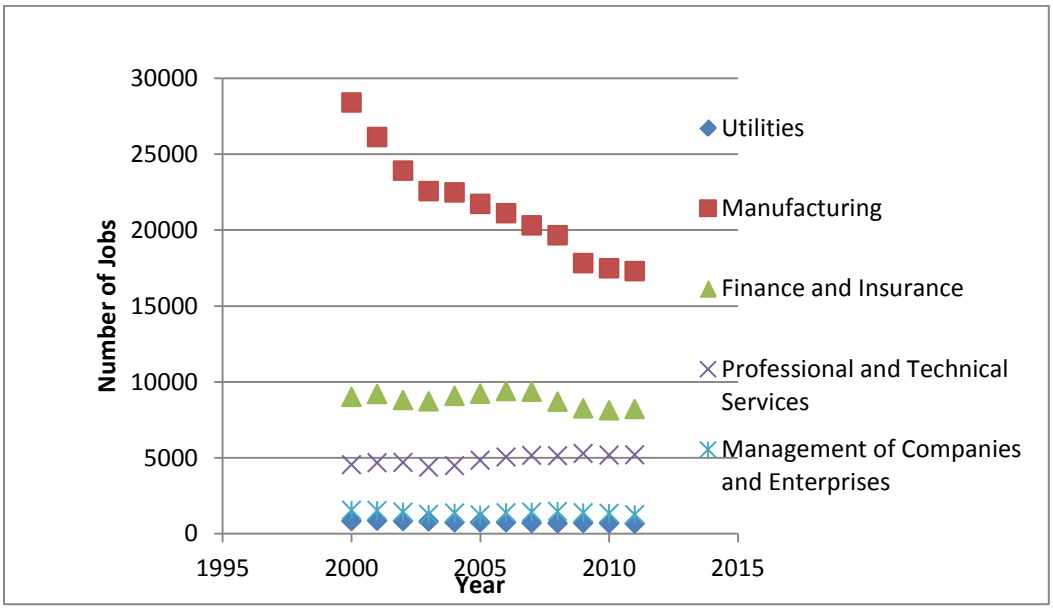


Figure 2-7 Jobs per Sector in Mohawk Valley

Figure 2-8 illustrates the average wage in the sectors that contribute to more than 5% of the region's workforce. While the general trend in the region shows an increase in salaries over a time period that may be softening the impact of inflation, it is important to note the significantly lower wages (as also seen in Table 2-2 above) for accommodation and food services, which are often associated with tourism, a target sector. Unfortunately, these services, along with retail wages, show a stagnant wage trend.

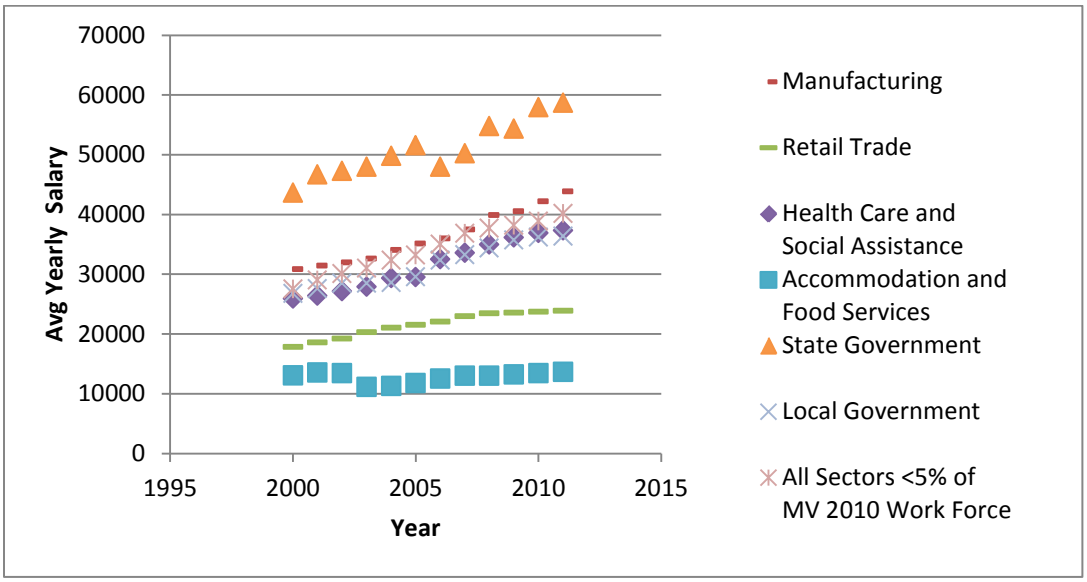


Figure 2-8 Average Wage Per Sector in Mohawk Valley

2.2.2.2 Future Status of Indicator: Targets

Based on the current standards and expected trends, Mohawk Valley has established the following targets for wages and employment:

- **2015**: No further loss of jobs or wage levels based on the regional average and 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 in 2050.

All targets assume an adjustment for inflation.

2.3 Summary

While the Mohawk Valley has seen significant job losses in the past with the decline of manufacturing, the very limited economic snapshot provided here indicates that this trend seems to be leveling out. This, along with the economic resiliency that was apparent during the most recent recession, present reasons for optimism about the Mohawk Valley's economic future. The multitude of higher education and job training opportunities that exist in the region, highway access to major metropolitan centers, and the low cost of housing further positions the region for future growth. Additionally, the reuse and maintenance of existing infrastructure and revitalization of town centers has been supported by most of those who have been involved in this planning process to-date. This potential for "smart" growth and investment requires local leadership and policies regarding future land use patterns and transportation networks to fully leverage the potential. Smart investment in existing infrastructure and development also requires planning and designing for the impacts of storms and rising water levels on infrastructure and towns located near waterways. Additionally, the target industry sectors of agriculture and forestry need to plan for the potential impacts on crops and natural bio-systems created by rising temperatures, increases in droughts and invasive species and pests that are predicted in NYSERDA's ClimAID report.[14]

[14] "Responding to Climate Change in New York State – Synthesis Report." Columbia University, The City University of New York, Cornell University, et al. with support from the New York State Energy Research and Development Authority. 2011. http://www.nyserda.ny.gov/~/media/Files/Publications/Research/Environmental/EMEP/climaid/responding-to-climate-change-synthesis.ashx

These topics are discussed further in the following chapters on transportation, land use, water management, and agriculture and forestry. The topics of energy and materials management that follow are also closely associated with economic development in that any efforts to improve operating efficiencies, reduce waste and provide local sources that support local business present economic opportunity for the region through the multiplier impacts of retaining more local dollars. Finally, the significant natural capital of the region should be fully valued in future decision making. The region's impressive waterways and open spaces are major attractions for tourists, entrepreneurs, and residents.

3 Transportation

3.1 Introduction

The Mohawk Valley region's multi-modal transportation network (major highways, railroads, waterways, and a regional airport) serves both the economic and recreational needs of residents and businesses and provides many opportunities for the region (Figure 3-1).

Roads/Highways

The Mohawk Valley Region is located in the center of New York State and is served by several major highways. Routes 5 and 5S are the primary regional connectors, and Routes 12 and 12B are used as additional connectors for commuters. 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. U.S. 20 serves as another through traffic route. I-88 serves the southern portion of the region.

Rail

Passenger rail service is available in the region through Amtrak. The Empire Service route travels between Niagara Falls and Albany and stops in Amsterdam, Utica, and Rome. Service and infrastructure is limited and priority is given to freight traffic.

Air

The Griffiss International Airport serves as the regional airport. Charter service is available, but residents must travel to Syracuse or Albany for commercial passenger service. Small public use airports that lack scheduled passenger service exist throughout the region.

Public Transit

Public transit availability varies across the Mohawk Valley. The Central New York Regional Transportation Authority (CNYRTA) was created in 1970 by the governor and legislature of New York State to provide transit service in Onondaga County. The service area was expanded by Centro, a CNYRTA company, several times and now includes Cayuga, Oneida, and Oswego counties in addition to the original area in metropolitan Syracuse. Several smaller private and municipal operators provide limited service in other communities throughout the region.

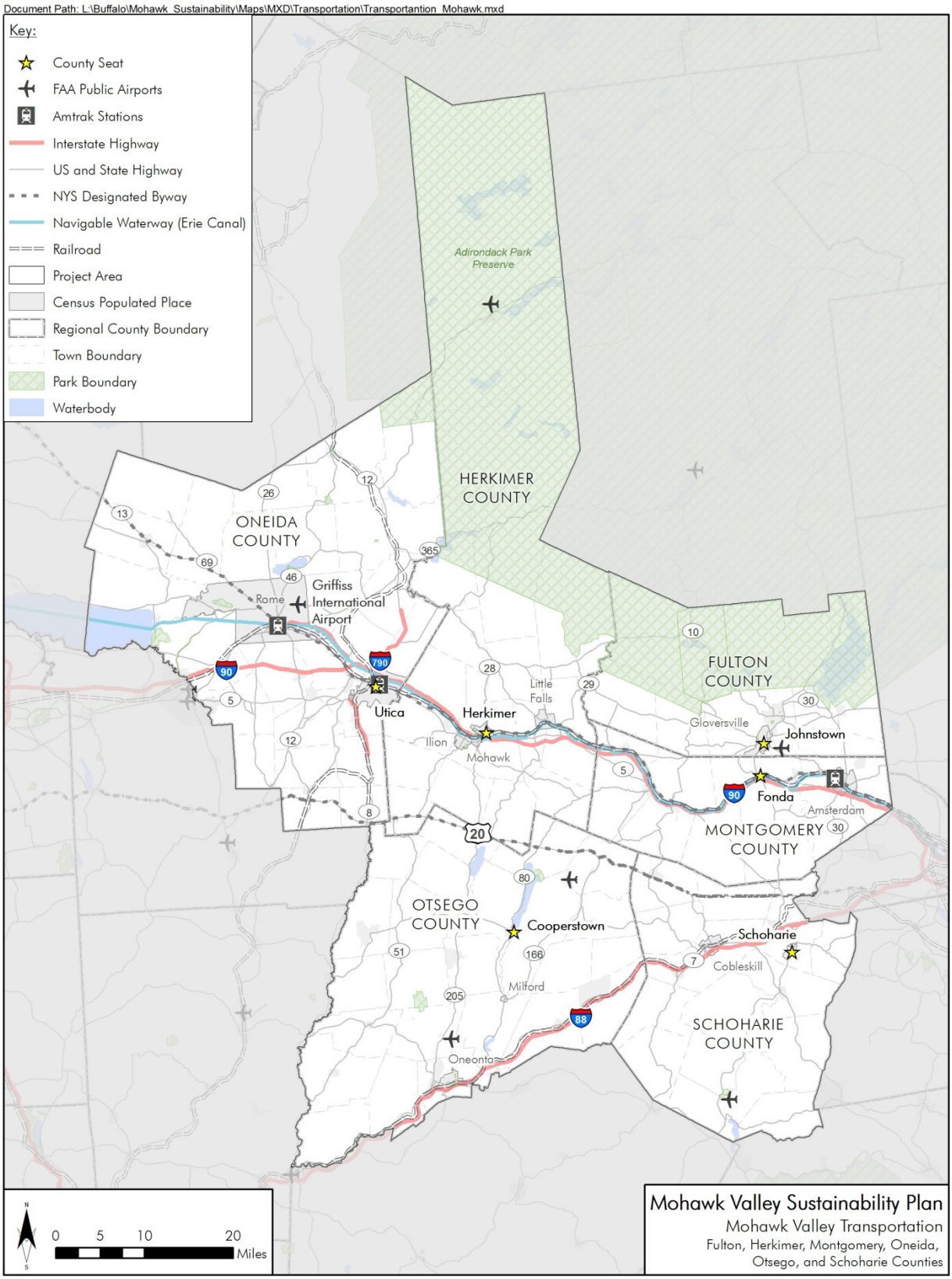


Figure 3-1 Map of Mohawk Valley Region's Key Transportation Features

Water
The Erie Canal runs across the state and provides both freight and recreational transportation opportunities.

Multi-Modal Recreational Trails
The region contains a large number of hiking, bicycling, snowmobiling, and horseback riding trails, but many of these trails are not connected.

As part of the planning process, five goals were developed to help the region develop a more efficient transportation system that serves residents and supports the communities.

Goal #1 Align Transportation and Land Use Planning and Investment
Plan and implement transportation infrastructure projects in line with regional smart growth and land use plans. Prioritize the preservation of aging infrastructure on main routes and in town centers.

- Plan new transportation infrastructure to support existing development and limit sprawl

- Consider traffic volume, lifecycle, and maintenance costs when prioritizing transportation infrastructure projects.

Goal #2 Improve efficiency in maintenance of transportation infrastructure

- Provide training and tools 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, LED street lights.

Goal #3 Improve and connect regional multi-use trails
Improve trails and supporting infrastructure for walking, bicycling, horseback riding and snowmobiles and increase connectivity between trails and to community centers without overburdening maintenance budgets.

Goal #4 Increase Public Transportation Ridership
Increase ridership on all forms of public transit through improved services and incentives.

- Promote public transit by expanding service and scheduling and providing incentives to commuters.

- Develop flexible and appropriate services for transportation disadvantaged populations in rural areas.

Goal #5: Promote Transportation Alternatives

- Improve reliability and scheduling of existing passenger rail service and support development of high-speed rail

- Promote use of Erie Canal for transportation of agricultural products and other local products

- Develop infrastructure for ridesharing, bicycling, and alternative fuel vehicles including hybrid, electric, compressed natural gas (CNG), biodiesel, etc.

A set of indicators were also developed to measure the region's progress towards sustainability and achieving the five transportation goals. Indicators were chosen based on data that is currently available region wide and may be easily replicated for future analysis.

3.2 Transportation Sustainability Indicators

3.2.1 Total Percentage of People Commuting via Walking, Biking, Public Transportation, and Carpooling

3.2.1.1 Baseline Status of Indicator

This indicator measures the percentage of commuters age 16 years and older who typically use commuting modes other than single occupancy vehicles. Increasing use of these alternative modes corresponds to lower GHG emissions from fewer vehicle miles traveled. Alternatives include walking, bicycling, public transportation, and carpooling. This indicator, which is required by NYSERDA, provides information about access to alternative modes of transportation and indicates progress toward Goal 1 - Align Transportation and Land Use Planning, and Goal 3 - Develop Regional Multi-ModeTrail Network. Table 3-1 lists the percentage of the population in the six counties that make up the Mohawk Valley region that use alternative modes of transportation to get to work. Figure 3-2 shows the use of alternative modes of transportation in relation to the population that drives alone.

Table 3-1 Commuting to Work in the Mohawk Valley Region

	Mohawk Valley Region	Herkimer County	Montgomery County	Otsego County	Schoharie County	Oneida County	Fulton County
Carpool	9.28%	8.38%	11.07%	11.19%	8.85%	8.16%	11.32%
Public Transportation*	1.04%	0.34%	0.86%	2.18%	1.24%	1.10%	0.27%
Bicycle	0.21%	0.18%	0.01%	0.29%	0.34%	0.25%	0.05%
Walked	4.14%	4.24%	3.45%	9.16%	4.46%	3.14%	2.66%
Total of all modes	**14.67%**	**13.14%**	**15.39%**	**22.81%**	**14.89%**	**12.65%**	**14.3%**

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

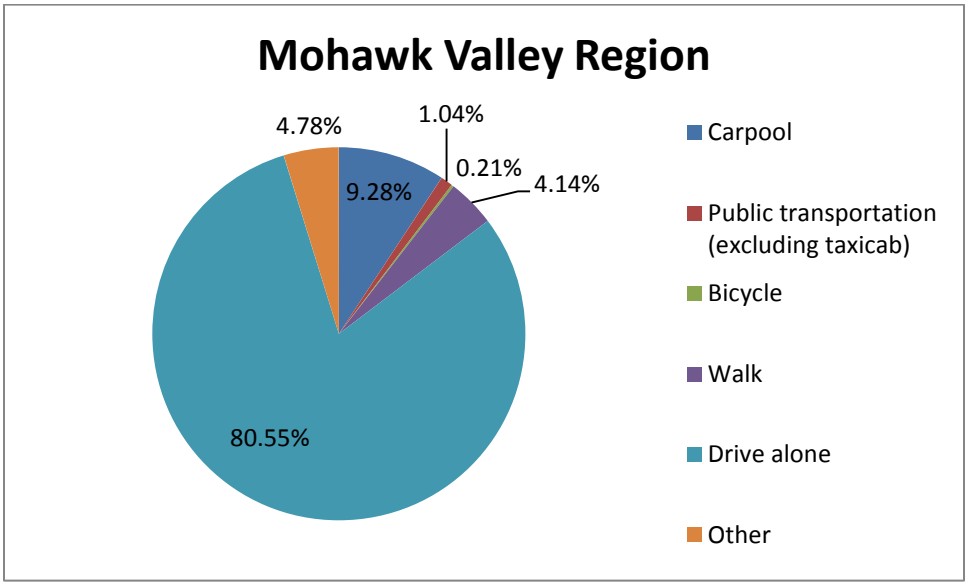


Figure 3-2 Commute to Work by Mode

3.2.1.2 Future Status of Indicator: Draft Targets

Targets for this indicator are included to initiate a discussion and should be considered preliminary. The final targets will 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.

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

3.2.2 Vehicle Miles Traveled per Capita

3.3.2.1 Baseline Status of Indicator

This indicator measures the total number of miles traveled in the region travel on a annual basis, per resident. Another required indicator by NYSERDA, this provides information about automobile usage in the region and indicates progress toward Goal 2 - Improve Resource Coordination and Goal 4- Increase Public Transportation Ridership.

Table 3-2 Number of Vehicle Miles Traveled per Capita in the Mohawk Valley Region (2009)

County	Annual VMT Per Capita (2009)
Fulton County	7,590
Herkimer County	11,415
Montgomery County	15,340
Oneida County	9,099
Otsego County	11,025

Table 3-2 Number of Vehicle Miles Traveled per Capita in the Mohawk Valley Region (2009)

County	Annual VMT Per Capita (2009)
Schoharie County	18,985
Mohawk Valley Region	10,743

Sources: NYSDOT 2009 data; US Census.

3.2.2.2 Future Status of Indicator: Draft Targets

Targets for this indicator are included to initiate a discussion and should be considered preliminary. The final targets will consider likely changes in population and development patterns and. This indicator is tied to 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.

- **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)

3.2.3 Number of Registered Alternative-Fuel Vehicles

3.2.3.1 Baseline Status of Indicator

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 (see Table 3-3). Measuring this provides information about the region's overall fuel efficiency and indicates progress toward increasing alternative fuel vehicles under Goal 5: Promote Transportation Alternatives.

Table 3-3 Number of Registered Alternative-Fuel Vehicles by County

County	Number of Registered Alternative Fuel Vehicles
Fulton County	250
Herkimer County	226
Montgomery County	262
Oneida County	1,265
Otsego County	455
Schoharie County	192
Mohawk Valley Region	2,651

Sources: NYS Department of Motor Vehicles

3.2.3.2 Future Status of Indicator: Draft Targets

Targets for this indicator are included to initiate a discussion and should be considered preliminary. The final targets will consider current and future infrastructure to support alternative fuel vehicles and the appropriateness of different types of vehicle as it relates to the rural nature of the region. This indicator will be influenced significantly by the automobile market and changes in vehicle technology and costs.

The targets are intended to refer to vehicles that would fall under the categories of Hybrid, Electric, CNG, Propane, and Other in Table 3-4. While Gas conversion and Flex Fuel vehicles are capable of running primarily on fuels other than gasoline, only the four categories included will be known to rely entirely or significantly on fuel sources associated with relatively lower GHG emissions than gasoline and diesel (petroleum).

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

3.2.4 Transit Ridership

3.2.4.1 Baseline Status of Indicator

This indicator measures the total number of one-way passenger trips on transit services provided to the public (see Table 3-4). This indicator provides information about the level of mass transit use in the region and indicates progress toward achieving Goal 4: Increase Public Transportation Ridership.

Table 3-4 Number of One-way Transit Trips by Provider

Operator	2011 Total Passengers	2011 Total Vehicle Miles
Birnie Bus Service (Herkimer County)	41,467	120,942
Birnie Bus Service (Oneida County)	43,388	172,239
Birnie Bus Service (Oneida County Rural Transit)	22,341	242,719
Brown Coach / I. Persch (Fulton County Commuter Route)	6,082	52,341
Brown Coach / I. Persch (Montgomery County Paratransit)	22,362	94,792
Brown Coach / I. Persch (Montgomery County CommuterRoute)	7,719	65,203
Centro of Oneida, Inc.	1,334,153	4,551,584
City of Gloversville Transit System	64,954	181,695
Oneonta Public Transit	713,821	410,658
Otsego Express (Birnie Bus)	87,832	453,395
Otsego Express (Cooperstown Trolley)	25,533	21,472
Schoharie County Office of Aging	128,727	398,542
Total Mohawk Valley Region	**2,498,379**	**6,765,582**

Sources:
Formula Bus Systems - 2011 STOA Statistics: https://www.dot.ny.gov/divisions/policy-and-strategy/darb/dai-unit/ttss
Annual Transit Profiles, 2011 National Transit Database: http://www.ntdprogram.gov/ntdprogram/data.htm

3.2.4.2 Future Status of Indicator: Draft Targets

Targets for this indicator are included to initiate a discussion and should be considered preliminary. The final targets will 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.

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

3.2.5 Regional Trail Network – Miles of Trails within the Region

3.2.5.1 Baseline Status of Indicator

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 3 - Develop Regional Multi-mode Trail Networks.

Table 3-5 Recreational Trails by County (Miles)

		Miles of Trails Accessible by Mode				
All Trails* (Miles)		Foot	Bicycling	Cross-country Skiing	Snow-mobiling	Equestrian
Fulton	107.36	107.36	43.34	93.29	77.09	27.78
Herkimer	321.21	298.15	238.28	288.05	161.92	66.27
Montgomery	76.16	7.00	47.24	29.64	8.35	n/a
Oneida	211.69	182.18	207.37	182.58	72.66	105.33
Otsego	40.77	28.61	13.01	36.32	15.44	n/a
Schoharie	100.86	28.87	10.13	16.82	73.21	n/a
Mohawk Valley Region	**858.04**	**652.17**	**559.37**	**646.70**	**408.67**	**199.38**

* Includes State Parks and NYSDEC-managed trails within the region. Trails may accommodate multiple modes

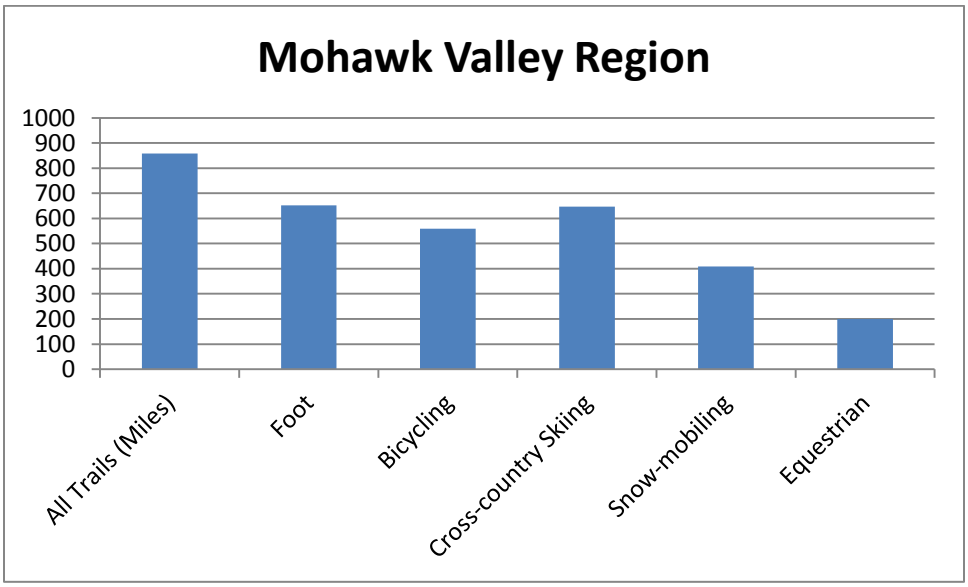


Figure 3-3 Total Recreational Trail Miles by Type

3.2.5.2 Future Status of Indicator: Draft Targets

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.

- **2015:** Formulate a regional strategy to connect trails into a network
- **2025:** Increase current total by 5%
- **2050:** Increase current total by 15%

3.3.6: 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, fuel efficiency, and less wear and tear on vehicles.

Table 3-7 Average Surface Ratings for State Roads

County	Rated Lane Miles	Average Condition	Percent Poor (<6)
Fulton	285	6.29	10.0%
Herkimer	523	6.63	8.5%
Montgomery	388	6.61	4.9%
Oneida	1074	7.00	2.7%
Otsego	683	6.69	8.7%
Schoharie	466	6.76	10.2%
Mohawk Valley	3419	6.75	6.7%

Rating	Condition/Description
9-10	Excellent - No surface distress
7-8	Good - Surface distress beginning to show
6	Fair - Surface distress is clearly visible
1-5	Poor - Distress is frequent and severe

Source: NYSDOT State Highway Surface Rating 2011

3.3.6.1 Future Status of Indicator: Draft Targets

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.

- **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**

3.3 Summary

Seeing improvement in the transportation indicators will require the region to consider careful land use planning, investing in the appropriate infrastructure, and promoting alternatives through education and incentives.

Commuting via Walking, Bicycling, Carpooling, and Public Transit

Single occupancy vehicles (SOV) are by far the most common mode for commuting. Many people use this mode largely for the convenience. Influencing people to switch to alternative modes will require increasing the convenience of the alternative (e.g., adding bicycle lanes more frequent buses) and improving their economic appeal through education and financial incentives. Rising gasoline pric-

es will also provide an incentive for people to switch to alternative modes of transportation.

Vehicle Miles Traveled

The Mohawk Valley is largely a rural region and so multiple approaches to reducing VMTs are needed along with reducing the use of 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.[15] Controlling the level of sprawl is vital to maintaining and reducing current VMT levels.

Alternative Fuel Vehicles

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 inclusion of infrastructure to support alternative fuel vehicles where possible.

Transit 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.

Regional Trail Network

The region has a considerable number of trails; however, trail networks are not evenly across all the counties. Much of the focus of planning will likely be 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.

[15] 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

4 Land Use and Livable Communities

4.1 Introduction

The Mohawk Valley is a diverse region that includes 8 cities, 102 towns, and 58 villages. The geography 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 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. 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 (see Figure 4-1). 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.

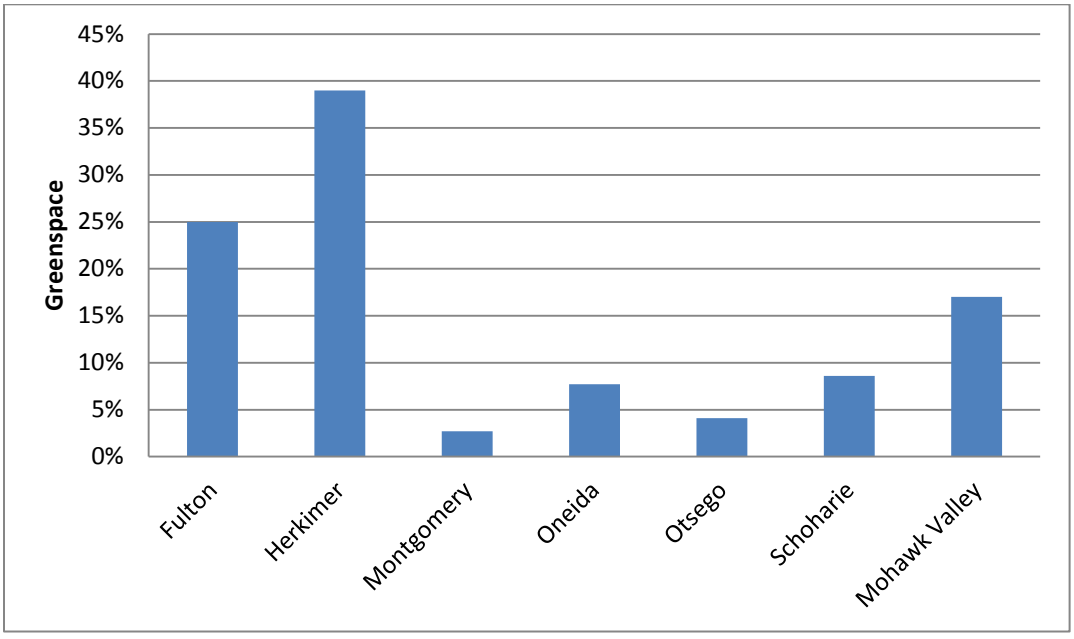


Figure 4-1 Percentage of Land Area as Greenspace

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 Mohawk Valley also has a rich heritage that includes women's suffrage, the birth place of baseball, and numerous historic buildings and iconic main streets. The region is home to numerous cultural organizations including historical museums and art centers.

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 the cities of Gloversville, Johnstown, Amsterdam, and Oneonta. These cities are faced with a shrinking manufacturing base and declining populations. Although stagnate economic conditions continue to be an issue, these cities are seeing a growing interest in their downtowns and historic resources.

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 #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 #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 #3: Encourage Local Foodshed Market Connections

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 of high quality farmland

Goal #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 within currently developed hamlets and villages
- Diversify housing market

4.2 Land Use and Livable Communities Sustainability Indicators

To track progress in accomplishing these goals, six indictors were selected.

4.2.1 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.

Undeveloped land includes natural areas such as forests, shrub land, grasslands, wetlands, and agricultural land where impervious surfaces account for less than 20% of total land cover.

4.2.1.1 Baseline Status of Indicator

The baseline conditions noted in Table 4-1 indicate the region's large amount of forest and grassland areas, with a few centralized areas of growth and development.

Table 4-1 Developed Land Per Capita, 2006

County	Developed, Open Space (Acres/ Per Person)	Developed, Low Intensity (Acres/ Per Person)	Developed, Medium Intensity (Acres/ Per Person)	Developed, High Intensity (Acres/ Per Person)	Total Developed Land (Acres/ Per Person)
Fulton	0.230	0.069	0.022	0.008	**0.330**
Herkimer	0.253	0.080	0.022	0.004	**0.360**
Montgomery	0.285	0.109	0.041	0.012	**0.447**
Oneida	0.098	0.068	0.022	0.007	**0.195**
Otsego	0.420	0.073	0.017	0.004	**0.514**
Schoharie	0.491	0.112	0.028	0.005	**0.637**
Total (All Mohawk Valley Counties)	**0.217**	**0.078**	**0.024**	**0.007**	**0.325**

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

MRLC Definitions:

Developed, Open Space - Includes areas with a mixture of some structures, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot, single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

Developed, Low Intensity -Includes areas with a mixture of structures and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.

Developed, Medium Intensity - Includes areas with a mixture of structures and vegetation. Impervious surfaces account for 50% to 79% percent of the total cover. These areas most commonly include single-family housing units and commercial/retail developments.

Developed, High Intensity - Includes highly developed areas where a large number of people reside or work. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover.

4.2.1.2 Future Status of Indicator: Draft Targets

- **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

Figure 4-2 below shows the percentage of various land uses in the Mohawk Valley region.

4.2.2 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 exists 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.

4.2.2.1 Baseline Status of Indicator

As noted in Table 4-2 below, approximately 50% of the population in each county live in the community centers.

> 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 census-designated places as defined by the U.S. Census.
>
> Census-designated places are delineated to provide data for settled concentrations of populations that are identifiable by name but are not legally incorporated under the laws of New York State.

Table 4-2 Percentage of City and Village Residents

County	County (Population)	Community Centers (Population)	Percentage of Population Residing in Community Centers
Fulton	55,531	28,315	**51%**
Herkimer	64,519	30,961	**48%**
Montgomery	50,219	30,745	**61%**
Oneida	234,878	132,138	**56%**
Otsego	62,259	26,225	**42%**
Schoharie	32,749	9,514	**29%**
Total (All Mohawk Valley Counties)	**500,155**	**244,437**	**52%**

Source: U.S. Census Bureau. 2010.

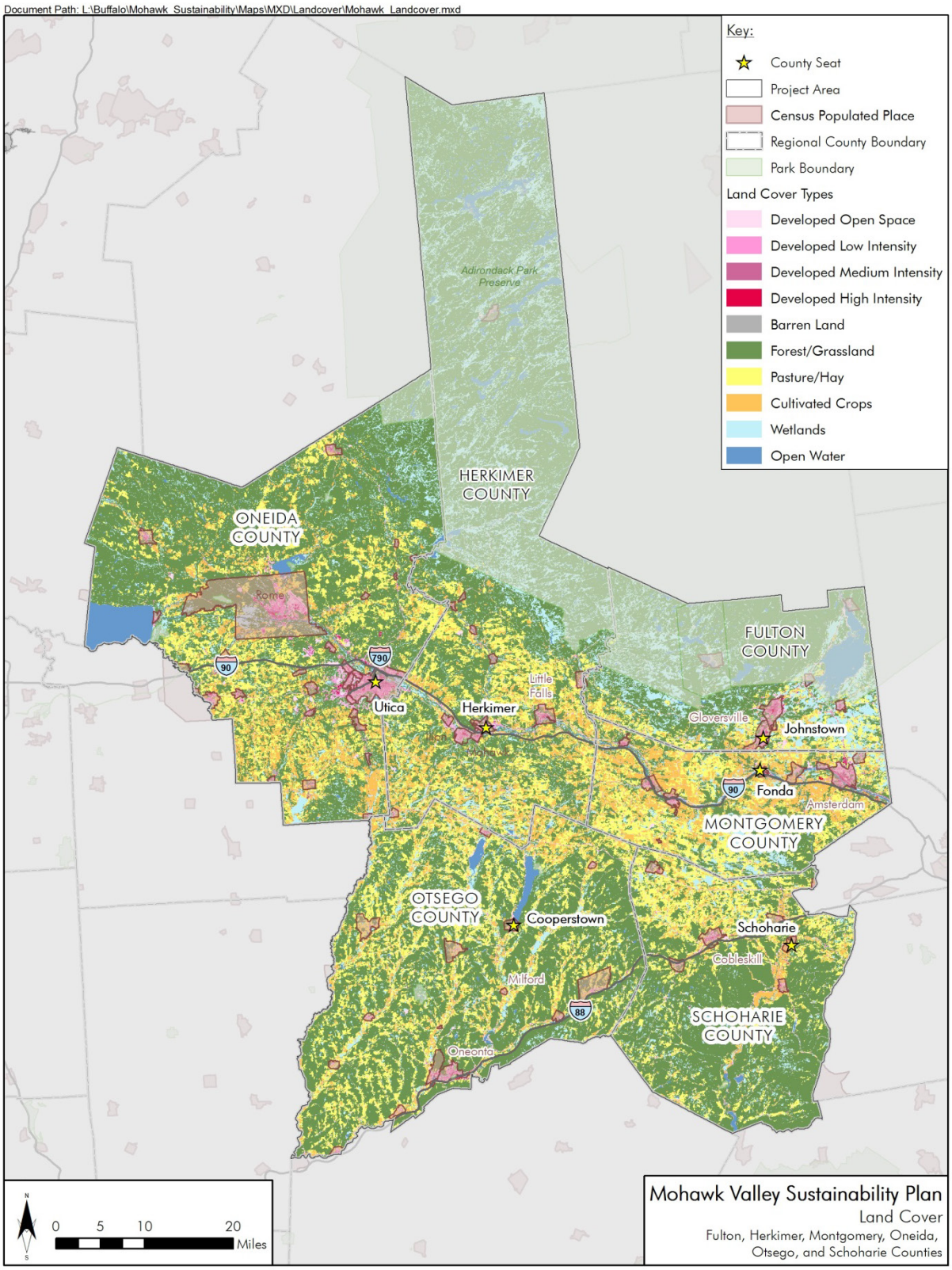


Figure 4-2 Land Uses in the Mohawk Valley Region

4.2.2.2 Future Status of Indicator: Draft Targets

- **2015:** Maintain percentage of CDP population at 52%
- **2025:** Increase percentage of CDP population by 2.5% to 54.5%
- **2050:** Increase percentage of CDP population by 5% to 57%

4.2.3 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. 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 that include a preliminary analysis, an in-depth assessment, and a full implementation strategy.

4.2.3.1 Baseline Status of Indicator

The reuse of brownfield sites reduces pressure on developing farmland and areas not well-served by infrastructure. Redevelopment of brownfields can also increase the viability of surrounding parcels. To date, six communities have taken advantage of this program; however, only one program has reached the third step of developing an implementation strategy.

Table 4-3 Mohawk Valley Brownfield Opportunities Area Participants

Municipality	Study Area	Current Step
City of Amsterdam	Northern/Eastern Neighborhoods	Step1
City of Amsterdam	Downtown Via Ponte	Step 2
City of Johnstown	Leather Mill	Step 1
City of Oneonta	D&H Rail Yard	Step 2
City of Oneonta	Factory Street/New Island	Step 1
City of Rome	South Rome	Step 1
City of Rome	Downtown Rome	Step 3
City of Utica	Erie Canal Industrial Corridor	Step 1
Village of Frankfort	Main Street and Mohawk River	Step 1

4.2.3.2 Future Status of Indicator: Draft Targets

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

4.2.4 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. The New York Main Street program provides financial resources and technical assistance to communities to strengthen the economic vitality of the state's traditional Main Streets and neighborhoods. Applicants receive a one-time financial award, but may apply on a yearly basis. This indicator identifies the number of communities committed to investing in their Main Streets. Identifying communities without a revitalization program will also reveal opportunities to provide technical assistance to advance this issue.

4.2.4.1 Baseline Status of Indicator

Only seven different community centers in Mohawk Valley participated in the program between 2004 and 2010 (see Table 4-4).

Table 4-4 Communities Receiving Main Street Program Funding

County	Municipality	Applicant	Year
Montgomery	City of Amsterdam	Industries For Amsterdam, Inc.	2004
Oneida	City of Utica	Growest, Inc.	2004
Oneida	Village of Boonville	Boonville Area Merchants Association	2004
Montgomery	Village of Fultonville	Fortroyal Foundation, Inc.	2005
Oneida	City of Rome	Keep America Beautiful of Rome, NY, Inc. dba Rome Clean and Green	2005
Oneida	City of Utica	Growest, Inc.	2005
Schoharie	Village of Middle-burgh	Middleburgh Renaissance Council	2005
Oneida	City of Rome	Keep America Beautiful of Rome, NY (Clean & Green)	2006
Oneida	City of Utica	Growest, Inc.	2006
Montgomery	City of Amsterdam	City of Amsterdam	2008
Oneida	City of Utica	Rebuild Mohawk Valley, Inc.	2010
Otsego	City of Oneonta	City of Oneonta	2010

4.2.4.2 Future Status of Indicator: Draft Targets

- **2015:** Increase number of community centers that have received Main Street Program funding by 4 to 11*
- **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.

Data associated with this indicator include the list of communities that have participated in this program to date. However, some of the funded programs that serve multiple communities do not clearly identify all municipalities benefiting from the Main Street Revitalization program.

4.2.5 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 (see Table 4-5). This metric gives an indication of how local communities can be equipped to guide future growth and development. 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.

Table 4-5 Number and Percentage of Municipalities with a Comprehensive Plan

Jurisdiction	Total Number of Municipalities*	Municipalities with Comprehensive Plan Updated as of 2002*	Percentage of Municipalities with a Comprehensive Plan Updated as of 2002
Fulton			
City	2	2	100%
Town	9	7	78%
Village	4	0	0%
Herkimer			
City	1	0	0%
Town	19	5	26%
Village	10	0	0%
Montgomery			
City	1	1	100%
Town	10	3	30%
Village	10	0	0%
Oneida			
City	3	2	67%
Town	25	6	24%
Village	19	4	21%
Otsego			
City	1	1	100%
Town	23	9	39%
Village	9	2	22%

Table 4-5 Number and Percentage of Municipalities with a Comprehensive Plan

Jurisdiction	Total Number of Municipalities*	Municipalities with Comprehensive Plan Updated as of 2002*	Percentage of Municipalities with a Comprehensive Plan Updated as of 2002
Schoharie			
City	0	N/A	N/A
Town	16	10	63%
Village	6	4	67%
Total (All Cities, Towns and Villages)	**168**	**56**	**33%**
Total (Cities and Towns ONLY)	**110**	**46**	**42%**

See Appendix A of this section for a list of cities and villages by county

*Sources:
Otsego County Planning Department. December 12, 2012. E-mail with Erik Scrivener.
Montgomery County Department of Economic Development and Planning. December 12, 2012. E-mail with Doug Greene.
Fulton County Planning Department. December 12, 2012. E-mail with Scott Henze.
Herkimer Oneida County Comprehensive Planning Program. December 12, 2012. E-mail with Kristen Campbell.
Schoharie County Website: http://www.schohariecounty-ny.gov/CountyWebSite/index.jsp:

4.2.5.1 Baseline Status of Indicator

Data supplied by county planning staff and community websites indicate that although a number of communities have an updated Comprehensive Plan, more than half of the communities in the region do not (see Table 4-6). This may indicate an area where regional assistance can support to develop updated plans.

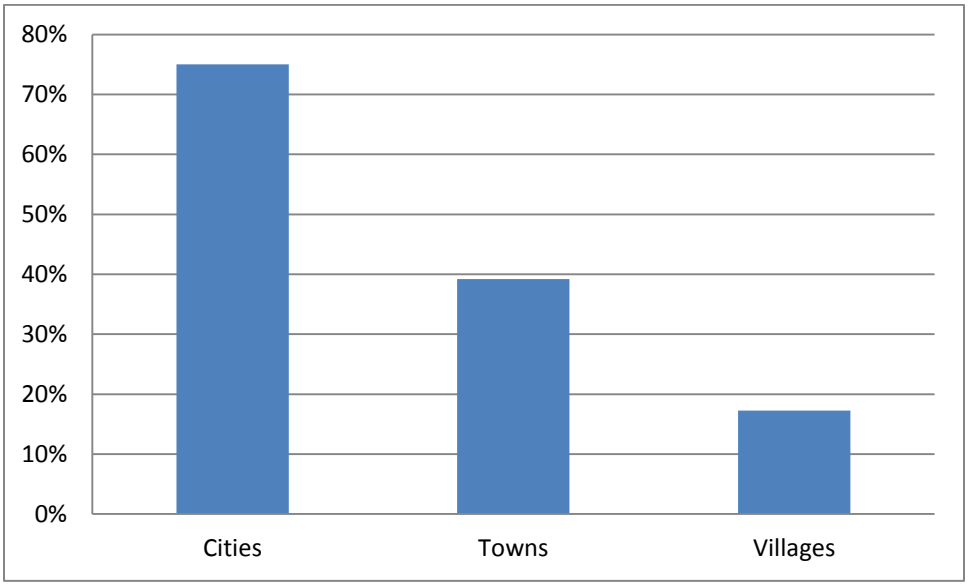


Figure 4-3 Municipalities in Mohawk Valley Region with a Comprehensive Plan Updated since 2002

4.2.5.2 Future Status of Indicator: Draft Targets

- **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%

4.2.6 Number of Grocery Stores and Farmers Markets per 1,000 Population

This indicator measures the number of grocery stores per 1,000 population, the number of farmers 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. Identifying access to food from a grocery store or farmers 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.

4.2.6.1 Baseline Status of Indicator

Food deserts were noted in the communities of Webb, Ohio, and Russia in Herkimer County. In Otsego County, the communities of Roseboom, Westford, Decatur, Worcester, and Maryland were identified as food deserts (see Table 4-6).

Food Desert: A food desert is a census tract with a poverty rate of 20% or higher and where at least 33% of the population resides more than 1 mile in urban areas or 10 miles in rural areas from a supermarket or large grocery store.

Table 4-6 Number of Food Access Points Per 1,000 Population

County Name	Total Number of Grocery Stores in County (2009)	Grocery stores/1,000 population* (2009)	Total Number of Farmers Markets in County (2011)	Farmers Markets /1,000 population* (2011)	Number of Communities Considered Food Deserts
Fulton	11	0.20	3	0.05	0
Herkimer	14	0.22	5	0.08	3
Montgomery	12	0.24	1	0.02	0
Oneida	57	0.24	19	0.08	0
Otsego	18	0.29	4	0.06	5
Schoharie	2	0.06	2	0.06	0
Total (All Mohawk Valley)	**114**	**.21**	**34**	**.06**	**8 (less than 1%)**

Source:
Economic Research Service (ERS), 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.

4.2.6.2 Future Status of Indicator: Draft Targets

- **2015:** Maintain number of grocery stores per 1,000 population at 0.21and farmers markets per 1,000 population at 0.06

- **2025:** Increase number of grocery stores per 1,000 population to 0.23 and maintain farmers markets per 1,000 population at 0.06.

4.3 Summary

Seeing improvement in these indicators will require communities to adopt long-term land use planning and foster collaboration between municipalities. The baseline data findings noted above suggest that improvements for the region can be developed in the following areas:

- **Per Capita Land Consumption –** 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 baseline levels. Achieving this will require limiting development of open space and farmlands and encouraging new development in existing community centers.

- **Ratio of Population Center to County Population –** It is expected there will only be a small increase in the percentage of people living in community centers due to stagnant and declining populations. 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.

- **Number of Communities Awarded BOA Funding –** 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 of this indictor will require a commitment of technical and resource assistance to help communities successfully apply and develop plans.

- **Percentage of Communities with a Main Street Revitalization Program –** 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.

- **Percentage of Communities with Comprehensive Plans Updated since 2002 –** Communities that lack an updated comprehensive plan may be indifferent to land use planning or lack the resources to create one. It is clear that 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 required by many of the smaller municipalities to create an effective comprehensive plan.

- **Local Food Access** – The region does not expect to see a large increase in the number of farmers markets; however, ensuring there are an adequate number of access points will continue to be important. 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 farmers markets.

Appendix 4A Mohawk Valley Region Community Centers

Fulton

Cities
- Gloversville
- Johnstown

Villages
- Broadalbin
- Dolgeville
- Mayfield
- Northville

Herkimer

Cities
- Little Falls

Villages
- Cold Brook
- Dolgeville
- Frankfort
- Herkimer
- Illion
- Middleville
- Mohawk
- Newport
- Poland
- West Winfield

Montgomery

Villages
- Ames
- Canajoharie
- Fonda
- Fort Johnson
- Fort Plain
- Fultonville
- Hagaman
- Nelliston
- Palatine Bridge
- St. Johnsville

Oneida

Villages
- Bridgewater
- Waterville
- Oriskany Falls
- Clayville
- Oneida Castle
- Vernon
- Clinton
- New Hartford
- Sylvan Beach
- Camden
- Boonville
- Remsen
- Prospect
- Barnevald
- Holland Patent
- New York Mills
- Yorkville
- Whitesboro

Cities
- Rome
- Utica

Otsego

Villages
- Cherry Valley
- Cooperstown
- Gilbertsville
- Laurens
- Milford
- Morris
- Otego
- Richfield Springs
- Unadilla

City
- Oneonta

Schoharie

Villages
- Cobleskill
- Esperance
- Middleburgh
- Richmondville
- Schoharie
- Sharon Springs

5 Water

5.1 Introduction

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, and the Mohawk River, and New York State Ship Canal, formerly the gateway to the western United States. 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. A map of the region's watersheds is shown below in Figure 5-1.

Both surface water and groundwater play an important role in the region. As shown in Figure 5-2, surface waters are the primary supply source for the region. (Note that a large portion of surface water withdrawals in Schoharie County are distributed downstate to New York City's supply system.) 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. 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. However, both groundwater and surface supplies are subject to pollution and require ongoing protection. The waterways of the region also provide recreational boating and fishing.

The Erie Canal still is the least expensive way to move products from upstate New York to markets in New York City.[16] Water can also be a source of hydropower, which is a clean source of renewable energy as long as fisheries and other resources can be protected. The region has a competitive advantage in attracting clean industries and commercial clients that depend on abundant, clean water sources.

[16] Syracuse Post-Standard. June 11, 2008. http://www.syracuse.com/news/index.ssf/2008/06/erie_canal_handles_450ton_load.html

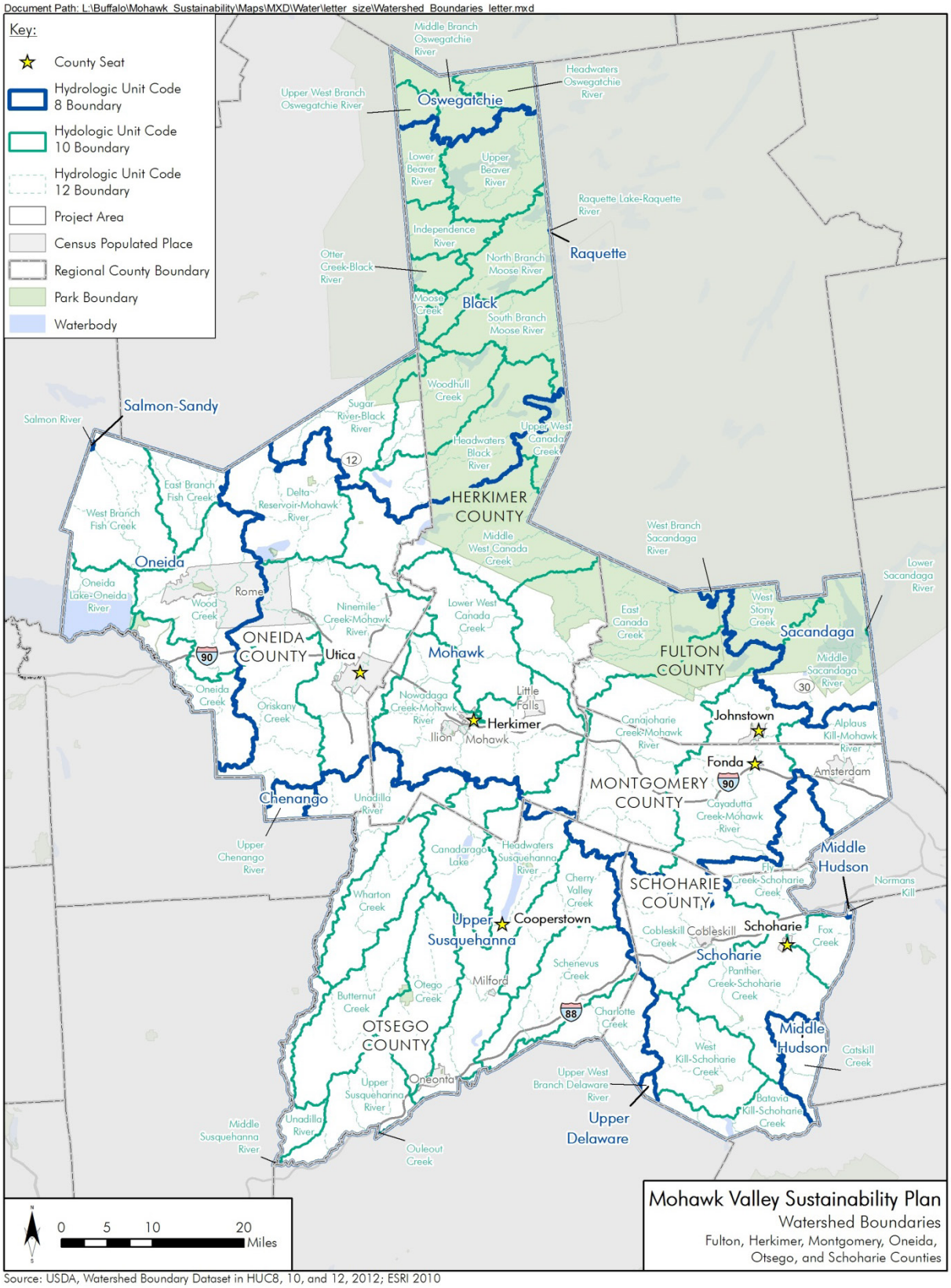


Figure 5-1 Watersheds of the Mohawk Valley Region

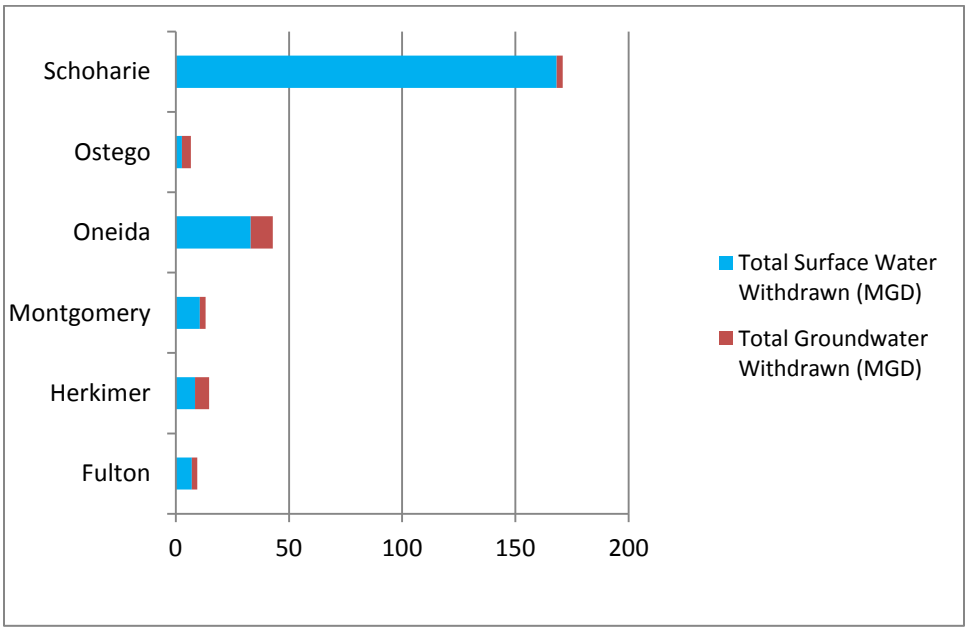


Figure 5-2 Water Withdrawals by Source (2005)
Source: United States Geological Survey (USGS), Estimated Use of Water in the United States, County-Level Data for 2005

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. Sprawl and regulatory changes may result in added costs. Suburban and semi-rural communities on public water and sewer can be more costly to maintain than denser communities because of longer distances for distribution and collection. Water conservation programs such as universal metering, leak detection, and incentivizing water-efficient fixtures for homes and businesses may reduce infrastructure operating costs. Low-impact development and green infrastructure may also reduce volume and pollutant loading to wastewater treatment facilities, thereby reducing wastewater treatment costs. However, although water conservation efforts may lower total costs, the cost per gallon can actually rise. Pricing strategies that encourage conservation need to be developed.

The implementation of asset management programs, which include routine equipment maintenance, phase out and replacement of aging equipment, and operator training will help manage and extend the life of water infrastructure. The generation of on-site renewable energy, such as the installation of solar panels, or the use of anaerobic digesters, should be explored to offset costs and save energy.

Table 5-1 shows a snapshot of water and sewer infrastructure costs as a percentage of overall expenditures for the year 2010. The table shows that water and sewer infrastructure is managed at the city, town, or village level. As a rule of thumb, 35% of a municipal energy budget is spent on wastewater treatment. The cost of electricity represents 25% to 40% of the operating costs of a wastewater

plant and 80% of the costs of potable treatment and delivery.[17] The text box below on the Johnstown-Gloversville system shows how one municipality eliminated the electrical costs of its wastewater treatment.

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

The Gloversville-Johnstown Joint Wastewater Treatment Facility (GJJWTF) set a goal to become a net-zero energy facility. They performed 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.

A planned expansion of the Fage facility in 2013 will create jobs for the region and provide more high-strength wastewater that will enable the GJJWTF to meet all its energy needs and become a net exporter of energy.

Table 5-1 Water and Sewer Infrastructure Costs, in 2010, as a Percentage of Total Jurisdictional Expenditures

Area	County[1]	City[2]	Town	Village
Fulton County	0.1%	30.7%	5.5%	21.4%
Herkimer County	3.4%	17.3%	2.4%	10.6%
Montgomery County	0.5%	36.7%	15.1%	19.9%
Oneida County	1.9%	5.0%	7.7%	10.1%
Otsego County	0.0%	8.5%	2.5%	25.5%
Schoharie County	0.0%	0.0%	19.4%	34.2%
Averages	**1.0%**	**16.4%**	**8.7%**	**20.3%**

Source: *New York State Office of the State Comptroller. Financial Data for Local Government. 2010* http://www.osc.state.ny.us/localgov/datanstat/findata/index_choice.htm

Notes:
1. Fulton, Otsego, and Schoharie counties reported costs at the county level less than 0.25% of total expenditures.
2. Data was reported for eight cities in the region: Gloversville and Johnstown (Fulton Co.); Little Falls (Herkimer Co.); Amsterdam (Montgomery Co.); Rome, Sherrill, and Utica (Oneida Co.); and Oneonta (Otsego Co.).

Weather-Related Impacts

The abundant water of the region can also be a problem. The region has historically suffered from flooding. Most recently, tropical storms Irene and Lee caused devastation along Schoharie Creek, the Mohawk River, and elsewhere in 2011 (Figure 5-3). This flooding was not an isolated incident. Severe flooding occurred along the Mohawk in 2006 and serious flooding has occurred periodically since records were kept (Figure 5-4). Flooding has been caused by storms and also by ice dams during snowmelt periods.

[17] NYSERDA. 2008. Statewide assessment of energy use by the municipal water and wastewater sector. Report 08-17.

Figure 5-3 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)

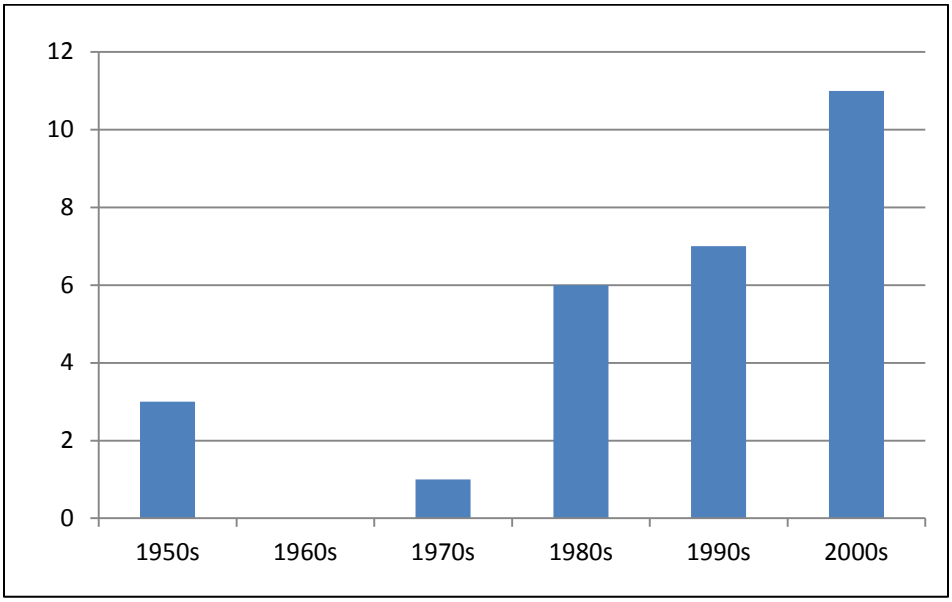


Figure 5-4 Frequency of Flood Events in the Mohawk River

(Source: NYSDEC Floodplain Management Section)

Climate change, which is in evidence already,[18] will result in higher demands and lower supplies of water. 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 (see Figure 5-4), and this trend could accelerate. Planners should consider a changing picture of supply and demand.

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

Goal #1 Conserve Energy

Establish incentives and encourage the use of existing state funding 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]). Implement leak detection programs that result in less pumping throughout the distribution system. Users that currently have flat rates should be metered to encourage efficiencies in water use. Educational programs can teach people how to conserve.

- Reduce personal water use
- Detect and mitigate leaks in water distribution systems
- Implement universal metering (remove flat rates)
- Improve energy efficiency of water infrastructure
- Promote the reuse and recycling of water
- Develop alternative means of collecting revenue so that conservation of water does not reduce revenue to utilities (i.e., current pricing that provides discounts for large-volume users is counter to the goal of conservation)

Goal #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 treatment wetlands for tertiary treatment

[18] "2012 was the warmest year on record in the contiguous 48 states, continuing a trend of elevated temperatures and drought" NOAA National Climatic Data Center (http://www.ncdc.noaa.gov/sotc/)

- 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 #3 Improve Existing Infrastructure

Maintain and operate existing infrastructure to provide high-quality and cost-effective treatment. Maintain equipment in good condition with routine maintenance and asset management programs. Update aging equipment to increase energy efficiency and reliability. 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 # 4 Establish Watershed Planning

Watershed boundaries do not often match municipal boundaries. 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.

A set of indicators was also developed to measure the region's progress toward sustainability and achieving the four water management goals. Availability of data was a factor in the indicator selection process because an indicator is of little value if it cannot be measured now or is not likely to be measured in the future. In general, data sources that are available on a county and regional basis were preferred to those for a specific treatment plant or water body because the data are available on a recurring basis, consistent in reporting, and are consolidated at regional or county levels.

5.2 Water Management Sustainability Indicators

5.2.1 Water Demand per Capita and by Sector

5.2.1.1 Baseline Status of Indicator

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)[19]. 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. Strategies to reduce water use are summarized under Goal #1 above.

The population distribution in the region by county is shown in Figure 5-5 below. Table 5-2 provides the per capita usage for domestic water supply. Figure 5-6 illustrates the per sector usage by county in the region, with the per sector use data provided in Table 5-3.

Table 5-2 Domestic Water Use per Capita (gallons per capita per day [GPCD]) in 2005

	Public Supply	Domestic Self-Supply
Fulton	75	75
Herkimer	100	75
Montgomery	100	75
Oneida	75	75
Otsego	100	75
Schoharie	98	75
Average	91	75

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

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

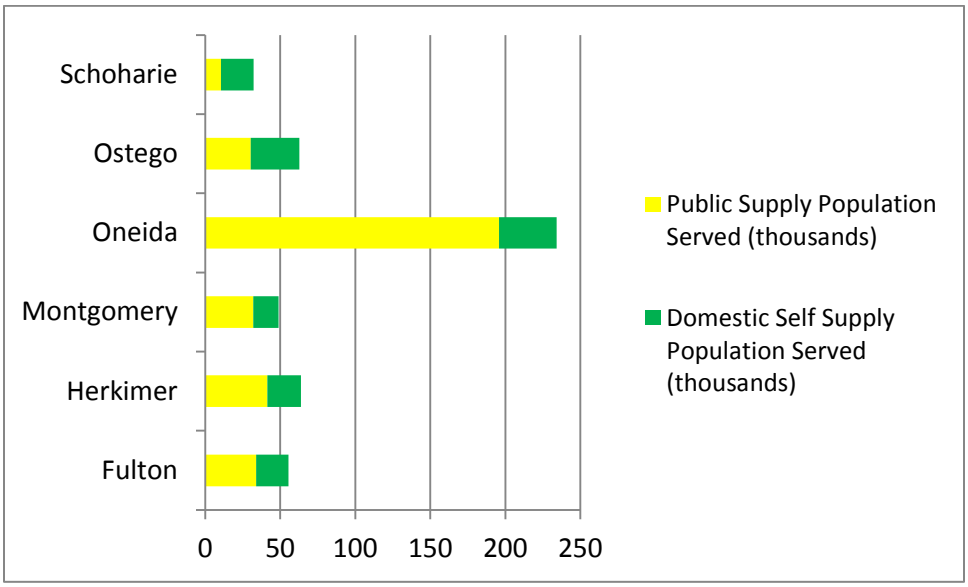


Figure 5-5 Baseline Population
Source: United States Geological Survey (USGS), Estimated Use of Water in the United States, County-Level Data for 2005

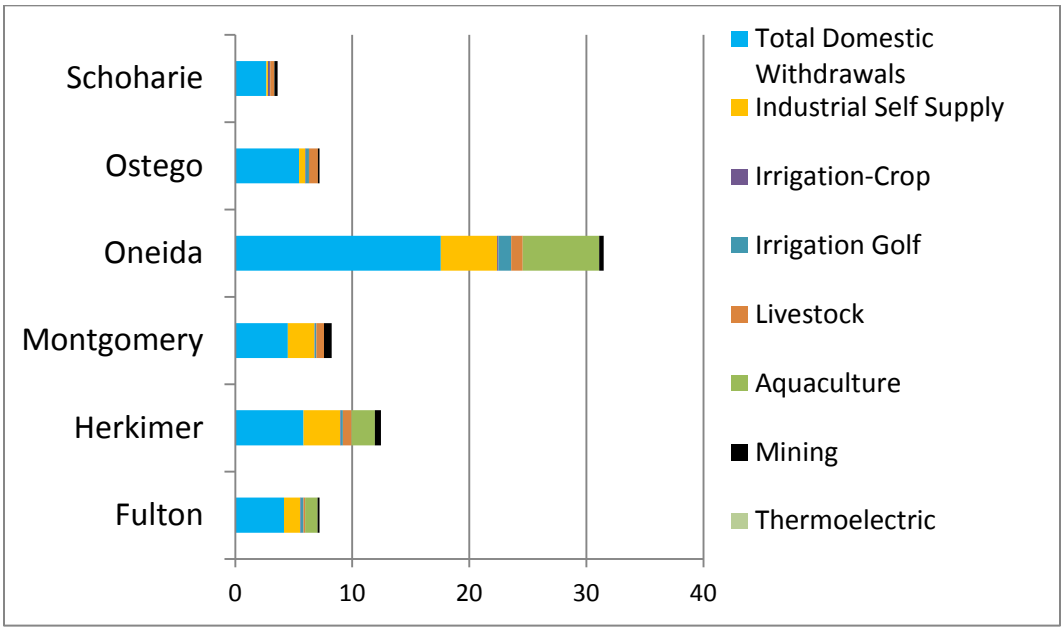


Figure 5-6 Water Use per Sector (million gallons per day [MGD]) in 2005
Sources: United States Geological Survey (USGS) Estimated Use of Water in the United States, County-Level Data for 2005

Table 5-3 Water Use per Sector (million gallons per day [MGD) in 2005

	Public Supply	Domestic Self Supply	Industrial Self Supply	Irrigation	Livestock	Aquaculture	Mining	Thermoelectric
Fulton	4.90	1.63	1.37	0.30	0.13	1.08	0.16	0.00
Herkimer	6.50	1.67	3.12	0.25	0.73	1.99	0.52	0.00
Montgomery	8.16	1.27	2.27	0.18	0.65	0.00	0.67	0.00
Oneida	26.13	2.87	4.82	1.20	0.98	6.54	0.38	0.00
Otsego	2.56	2.42	0.52	0.32	0.75	0.00	0.16	0.00
Schoharie	168.25	1.64	0.14	0.18	0.33	0.02	0.27	0.00
Totals	**216.50**	**11.50**	**12.24**	**2.43**	**3.57**	**9.63**	**2.16**	**0.00**

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

5.2.1.2 Future Status of Indicator: Targets

- **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)

5.2.2 Total Number of Impaired Waters

5.2.2.1 Baseline Status of Indicator

This indicator quantifies waters that do not support appropriate uses and that may require development of a total maximum daily load (TMDL). The TMDL is a plan that is intended to restore the waterbody to a non-impaired status. 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) list20. The list is updated every two years. 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.

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.[21] 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 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 (see Figure

[20] http://www.dec.ny.gov/chemical/31290.html
[21] http://www.dec.ny.gov/chemical/36730.html

5-7), with the remainder requiring further study or are categorized as minor impairments.[22]

5.2.2.2 Future Status of Indicator: Targets

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

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

5.2.3.1 Baseline Status of Indicator

This indicator measures the energy used by public water and wastewater treatment facilities within 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), where information is available, and from the industry-wide estimates referenced in the table. To date, data has been provided from one facility, the Gloversville-Johnstown Joint Wastewater Treatment Facility (see Table 5-4).

Table 5-4 Energy Use at the Gloversville-Johnstown Wastewater Treatment Facility

	Average Plant Energy Use (KW/day)[1]	Average Flow (MGD)[1]	Energy (KW) Used per MG[1]	Average Electricity Generated In-House[1]	Estimated Annual Savings[2]
2011	15,262	6.7	2,475	91%	$625,188
2012	15,970	5.3	3,151	90%	$615,644

Sources:
1 Gloversville-Johnstown Joint Wastewater Treatment Facility, Received December 7, 2012
2 U.S. Department of Energy, Energy Information Administration, "Electric Power Monthly." http://www.nyserda.ny.gov/en/Page-Sections/Energy-Prices-Supplies-and-Weather-Data/Electricity/Monthly-Avg-Electricity-Commercial.aspx

[22] NYSDEC list of impaired water bodies: http://www.dec.ny.gov/docs/water_pdf/303dlistpropfnl2012.pdf

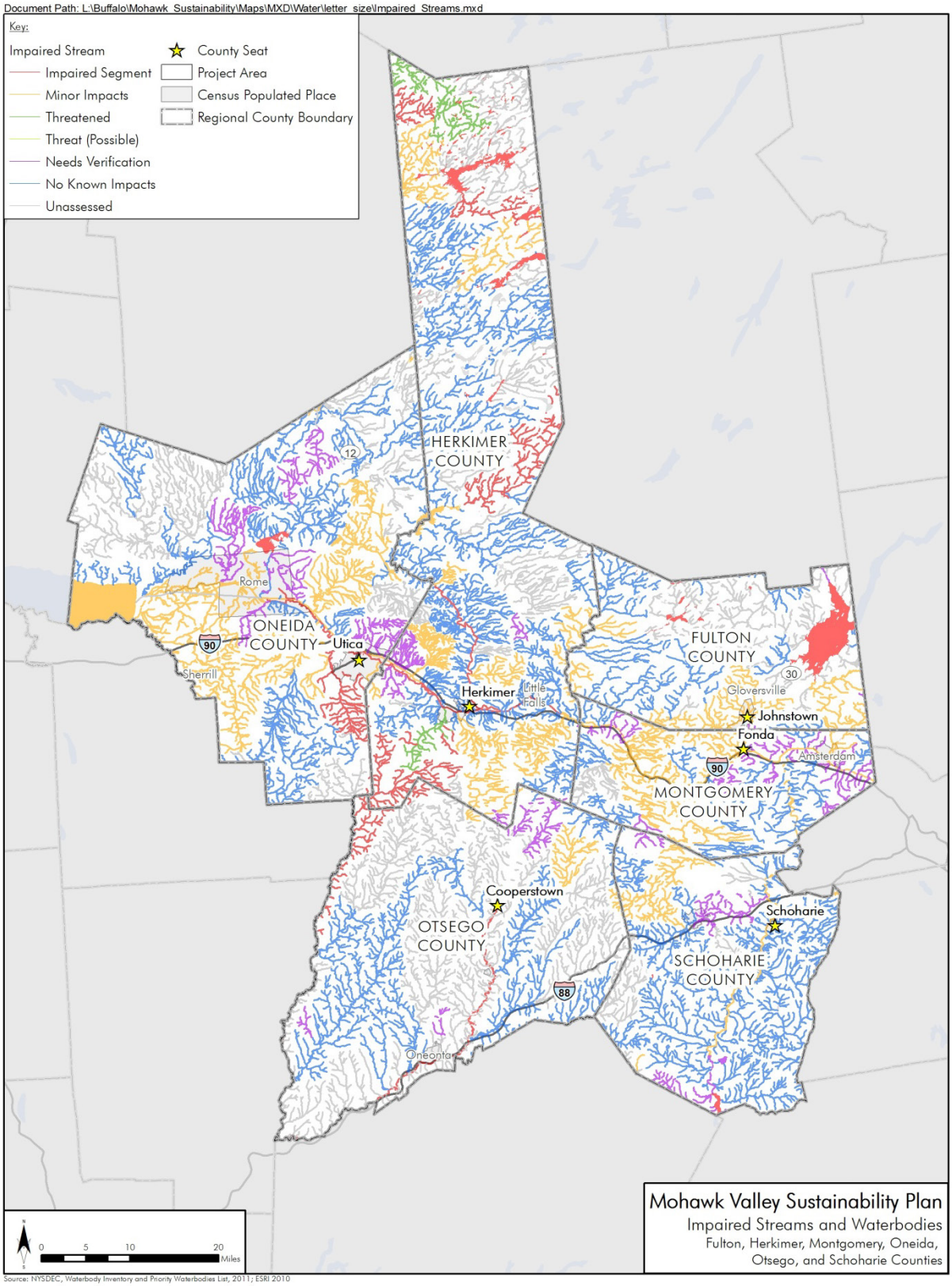


Figure 5-7 Total Number of Impaired Waters (NYSDEC 303(d) list)

5.2.3.2 Future Status of Indicator: Targets

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

5.2.4 Percent of Unaccounted Water

5.2.4.1 Baseline Status of Indicator

This indicator includes water used for fire suppression, leakage, and un-metered customers. It represents lost revenues and includes water for which there is little incentive to conserve. Table 5-5 presents the estimated system losses for four public water utilities in the region. These data were provided by representatives of the facilities and were presented in the annual water quality reports for these facilities.

Table 5-5 Percent Losses, Public Water Supply Systems

Water District/Authority	Percent Losses within the System (non-metered/ fire / leaks)
Mohawk Valley Water Authority	48%
City of Rome	46%
Oneida	22%
Johnstown	29%

5.2.4.2 Future Status of Indicator: Targets

- **2015:** Identify potential loss areas. Incur no additional system losses.
- **2025:** 10% reduction in system losses
- **2050:** 30% reduction in system losses

5.3 Summary

The region currently has sufficient water supply to meet consumption, economic, and ecological needs, and considers its lakes, streams, and canals to be a defining regional characteristic. 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. Water quality is generally good, although 9% of the region's stream segments are classified as impaired.

Despite the adequate supply of water, several systems would require substantial investments in water or wastewater treatment to use the resource. For example, upgrades to the City of Utica's wastewater treatment are necessary to treat water that infiltrates the system during wet weather. These upgrades are estimated to

cost $187 million.[23] Anticipated increases in demand from enhanced economic activity and climate change may strain some systems. Private supplies are at risk because their alternatives are limited. These factors argue for a conservation program to reduce water use and will also result in energy and GHG reductions. Conservation can be achieved through a combination of the following:

- Education to promote conservation
- Asset management program for infrastructure
- Leak detection and repair
- Zoning and site plan reviews to 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
- Encouragement of public-private partnerships to treat biosolids efficiently.

A centralized system of wastewater treatment is most efficient, and favors the redevelopment of downtown areas and argues against suburban sprawl. However, municipalities must be able to manage the costs of wastewater infrastructure in small urban areas, where the tax base is low and the cost per gallon of treatment may be higher than a similar facility in a dense, highly populated urban center. Implementing an asset management program, coupled with reuse, green infrastructure, and the potential to generate energy in-house, can benefit these smaller centralized facilities and the residents served by them.

Flood management will remain a challenge, but is can and must be met by avoiding construction in flood-prone areas and advanced preparation for future flooding of some facilities, e.g., drinking water well fields. Communities located in floodplains will be encouraged to participate in programs such as the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program's (NFIP) Community Rating System (CRS). The NFIP CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements.

As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood damage to insurable property; (2) strengthen and support

[23] NYS 2008 Needs Assessment, reported in the MV REDC report at http://regionalcouncils.ny.gov/themes/nyopenrc/rc-files/mohawkvalley/1A_MohawkValleyBullets.pdf

the insurance aspects of the NFIP, and; (3) encourage a comprehensive approach to floodplain management.[24]

Much the region's dam infrastructure is also aging and in need of repair (see Table 5-6). The design lives of many dams have been exceeded. Many dams were not built, nor are being maintained according to today's engineering standards. There are 34 NYSDEC-inventoried dams in the Mohawk Valley region. The hazard classification of these dams include; 17 high, 12 significant, and 5 low. Hazard classification refers to the probability of loss of human life should a dam failure take place, not that a dam is structurally deficient and likely to failure.

Table 5-6 Dams by County and Hazard (1999)

Hazard	Fulton	Herkimer	Montgomery	Oneida	Otsego	Schoharie	Total
HIGH	2	6	1	4	1	3	17
LOW	1	4					5
SIGNIFICANT	3	7			2		12

Source: National Inventory of Dams, U.S. Army Corps of Engineers, and Federal Emergency Management Agency. 1999

Additionally, there are more than 1,500 bridges and numerous culverts in the region (see Table 5-7). Most of these were constructed many years ago, are in poor condition, and are not sized adequately to pass large flood flows, which can threaten life and property during major storms.

Table 5-7 Bridges by County (2006)

Hazard	Fulton	Herkimer	Montgomery	Oneida	Otsego	Schoharie	Total
Number of Bridges	101	262	210	531	273	185	1562

Source: New York State Department of Transportation. 2006

[24] http://www.fema.gov/national-flood-insurance-program/community-rating-system

6 Materials and Solid Waste Management

6.1 Introduction

The Mohawk Valley Region's materials and solid waste management landscape is a complex mixture of both public and private sector participants. The role of New York State is to provide oversight and assistance to local municipalities so that they may adhere to their solid waste management obligations as directed under NYS law. This is accomplished through the NYS Solid Waste Management Plan, NYS funding, and permitting and approval of local plans and facility applications.

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 the LSWMPs is to provide clear, specific guidance, including selection of 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 to 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.

6 Materials and Solid Waste Management

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 and 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.[25] Nevertheless, both the OHSWA and FC-DSW are recovering a portion of energy from wasted materials by employing landfill-gas-to-energy (LGTE) plants at their respective landfills. More information about the region's LGTE plants is provided in Chapter 7 – Energy.

The overall materials management goal for the region is to maximize levels of waste reduction and recycling, coupled with the development of environmentally and economically sound waste management programs. Achievement of this regional goal will meet NYSERDA's CGC program goal of reducing energy and greenhouse gas emissions.

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 the New York State Department of Environmental Conservation's (NYSDEC) 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 (see Figure 6-2) such as reduction, reuse, recycling. The term "disposal" includes municipal waste combustion, landfilling, and export for ultimate disposal.)

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

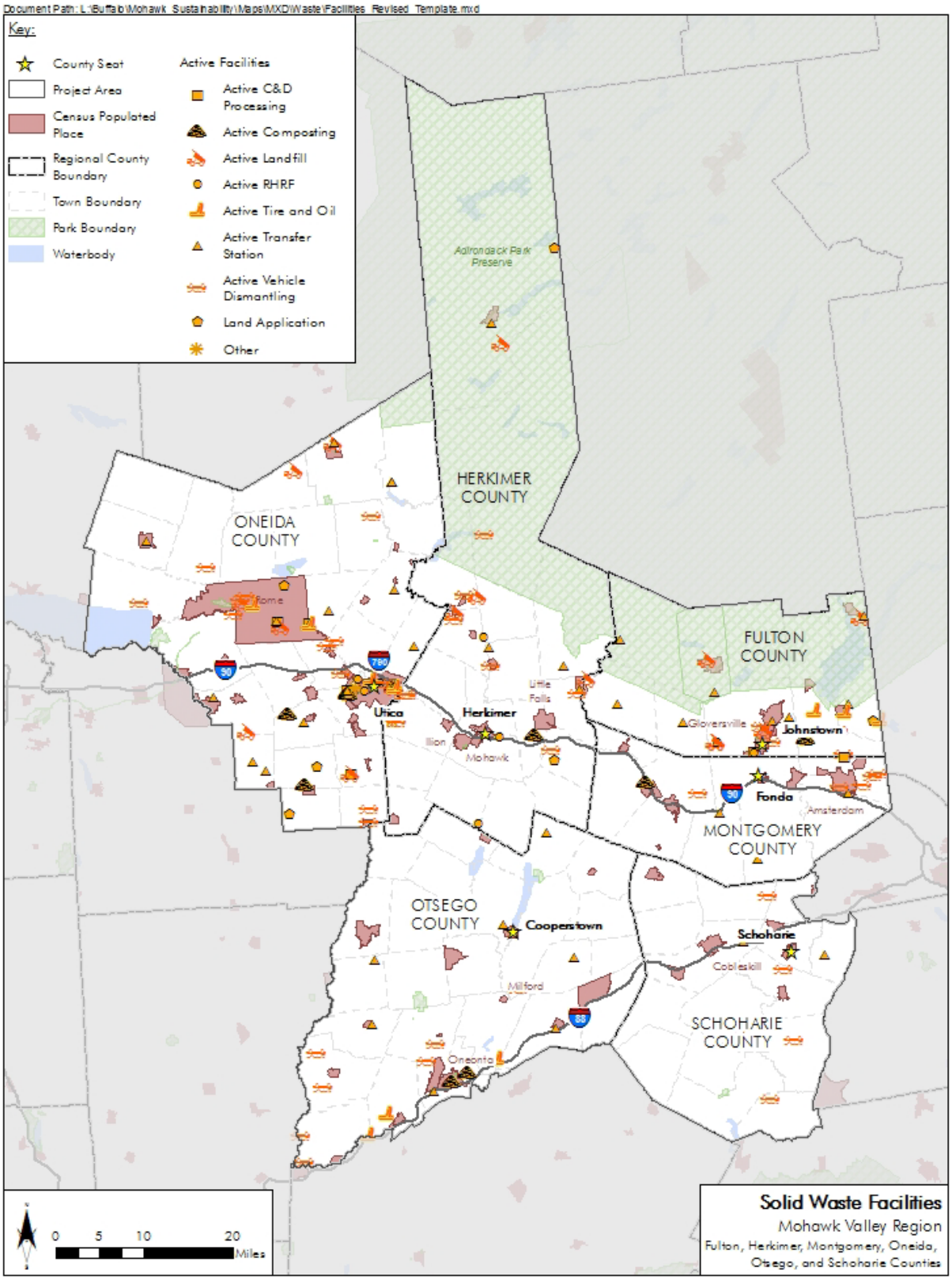


Figure 6-1 Active Materials and Solid Waste Management Facilities

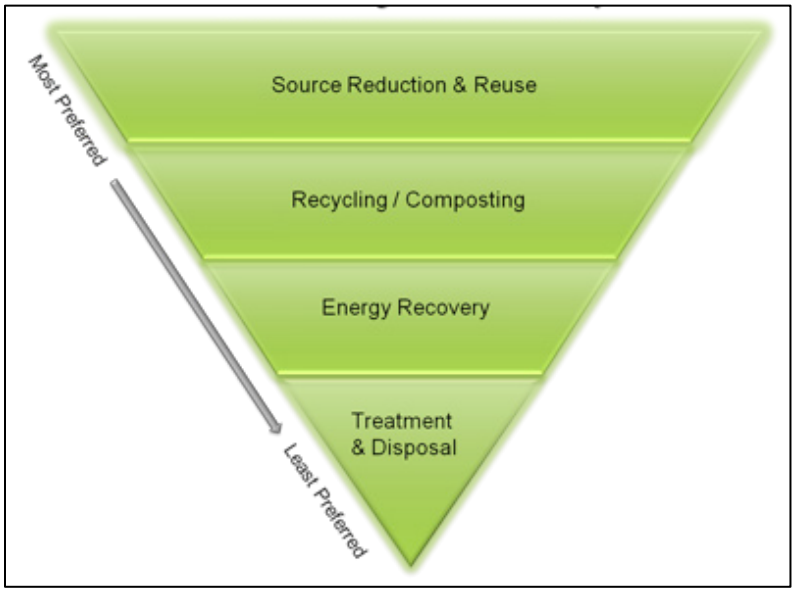


Figure 6-2 Materials and Waste Management Hierarchy

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

Goal #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 #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 #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 #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.

6.2 Materials Management Sustainability Indicators

Four indicators were selected to measure and monitor the region's progress toward achieving the materials and waste management objectives. The following subsections present a description of each indicator and the status of the indicator as of 2010 (the baseline year).

6.2.1 Total Municipal Solid Waste Disposed of Per Capita

6.2.1.1 Baseline Status of Indicator

This indicator provides an overall view of the region's contribution to municipal solid waste (MSW) that is disposed of in landfills. It is the total regional MSW in tons per day divided by the size of the population that is served.

Table 6-1 shows the MSW disposed of per capita per day in 2010 by county. Each county and the region overall disposed of less MSW per person than the New York State average in 2010.

- This indicator is consistent with the metric and methodology proposed in NYSDEC's *Beyond Waste* plan.
- The indicator is sensitive to factors such as economic growth or change in population

Table 6-1 2010 Total MSW Disposed per Capita per Day

	Population	MSW (tons per year)	MSW per Capita per Day (lbs/pp/day)
New York State[+]	**19,378,102**	**14,500,000**	**4.1**
Mohawk Valley	**500,155**	**267,043**	**2.9**
Oneida-Herkimer [++]	299,397	171,831	3.1
Schoharie	32,749	11,864	2.0
Montgomery	50,219	32,004	3.5
Otsego	62,259	30,000	2.6
Fulton	55,531	21,344	2.1

Notes/Sources:

\+ NYSDEC 2010. *Beyond Waste: A Sustainable Materials Management Strategy for New York State.* NYS Disposal Rate is a calculated estimate.

++ Oneida-Herkimer Solid Waste Authority submits a combined Annual Solid Waste Planning Unit Recycling Report for the two counties in its coverage area.

Figure 6-3 below presents 2011 data and 2010 data. The figure shows a slight decline in MSW disposal rates among most of the counties, with one major exception—Schoharie County—which more than doubled its disposal rate per person between 2010 and 2011. 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 the 2010 predecessor.

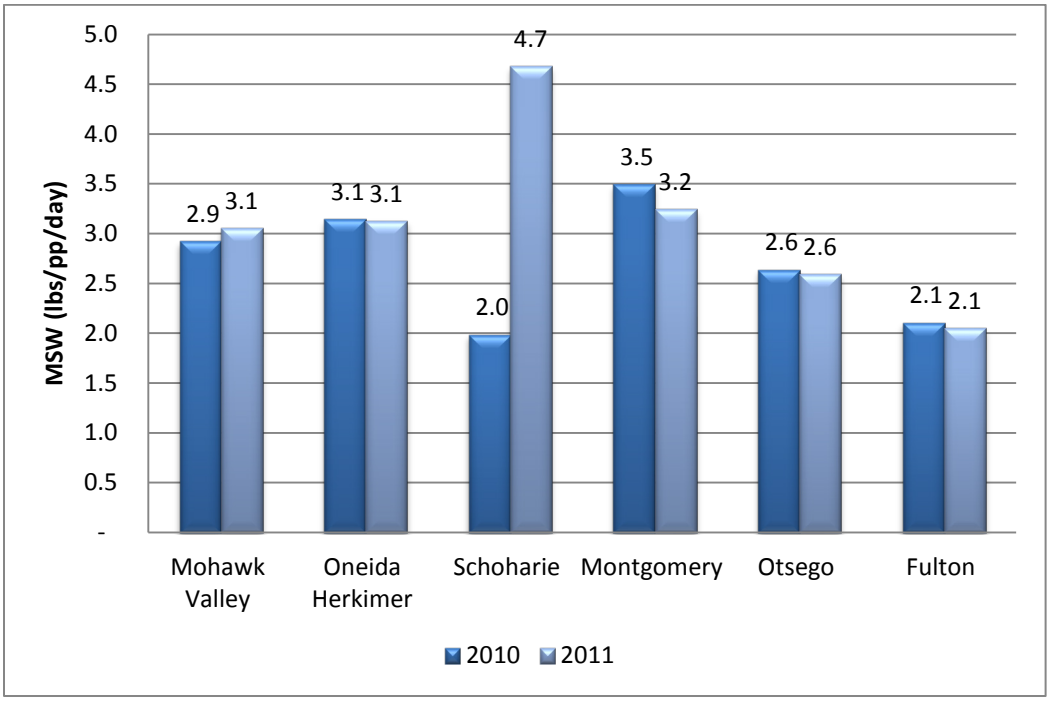


Figure 6-3 Total MSW Disposed Per Capita in 2010 and 2011

6.2.1.2 Future Status of Indicator: Target

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. The per capita disposal rate targets are:

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

6.2.2 Proportion of Solid Materials Diverted (Recycled or Composted)

6.2.2.1 Baseline Status of Indicator

This indicator 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. It is calculating by dividing the total regional solid materials diverted per year by the total amount of reported waste.

Table 6-2 shows the percentage of county and regional materials generated that is diverted from a landfill through recycling and composting. Compared with the rest of New York State, the Mohawk Valley region appears to be lagging behind. This may be an artifact of the way the data are reported: reported waste includes MSW as well as portions of many other waste streams (construction and demolition, non-hazardous industrial, and biosolids). 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. Unfortunately, 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 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 in Table 6-2 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.

Table 6-2 2010 Proportion of Solid Materials Diverted from Landfills

Mohawk Valley	Total Materials [Waste + Diverted] (tons)	Materials Diverted (tons)	% Materials Diverted
New York State*	**36,000,000**	**13,000,000**	**36%**
Mohawk Valley	**551,439**	**132,703**	**24%**
Oneida-Herkimer	365,247	115,652	32%
Schoharie	16,872	1,292	8%
Montgomery	46,152	2,416	5%
Otsego	43,615	4,012	9%
Fulton	79,553	9,331	12%

Notes/Sources:
* NYSDEC 2010. *Beyond Waste: A Sustainable Materials Management Strategy for New York State*. NYS values are from 2008.

Data from 2011 and 2010 are shown in Figure 6-4. As shown in the figure, there was a decline in the recycling rate across the region, except for Montgomery County, from 2010 through 2011.

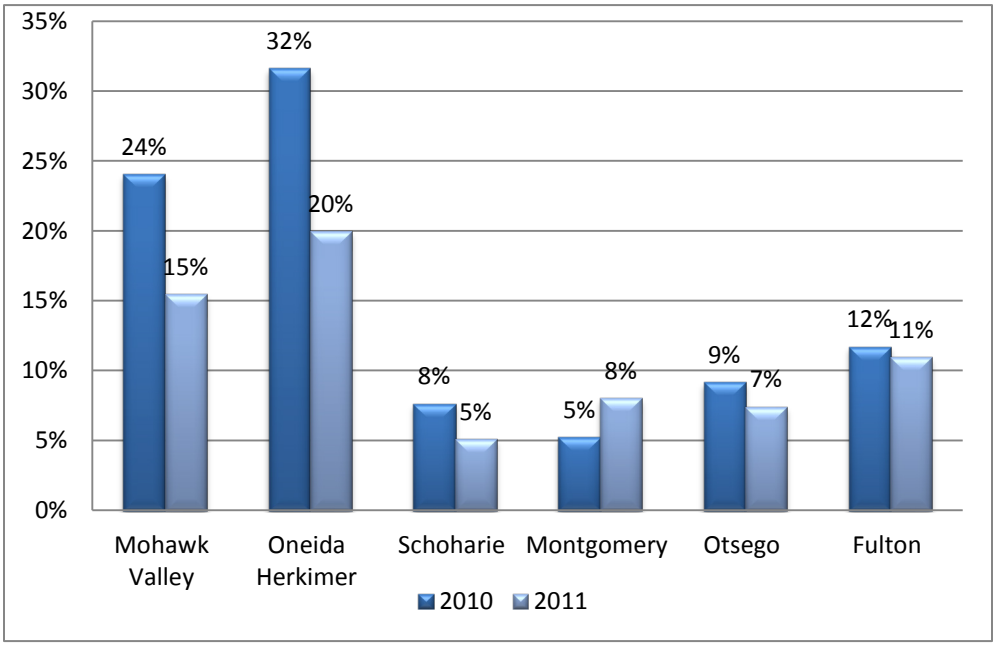


Figure 6-4 Proportion of Solid Materials Diverted from Landfills in 2010 and 2011

6.2.2.2 Future Status of Indicator: Targets

Consistent with the goals set in NYSDEC's *Beyond Waste*, this plan strives to achieve a progressive reduction in the amount of materials diverted to 50 percent (pounds per person per day) by 2020. The proportion of solid materials diverted targets are:

- 35% by 2015
- 70% by 2025
- 95% by 2050

6.2.3 Energy Cost per Ton of Materials Processed

6.2.3.1 Baseline Status of Indicator

This indicator assesses the amount of money spent each year to operate and maintain waste management facilities and equipment divided by the total amount of material that is processed. It is a measure of the energy efficiency of 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 difference 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.

Table 6-3 2010 Energy Cost per Ton of Materials Managed by Planning Units

Planning Unit	Energy Cost / Ton
FC-DSW*	$ 8.10
MOSA	$ 1.19
OHSWA	$ 2.91

* Recycling facility only.

6.2.3.2 Future Status of Indicator: Targets

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

6.2.4 Expenditures per Capita Dedicated to Education and Outreach

6.2.4.1 Baseline Status of Indicator

This indicator measures the funds spent on public education about waste, materials management best practices, and options. 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.[26]

Table 6-4 2010 Budgeted Dollars per Capita Dedicated to Education and Outreach by Planning Units

Planning Unit	Education Cost / Person
Fulton	$ 1.08
MOSA	$ 0.30
Oneida - Herkimer	$ 0.37

To better evaluate the effectiveness of each dollar spent on education has on waste reduction this indicator should be used in conjunction with indicators 6-1 and 6-2.

6.2.4.2 Future Status of Indicator: Targets

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

6.3 Summary

An assessment of the 2010 data for the material management sustainability indicators indicates that the region has a lower than average MSW disposal rate per capita than the New York State average. Despite relatively good rates of total waste generation, more can be done to increase the proportion of materials diverted from disposal into the region's landfills.

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.

[26] Data provided through personal email communications with representatives from each of the three Mohawk Valley planning units (December 2012).

7 Energy

7.1 Introduction

NYSERDA's objectives, outlined in the Cleaner, Greener Communities (CGC) program, are to reduce GHG emissions, reduce energy use, increase efficiency, and provide opportunities for regional economic development. The successful achievement of these objectives and the goals of the Mohawk Valley sustainability plan are consistent with the leadership in energy policy already achieved by New York. To place the CGC objectives in context:

- In 2010, New York State was the eighth largest energy consumer in the United States, but, due in part to its widely used mass transportation systems, it had the second lowest energy consumption per capita after Rhode Island.

- In 2011, 24% of electric power generation in NYS came from renewable energy resources; the NYS Renewable Portfolio Standard (RPS) requires that 30% of electricity come from renewable energy resources by 2015.

The unique aspects of the Mohawk Valley region's energy use are that 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 compared with 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 primary 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. Ninety eight percent of this is from renewable sources, primarily from small hydroelectric facilities or landfill gas. Figure 7-1 summarizes the electricity gener-

ated 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. The contribution to the electricity generation profile of Mohawk Valley from these projects is discussed in Section 7.3.

Figure 7-2 illustrates the region's electricity consumption by sector.

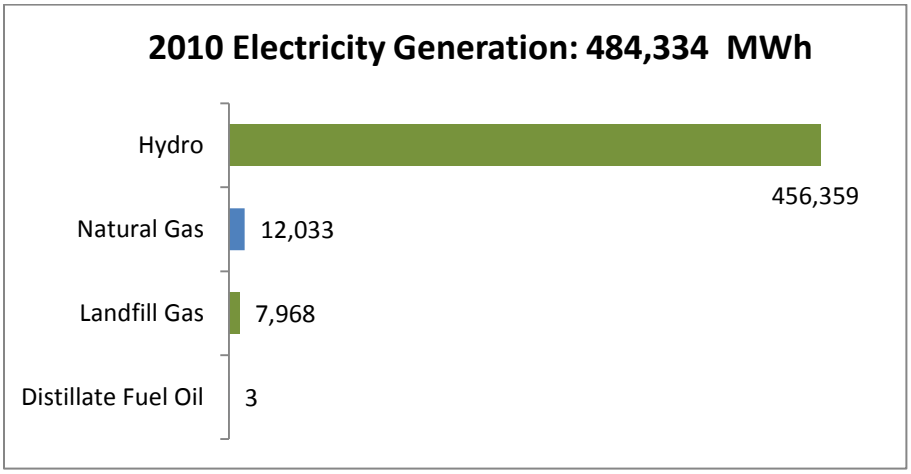


Figure 7-1 Net Generation of Grid-Supplied Electricity in the Mohawk Valley by Type in 2010

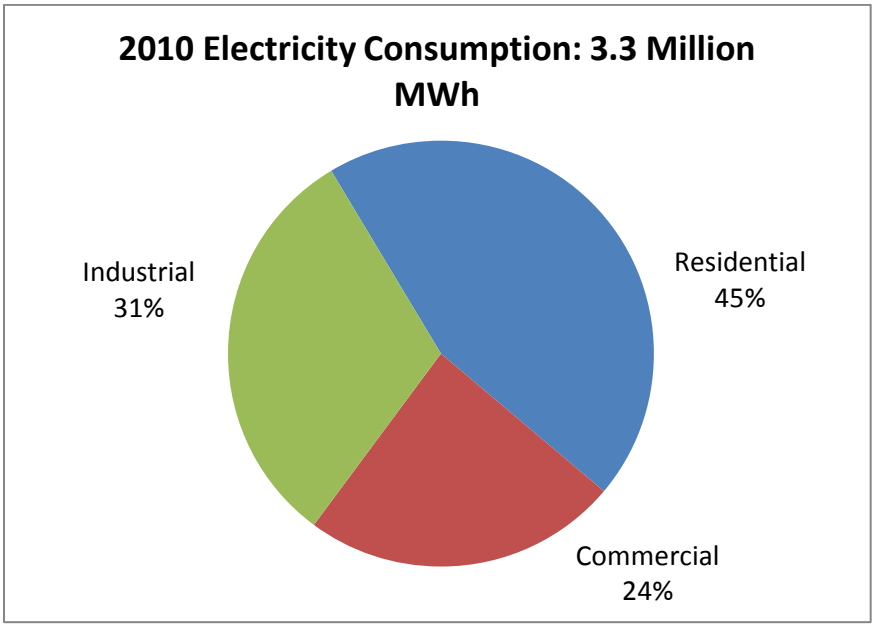


Figure 7-2 Electricity Consumption in the Mohawk Valley by Sector in 2010

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, as well as biomass such as wood, primarily for heating buildings and water 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. Figure 7-3 shows the percentage of MMBtus of direct energy consumption by fuel type.

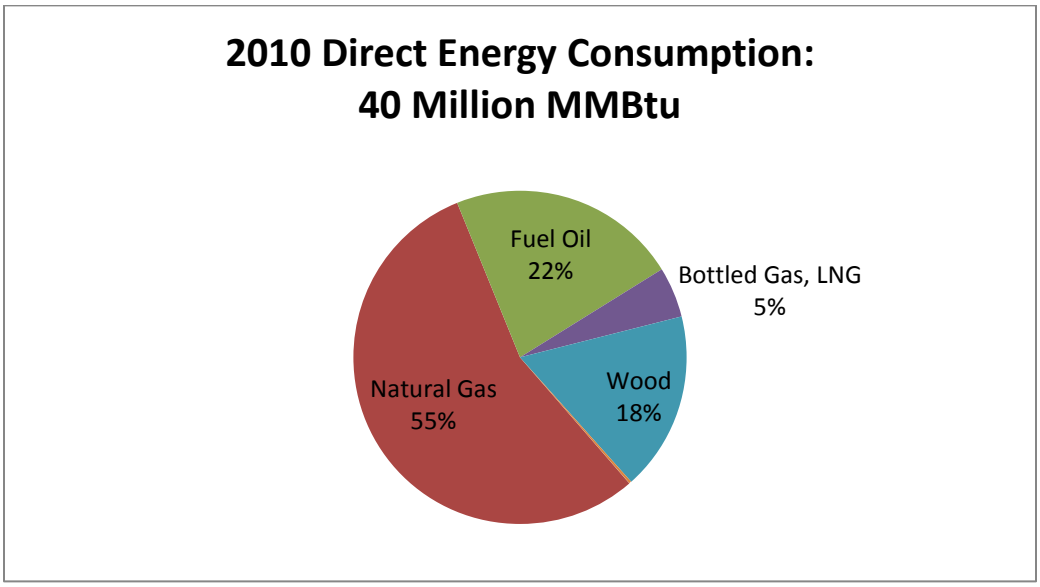


Figure 7-3 Direct Energy Consumption in the Mohawk Valley by Fuel Type in 2010

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 state-wide 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.

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

Goal 1 – Reduce consumption of electricity and heat generated by from fossil fuels

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

Goal-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-3 – Increase renewable local energy generation and use for electricity and hear

- 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-4 – Evaluate life cycle impacts of energy generation and use

- The application of life-cycle analysis was 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.

7.2 Energy Sustainability Indicators

Table 7-1 provides a summary of the energy sustainability goals and the associated indicators identified for measuring progress toward these goals.

Table 7-1 Energy Sustainability Goals and Indicators

Energy Goal	Energy Indicator
Goal 1 - Reduce consumption of electricity generated by from fossil fuels	7-1 Greenhouse Gas Emissions - CO_2e emitted by energy usage in buildings (residential, commercial, industrial), absolute and per capita
Goal 2 - Increase Energy Efficiency	7-2 Regional Total Energy Use per Capita (required indicator) 7-3 Regional Direct Fossil Fuel Energy Consumption per Capita 7-4 Energy Efficiency - Number of regional households and businesses enrolled in energy-efficiency programs and number of NYSERDA funded projects in the region.
Goal 3 - Increase renewable local energy generation and use	7-5 Renewable Energy - Total annual renewable electricity and heat energy generation
Goal 4 - Evaluate life-cycle impacts of energy generation and use	Progress toward this goal is not quantifiable at the present time. The plan, as a long-term and dynamic effort, can include goals that may be difficult to measure with available data.

The following subsections describe each indicator and the status of the indicator as of 2010 (the baseline year).

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

7.2.1.1 Baseline Status of Indicator

The GHG emissions for the whole region were divided by the population to develop this measure of per capita emissions. GHGs include CO_2 and other heat-trapping gases, including water vapor and methane. To simplify reporting, all emissions were converted to the heat trapping capability of CO_2. Detailed methods are explained in the GHG inventory.

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. Total GHG emissions from all sources are described by Indicator 10.2. The building heating sources tallied here are about a third of the total regional GHG emissions.

2010 Baseline: 5.4 tons CO_2e per capita
2.7 million metric tons CO_2e

7.2.1.2 Future Status of Indicator: Targets

- **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%)

Compared with total regional GHG emissions for all sources (including transportation, industrial sources, waste management, agriculture and forestry) approximately 43% 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. As shown in Table 7-2, GHG emissions in the region average 5.4 metric tons per capita. Figure 7-4 shows how the estimated GHG emissions per capita vary significantly between the Mohawk Valley counties, likely a result of the difference in population and business density.

Table 7-2 GHG Emissions from Stationary Energy Use in Mohawk Valley Counties by Sector and Per Capita

	GHG Emissions in Mohawk Valley (CO_2e metric tons per capita)						
	Mohawk Valley	Fulton	Herkimer	Montgomery	Oneida	Otsego	Schoharie
Population	500,155	55,531	64,519	50,219	234,878	62,259	32,749
Residential	1,450,060	160,136	192,880	135,507	678,934	198,130	84,677
Commercial	933,484	79,711	84357	80,448	475,038	133,145	80,784
Industrial	329637	23,087	57,835	63,864	141,942	5,037	37,872
Total	**2,713,181**	**262,935**	**335,073**	**279,819**	**1,295,914**	**336,312**	**203,333**
Per Capita	**5.4**	**4.7**	**5.2**	**5.6**	**5.5**	**5.4**	**6.2**

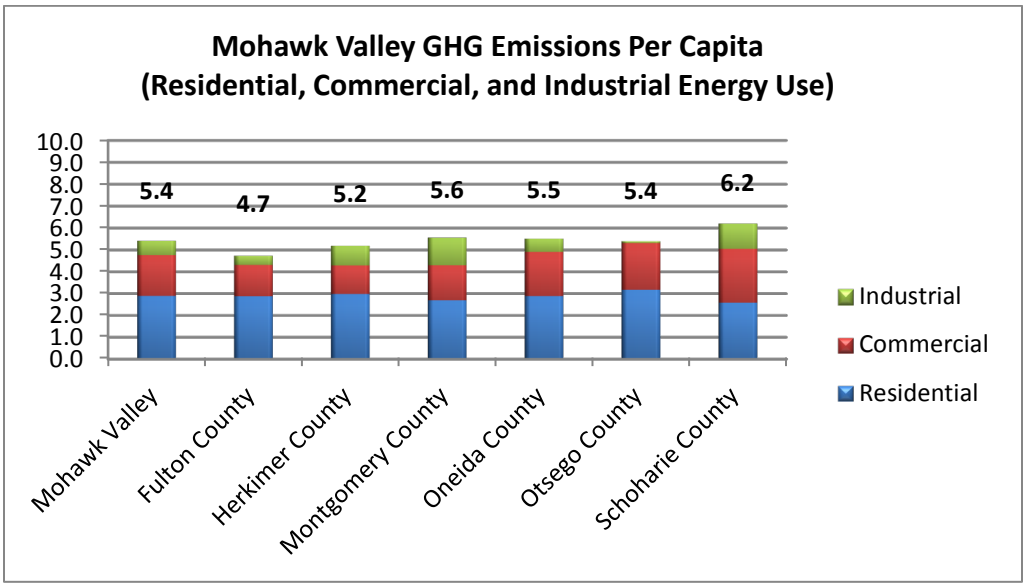


Figure 7-4 Building Energy Consumption GHG Emissions (CO_2e) per Capita in Mohawk Valley by County in Metric Tons

7.2.2 Regional Energy Consumption per Capita (MMBtu)

7.2.2.1 Baseline Status of Indicator

This second indicator is a NYSERDA-required indicator that 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.

2010 Baseline: 184 MMBtu per Capita

7.2.2.2 Future Status of Indicator: Targets

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

Table 7-3 and Figure 7-5 summarize the total energy consumption and distribution in the Mohawk Valley region by sector and per capita based on a population of 500,155.

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%.[27] The NY ISO Gold Book 2011[28] 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.

Table 7-3 Total Energy Consumption (MMBtu) in Mohawk Valley in 2010

By Sector	MMBtu	%
Residential	28,965,980	32%
Commercial	16,657,010	18%
Industrial	5,446,903	6%
Transportation	40,846,311	44%
Total	**91,916,204**	100%
Per Capita	**184**	

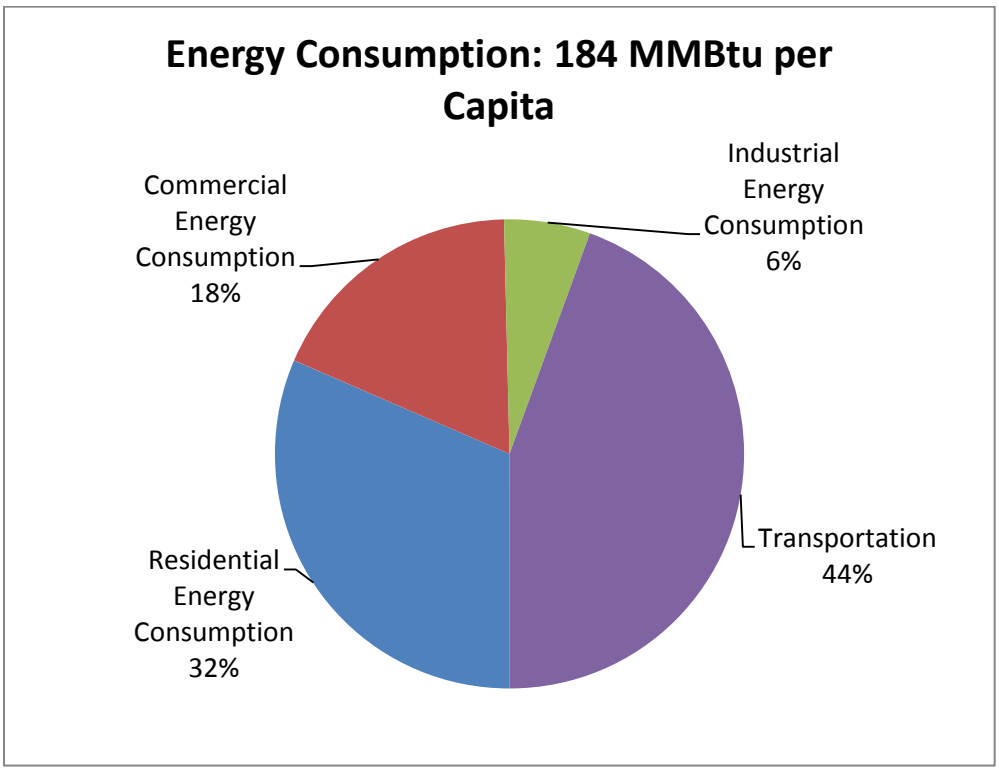


Figure 7-5 Per Capita Energy Consumption in the Mohawk Valley by Sector in 2010

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

[28] 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 State 2050 Vision outlined in the New York Climate Action Plan (Interim) calls for an 80% reduction in GHG emissions from 1990[29], 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.

The targets set by Germany were also used to inform the long-term target for the regional goal of increasing energy efficiency. The goals of Germany's energy and climate policy include reducing GHG emissions (using 1990 data as the baseline) by 40% by 2020, 55% by 2030, 70% by 2040, and 80% to 95% by 2050. The goals also include reducing primary energy consumption by 20% by 2020 and by 50% by 2050. In addition, Germany's goal is to increase renewables share of electricity production is 50% share by 2030, 65% by 2040, and 80% by 2050[30].

Data for this indicator were collected as part of the Regional Tier II GHG inventory. These methods were developed to provide an estimate of consumption in each county and region and permits state-wide comparison. While this method provides consistency between regions and best represents the total regional energy use for 2010, it may not accurately represent actual energy use by specific or individual residential, commercial, and industrial sources in the region, and it also may not be accurate as an average at the county level.

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 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.

7.2.3 Regional Direct Fossil Fuel Energy Consumption per Capita (MMBtu)

7.2.3.1 Baseline Status of Indicator

This indicator is a subset of the indicator "regional energy consumption per capita" (see Section7.2.2 above), specifically, the direct stationary use of fossil fuels primarily for heating buildings. This indicator measures increased efficiencies of

[29] http://www.dec.ny.gov/energy/80930.html

[30] Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety. October 2011. The Energy Concept and its Accelerated Implementation. http://www.bmu.de/en/topics/climate-energy/transformation-of-the-energy-system/resolutions-and-measures/.

heating systems and building envelopes as well as the reduction in fossil fuels as a heating source for buildings and incorporation of renewable energy sources and technology. (Consumption associated with transportation and use of electricity is not measured by this indicator. Reduction in fossil fuel use in the transportation sector is addressed in the transportation portion of this plan.) Electricity is also not included because it is not a direct energy use. The targets reflect consideration of Germany's national goal of a 50% reduction in energy usage between 2008 and 2050.

2010 Baseline: 33 million MMBtu
66 MMBtu per capita

7.2.3.2 Future Status of Indicator: Targets

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

Figure 7-6 and Table 7-4 summarize the current distribution of direct fossil fuel consumption by sector in the Mohawk Valley region, both total and per capita, based on a population of 500,155.

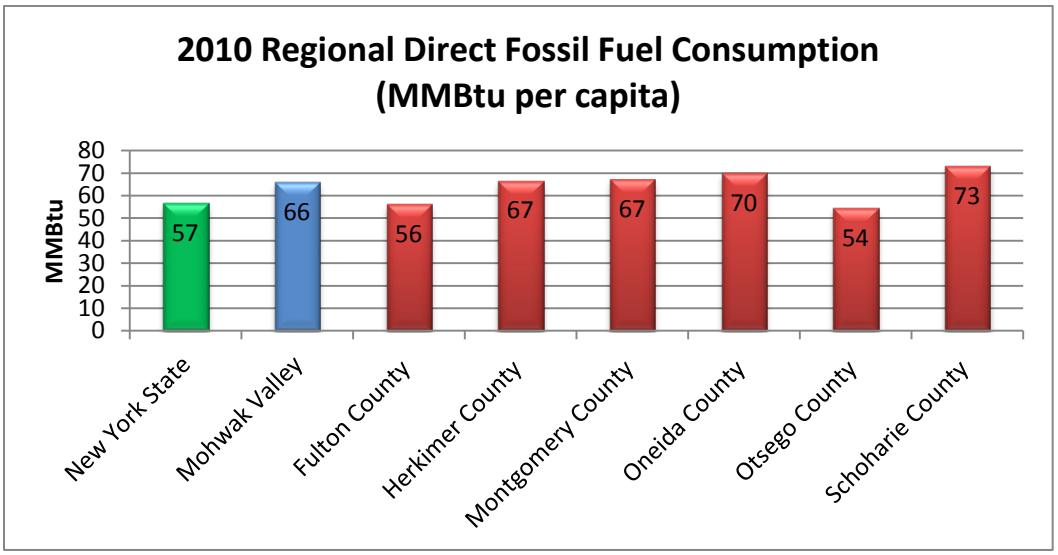


Figure 7-6 Direct Fossil Fuel Consumption in the Mohawk Valley (MMBtu per capita) in 2010

Table 7-4 Regional Energy Use by Type (Total and per Capita) in 2010

Energy Source	Total Regional MMBtu	MMBtu per capita
Electricity / Steam	11,112,277	22
Natural Gas	22,073,720	44
Propane / LPG	1,958,560	4
Distillate Fuel Oil (#1, #2, Kerosene)	8,934,762	18
Residual Fuel Oil (#4 and #6)	19,448	0
Coal	4,095	0
Wood	6,967,052	14
Gasoline/Diesel	40,802,776	82
Jet Fuel/Aviation Gasoline	43,515	0
Total	**91,916,204**	**184**
Direct Fossil Fuel Use *(excluding electricity, gasoline/diesel, wood, and jet fuel/aviation gasoline)*	**32,990,585**	**66**

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 (see Figure 7-7).

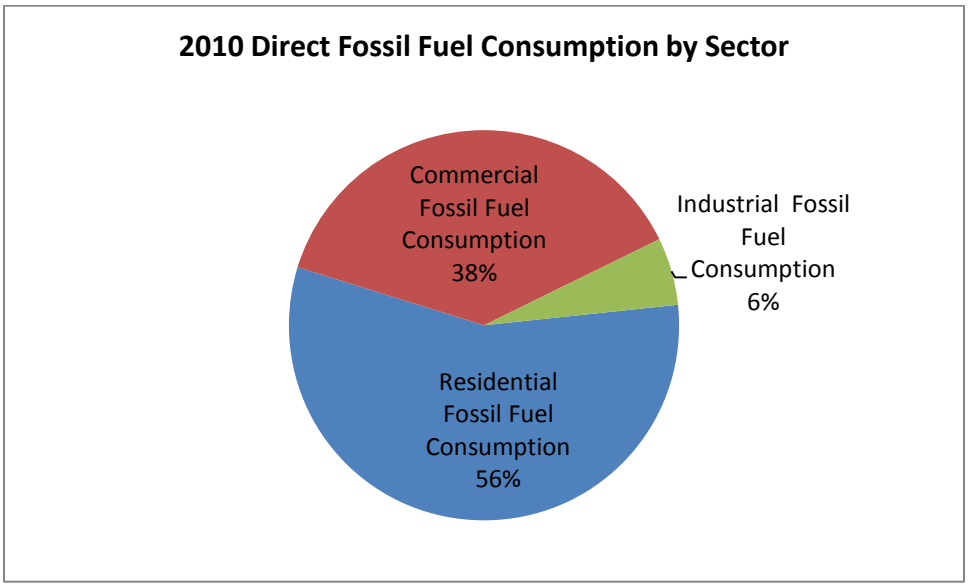


Figure 7-7 Percentage of Direct Fossil Fuel Consumption by Sector in the Mohawk Valley by Sector in 2010

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 (HDD) than the state weighted average. (6,873 HDD compared with 5,616 HDD)
- 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 compared to a multifamily home.

Figures 7-8 and 7-9 compare the amount of energy used in residences by county and type of fuel (including wood) as estimated in the GHG inventory. Households in the region uses significantly more wood and home heating oil compared with other regions in the state. The counties vary significantly in use of fuel oil and natural gas, based on the availability of natural gas.

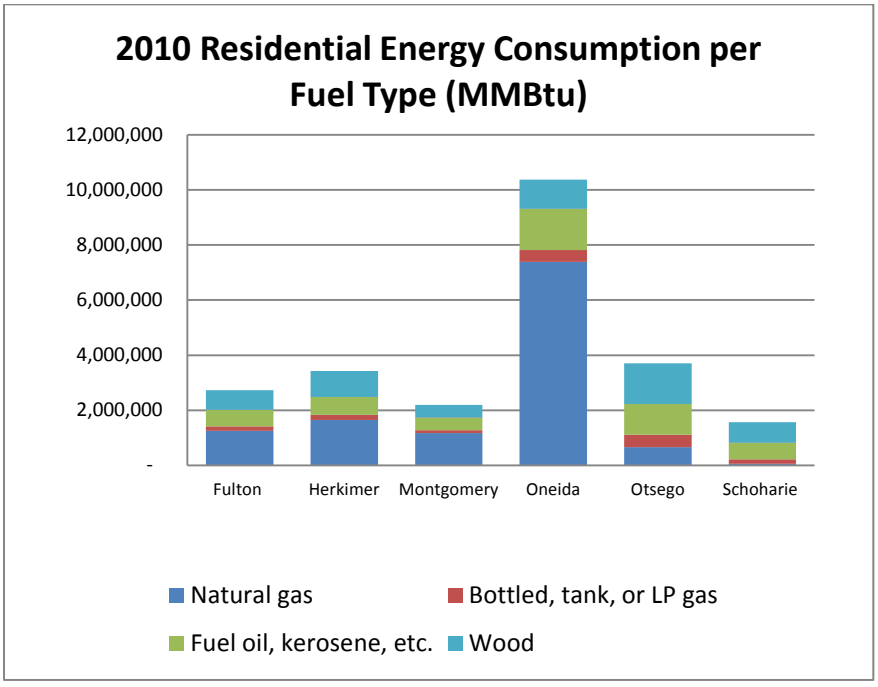


Figure 7-8 Direct Residential Energy Consumption in the Mohawk Valley in 2010

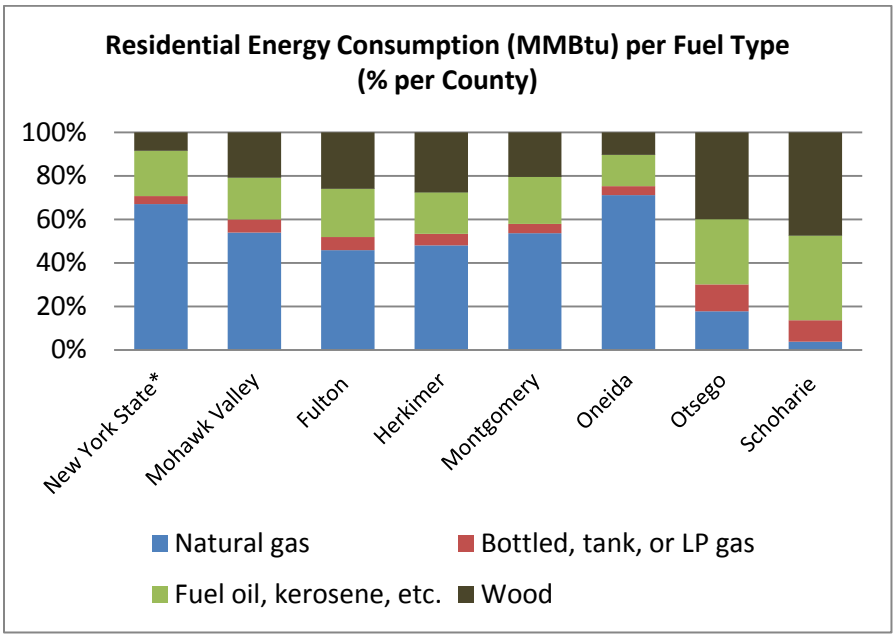


Figure 7-9 Percentage of Fuel Type for Total Direct Residential Energy Consumption in the Mohawk Valley in 2010

7.2.4 Total Annual Renewable Energy Generation

7.2.4.1 Baseline Status of Indicator

This indicator shows the total annual renewable grid-tied electricity energy generation in the region. Because of the different efficiencies of different technologies, reporting generation in MWh (instead of capacity) provides consistency between technologies that is not possible when considering only capacity and reflects the actual performance of these technologies.

2010 Baseline: 464,327 megawatts per hour (MWh) (grid-tied renewable electricity generation)

7.2.4.2 Future Indicator Status/Targets

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

The Mohawk Valley region produces 14% of the power consumed within the region and imports the remainder through the transmission grid. As shown in Figure 7-1, 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.

The NYSERDA Renewable (Energy) Portfolio Standard (RPS) employs two programs as the principal means of obtaining additional renewable resources. The bulk of the electricity needed to reach this goal is obtained from competitive procurements of renewable resources (the Main Tier), i.e., large-scale, grid-tied supply from hydro, landfill gas, and large wind and biomass facilities. In the complementary program for "behind-the-meter" applications of renewable generation, customers directly participate (the Customer-Sited Tier) with on-site generation using smaller wind, solar, and biomass systems that replace grid supply at the point of use. While project-specific data are not available, NYSERDA does provide information on the cumulative renewable energy projects funded through the RPS program.[31] Table 7-5 lists the renewable energy projects in the region.

Table 7-5 RPS-Funded Projects in the Mohawk Valley as of December 2011

	Main Tier Sources	Customer Tier Installations of Wind, Fuel Cells, and Anaerobic Digesters	PV Installations	Solar Thermal Installations
Fulton	None	2 anaerobic digesters	8	1
Herkimer	Hardscrabble Wind Farm	None	5	None
Montgomery	None	1 small wind turbine	22	None
Otsego	None	None	17	1
Oneida	Oneida-Herkimer Landfill generation	1 small wind turbine	32	None
Schoharie	None	None	19	None

Source: NYSERDA RPS Annual Report. August 2012.

Grid-tied supply of renewable energy is tracked by the EIA and the Public Service Commission (PSC) (see Figure 7-1). On-site source data are more difficult to collect but provide an illustration of the extent of independent support for and participation in clean energy generation. Monitoring this indicator over time can identify trends resulting from improvements in technology or changes in energy policy and demonstrate the region's contribution to New York's RPS goals.

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.[32] In April 2012, the largest and newest landfill in the region, the Ava Landfill operated by the OHSWA, began generating electricity

[31] New York State Energy Research and Development Authority. August 2012. 2012 RPS Performance Report. http://www.nyserda.ny.gov/en/Program -Planning/Renewable-Portfolio-Standard/Documents.aspx?sc_database=web

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

from recovered landfill gas.[33] 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.[34] 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.

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

7.2.5.1 Baseline Status of Indicator

This indicator is the measure of the number of households and businesses enrolled in energy efficiency programs and implementation of NYSERDA-funded Projects.

2010 Baseline: 140 new projects
11.5 million kilowatts per hour (kWh) off-grid

7.2.5.2 Future Status of Indicator: Targets

- **2015:** 12.7 kWh (10% increase)
- **2025:** 15.9 kWh (25% increase)
- **2050:** 23.8 kWh (50% increase)

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 (Table 7-6). 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.

[33] 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

[34] 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).

Table 7-6 Participation in NYSERDA Energy Efficiency Programs in 2010 and 2011*

	2010		2011	
	Projects	kWh	Projects	kWh
NYSERDA (EFP, NCP, IPE)	140	11,579,564	100	10,805,896
MV Participation as a Percentage of Total NYS	4.70%	3.60%	3.60%	3.50%

* Source: NYSERDA. July 2012. NYSERDA Program Summary.xls. Provided by NYSERDA to the NYSGHG Inventory Protocol Group

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. Many additional programs other than NYSERDA exist to help business and homeowners install renewable energy technologies

7.3 Summary

Building energy use is the largest source of GHG emissions. Replacement of fossil fuel energy with renewable energy provides the best opportunity to reduce GHG emissions from energy use. However, renewable energy choices have challenges and costs but can help expand a growing green energy economy. Energy efficiency provides the best opportunity for existing businesses and residents to reduce their own energy costs and GHG emission impacts.

8 Agriculture and Forestry

8.1 Introduction

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 including Herkimer County Community College, Fulton Montgomery Community College, SUNY Cobleskill, and SUNY-ESF, 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 (Figure 3-1). 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 following objectives/goals and strategies have been identified:

Goal #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 #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 biomass for home grown energy.

Goal #3: Promote agriculture and forestry economic development for individuals, families, and the region to help sustain the current workforce and encourage others to join the workforce.

- Creating marketing opportunities to bring higher prices, e.g. food hubs, various modes of direct marketing, etc.
- Creating a regional brand for marketing
- Creating new or strengthening 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.

8.2 Agriculture and Forestry Sustainability Indicators

Several primary goals related to the sustainability of agriculture and forestry have been identified. To track progress in accomplishing these goals, a number of indictors for which data are currently available and are likely to be updated at regular intervals to allow tracking of progress over time were selected. The selected indicators and the future status of each are described in the following subsections.

8.2.1 Number of active "Agriculture in the Classroom" Programs

8.2.1.1 Baseline Status of Indicator

This indicator quantifies school children's level of awareness, understanding, and appreciation of how we produce food and fiber, what we eat, and how we live, by helping educators, students, and their communities learn about and engage with agriculture and food systems.

In 2012, [TBD] programs were active in the region.

8.2.1.2 Future Status of Indicator: Targets

- **2015:** _____ programs
- **2025:** _____ programs
- **2050:** _____ programs

8.2.2 On-farm energy efficiency projects implemented

8.2.2.1 Baseline Status of Indicator

This indicator quantifies the number of farms that have increased their energy productivity 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.

8.2.2.2 Future Status of Indicator: Targets

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

8.2.3 Acres of Cropland Available for or in Production

8.2.3.1 Baseline Status of Indicator

This indicator quantifies available acreage as well as the amount being actively used (Figure 8-1). As an indicator of industry growth, it tracks the way land is being used in the region (Figure 8-2). Cropland is land that is available for and most years is used to grow crops. Harvested cropland is land that was actually used for growing crops in the census year. Cropland that is not harvested includes land lying fallow in the census year, and land that was planted, but not harvested due to crop failure or other reasons. The Census of Agriculture is currently the only known source of reliable and replicable data for acres of cropland and harvested cropland, which includes pasture, hayland, orchards, etc. It was last pub-

lished in 2007 with a current update in progress. Information from the 1997 and 2002 Censuses of Agriculture can provide information about trends.

8.2.3.2 Future Status of Indicator: Targets

- **2015:** No loss of cropland
- **2025:** No loss of crop land
- **2050:** No loss of cropland

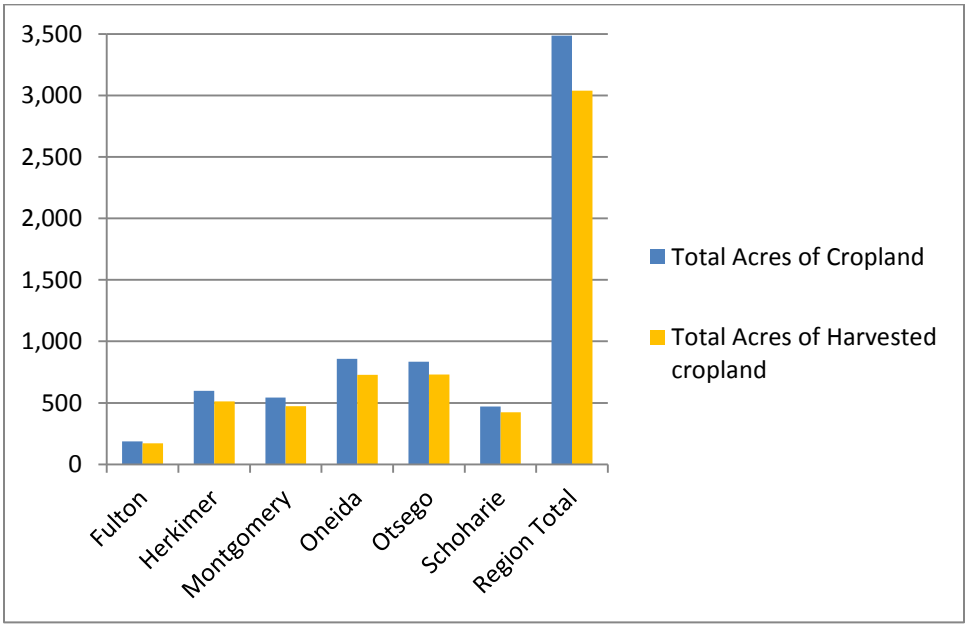


Figure 8-1 Acres of Available and Harvested Cropland
Source: 2007 U.S. Department of Agriculture. Agriculture Census.
http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/

The number of farms has been declining for decades in New York State and at the same time, some farmland has been taken out of production by converting it to developed uses. In addition, as cultivation declined, other farmland has naturally reverted to trees or old-field vegetation and is not actively being managed as forest. Some of that undeveloped farmland could be brought back into production. Additional areas for consideration include land with soils categorized as "prime if drained." Some areas of "prime if drained" soils have already been drained for agricultural purposes. Areas that have not been drained are unlikely to be drained in the future because of wetlands regulations. Several counties within the region contain a significant percentage of this soil type (Figure 8-5). This indicator also quantifies greenhouse gas (GHG) production capacity as well as progress toward

promoting economic development since the availability of land for farming is essential to sustaining the region's agriculture industry.

8.2.2.2 Future Status of Indicator: Targets

- **2015:** No loss of prime farmland or farmland of statewide importance for agriculture
- **2025:** No loss of prime farmland or farmland of statewide importance for agriculture
- **2050:** No loss of prime farmland or farmland of statewide importance for agriculture.

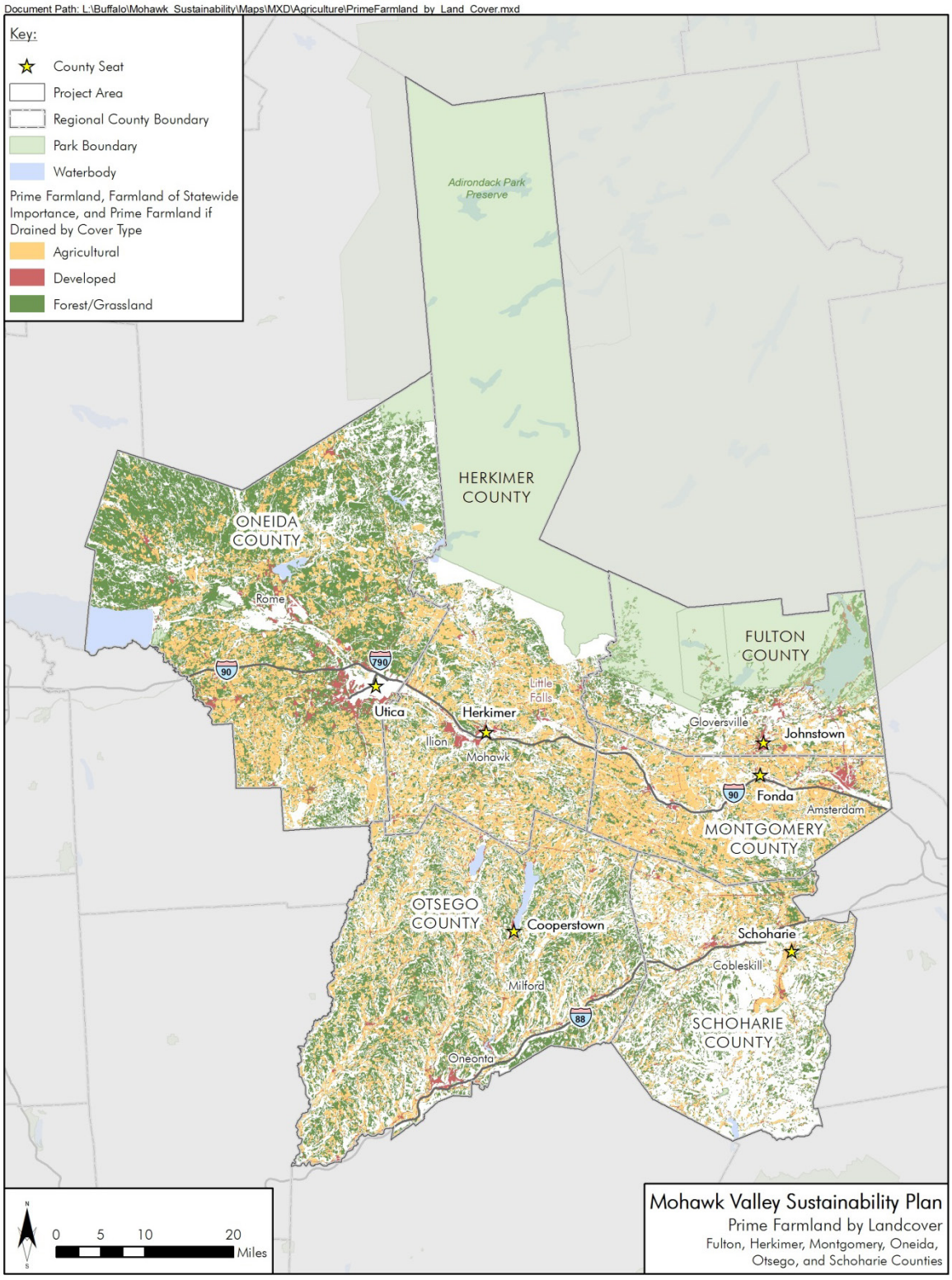


Figure 8-2 Land Cover Types

Source: Multi-Resolution Land Characteristics Consortium – Land Use Land Cover dataset. 2006. www.mrlc.gov/nlcd06_data.php

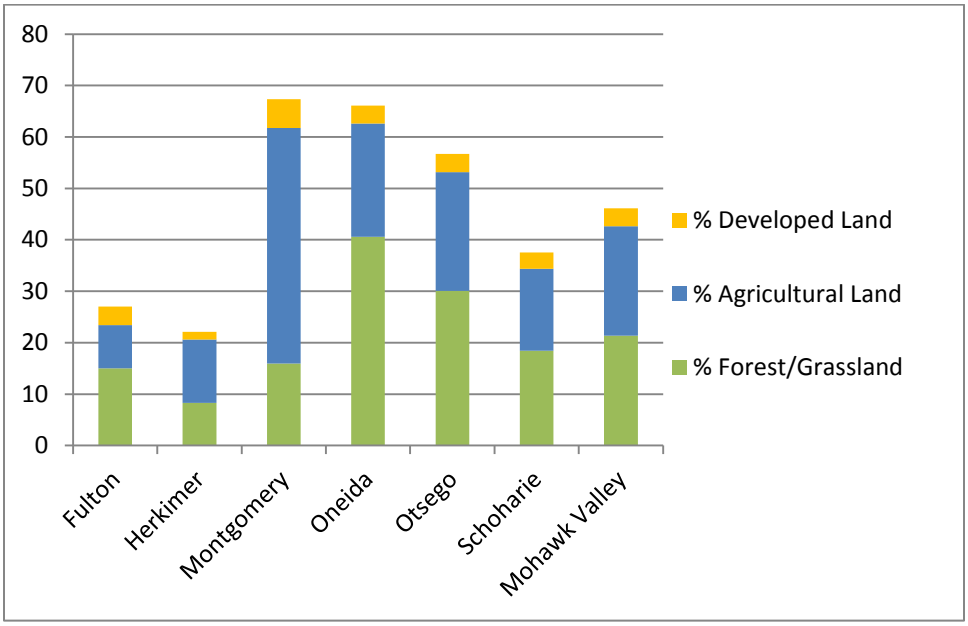


Figure 8-3 Prime and Statewide Important Farmland by Land Cover

Source: U.S. Department of Agriculture Natural Resources Conservation Service. Soils Data Mart. http://soildatamart.nrcs.usda.gov/

Multi-Resolution Land Characteristics Consortium. Land Use Land Cover dataset 2006. www.mrlc.gov/nlcd06_data.php

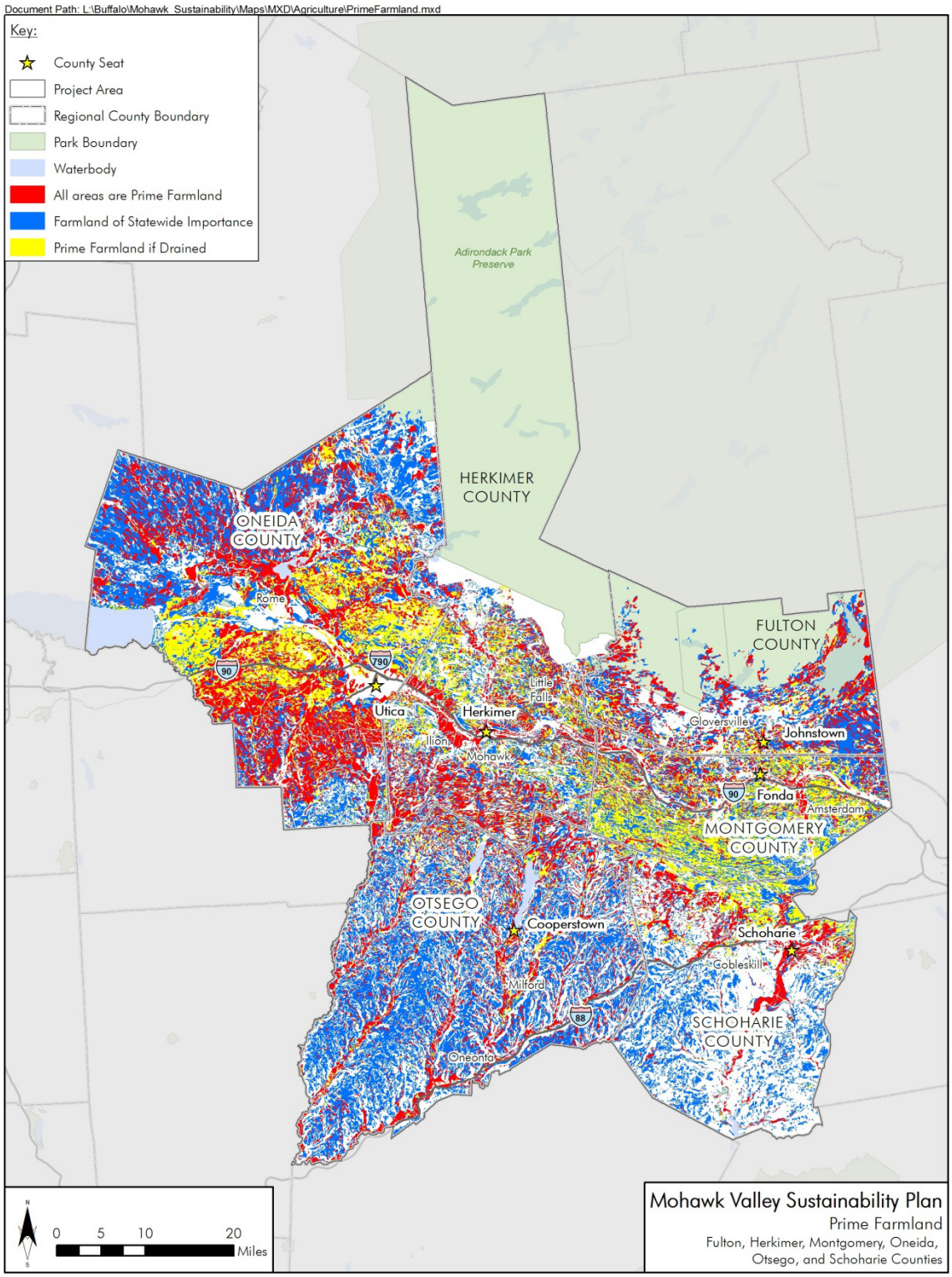


Figure 8-4 Prime and Statewide Important Farmland by Land Cover

Sources: USDA NRCS Soils Data Mart. http://soildatamart.nrcs.usda.gov/
Multi-Resolution Land Characteristics Consortium – Land Use Land Cover dataset 2006.
www.mrlc.gov/nlcd06_data.php

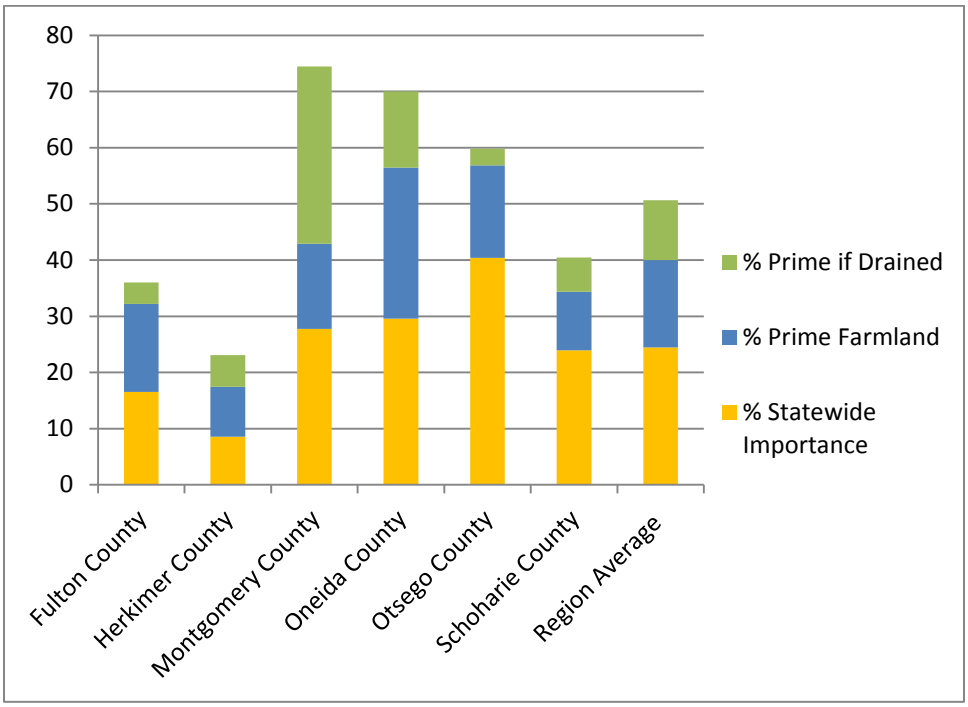


Figure 8-5 Prime and Statewide Important Farmland
Source: U.S. Department of Agriculture Natural Resources Conservation Service. Soils Data Mart. http://soildatamart.nrcs.usda.gov/

8.2.4 Forest Land Available for Production and Harvest of Wood

8.2.4.1 Baseline Status of Indicator

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 (Figures 8-6 and 8-7). 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 is a concern. 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.

8.2.4.2 Future Status of Indicator: Targets

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

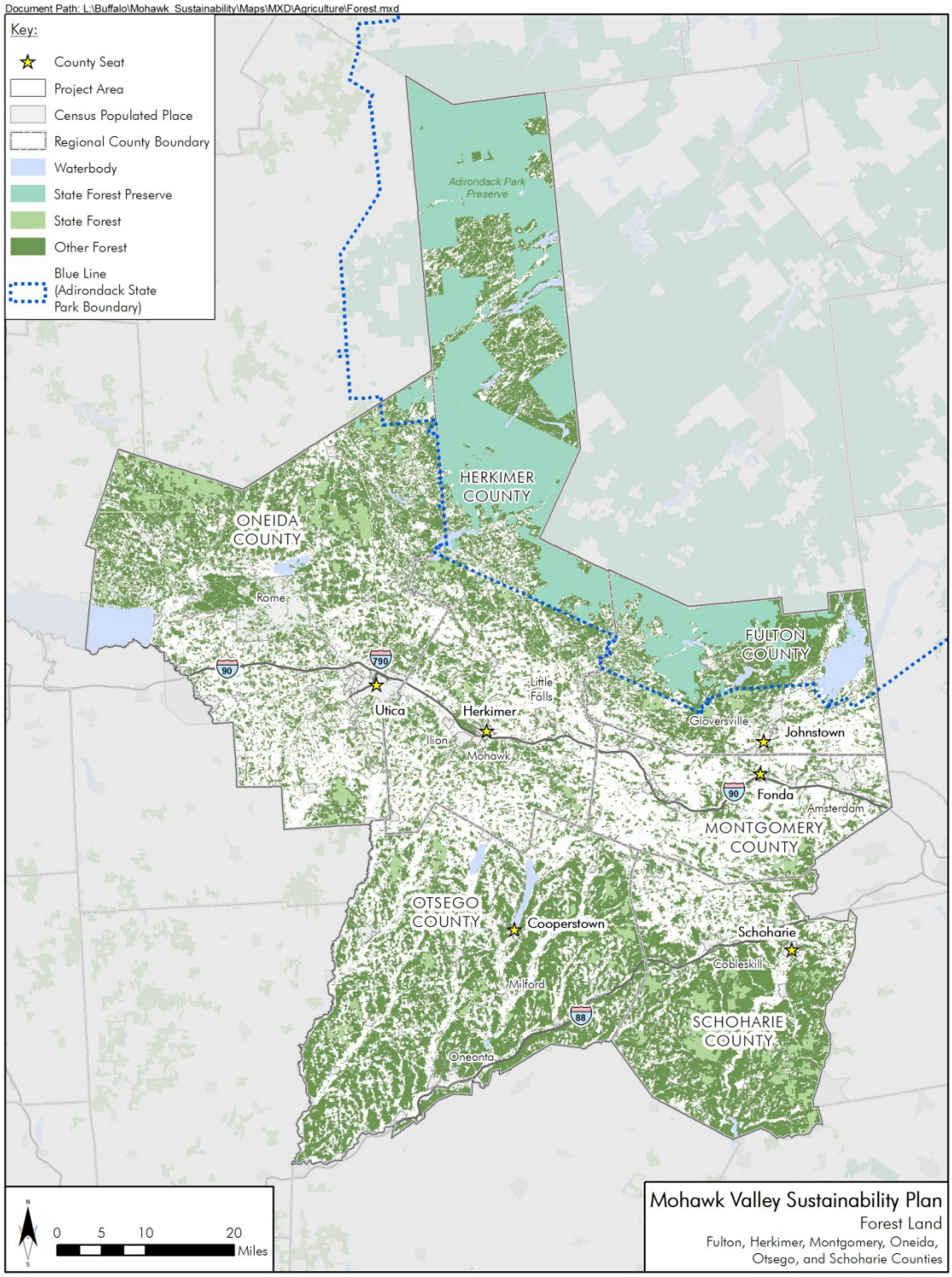


Figure 8-6 Forested Land

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

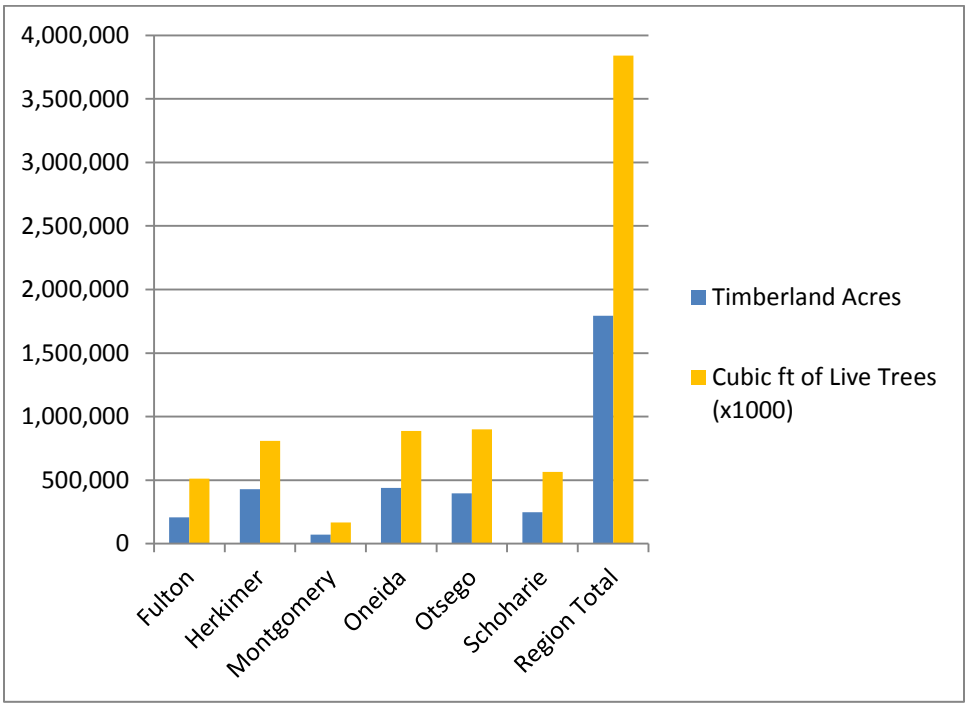


Figure 8-7 Acres of Timberland and Volume of Live Trees
Source: U.S. Forest Service. Forest Inventory and Analysis National Program 2007 reports. http://www.fia.fs.fed.us/tools-data/default.asp

8.2.5 Economics of Farmer Households

8.2.5.1 Baseline Status of Indicator

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 (Figure 8-8). Although 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 (Figure 8-9). Tracking the income derived from operation of their businesses reflects economic sustainability.

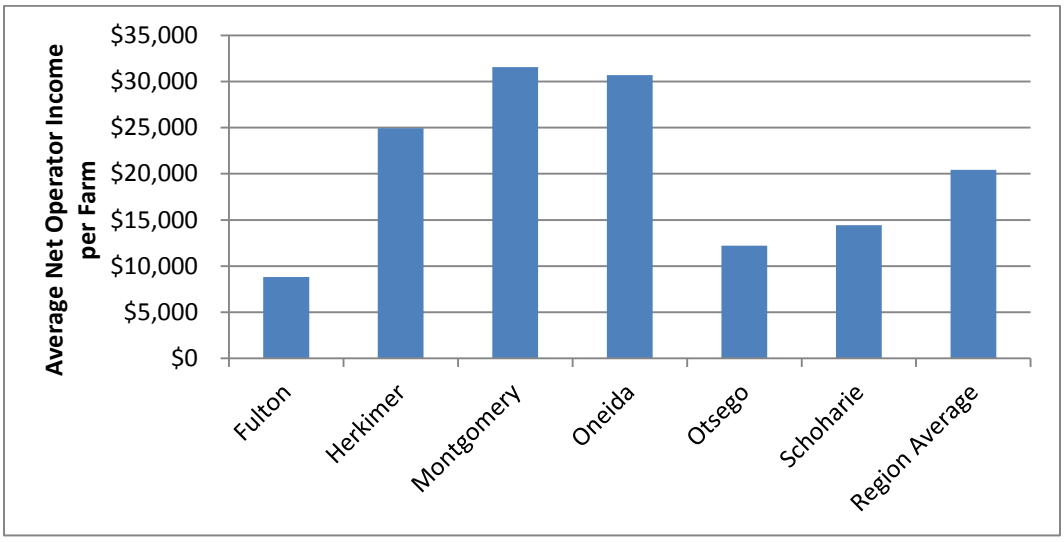


Figure 8-8 Average Net Operator Income per Farm
Source: 2007 U.S. Department of Agriculture. Agriculture Census.
http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/

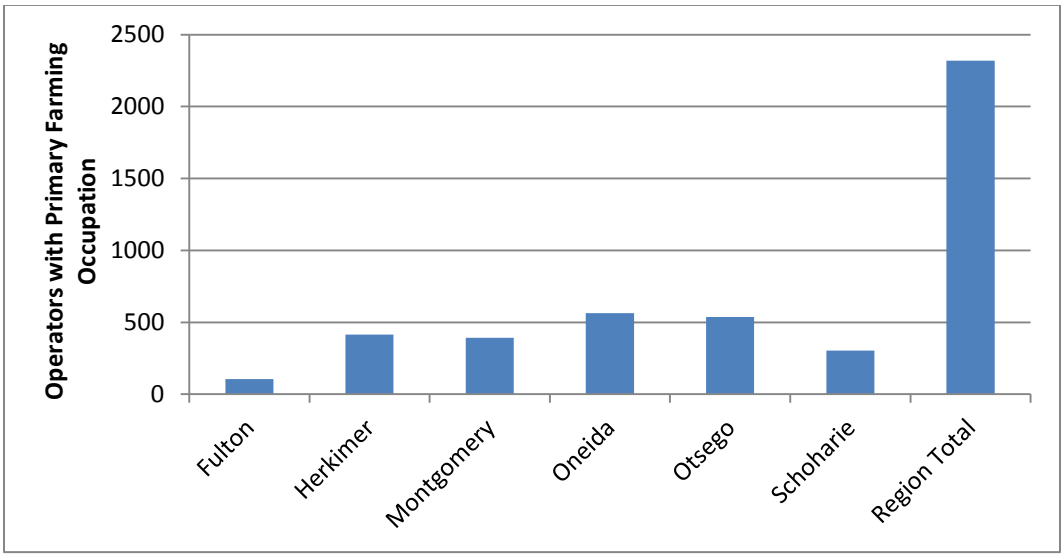


Figure 8-9 Number of Primary Farmers in the Mohawk Valley Region
Source: 2007 U.S. Department of Agriculture. Agriculture Census.
http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/

8.2.5.2 Future Status of Indicator: Targets

- **2015:** Average net operator income/farm increases from $20,436 (2007) to $30,000 (2007 dollars)
- **2025:** Average net operator income/farm increases $45,000 (2007 dollars)
- **2050:** Average net operator income/farm increases to $60,000 (2007 dollars)
- **2015:** Farmers by primary occupation increase from 2,319 (2007) to 2,400.
- **2025:** Farmers by primary occupation increase to 3,000
- **2050:** Farmers by primary occupation increase to 3,500.

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

8.2.6 Number of Agricultural and Food Processing Operations

8.2.6.1 Baseline Status of Indicator

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 (Figure 8-10). 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.

8.2.6.2 Future Status of Indicator: Targets

- **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).

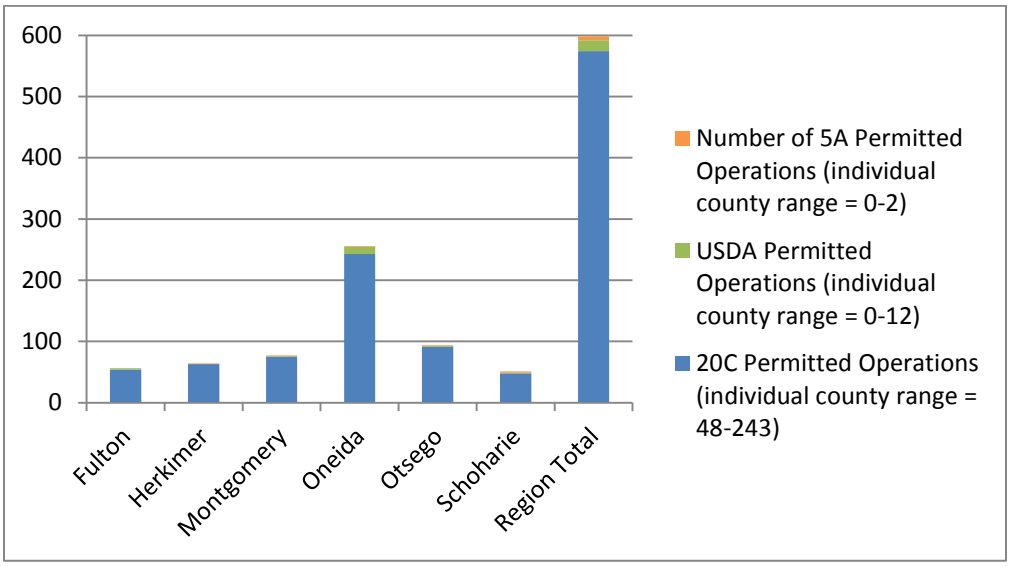


Figure 8-10 Numbers of NYS Ag and Markets 20A and 5C Permits and USDA Permits for Food Processing

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

8.2.7 Number of Forest Product Processing Operations

8.2.7.1 Baseline Status of Indicator

This indicator tracks the number of facilities processing wood (Figure 8-11). 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.

8.2.7.2 Future Status of Indicator: Targets

- **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.

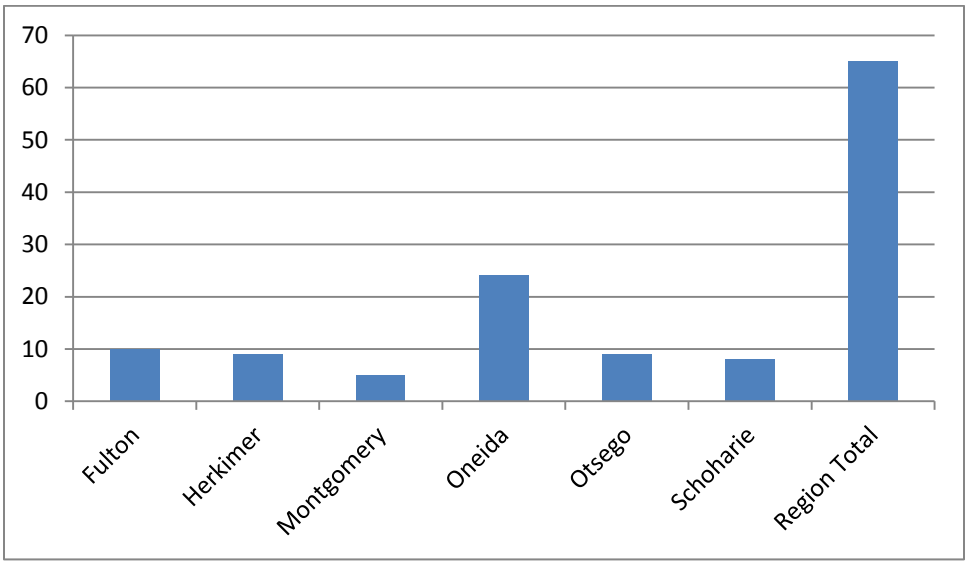


Figure 8-11 Number of Primary and Secondary Wood-Using Industries

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

8.2.8 Number of Local Food Markets

8.2.8.1 Baseline Status of Indicator

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. In addition to Community Supported Agriculture (CSAs), direct sales of food from farms to consumers, farmers markets, farm to school programs, food hubs, and co-ops were also selected as critical options for local food sales (Figure 8-12). 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 enhancing efficiencies and promoting economic development.

8.2.8.2 Future Status of Indicator: Targets

- **2015:** Increase to 565 farms with direct sales (up 5% from 2012); increase to 3 farm-to-school programs (up 50% from 2012); increase to 34 CSAs (up 10% from 2012); increase of 45 farmers markets (up 5% from 2012); increase to 2 food hubs*

- **2025:** Increase to 591 farms with direct sales (up 10% from 2012); increase to 4 farm-to-school programs (up 100% from 2012); increase to 37 CSAs (up 20% from 2012); increase to 45 farmers markets (up 10% from 2012); increase to 4 food hubs

- **2050:** Increase to 618 farms with direct sales (up 15% from 2012); increase to 6 farm-to-school programs (up 200% from 2012); increase to 40 CSAs (up 30% from 2012); increase to 49 farmers markets (up 20% from 2012); increase to 6 food hubs.

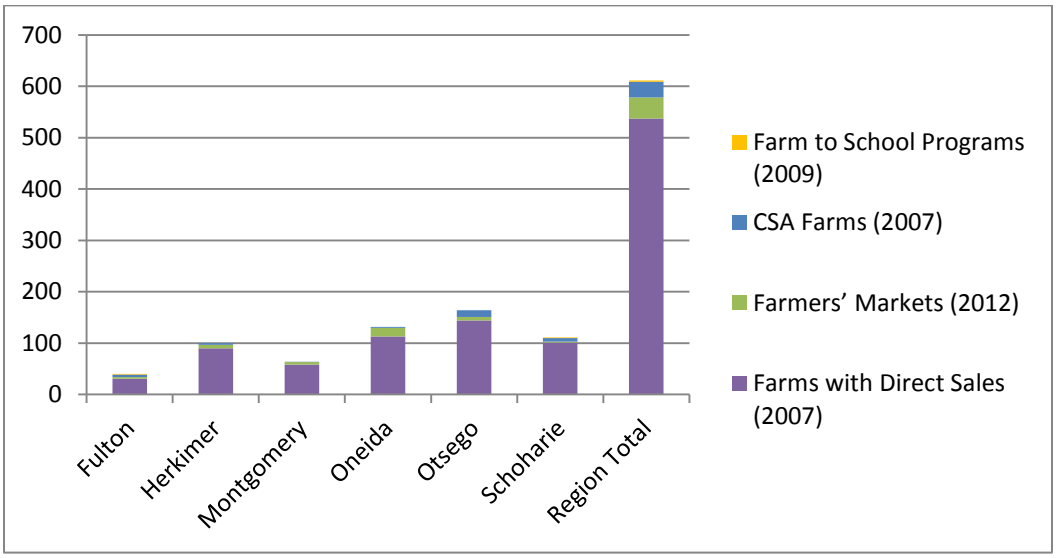


Figure 8-12 Number of Local Food Markets
Source: U.S. Department of Agriculture Economic Research Service. Food Environment Atlas
http://www.ers.usda.gov/data-products/food-environment-atlas/go-to-the-atlas.aspx
*Note: There are currently no food hubs within the region.

8.3 Summary

Seeing improvement in the agriculture and forestry indicators will require the region to consider careful land use planning, investing in educational programs for the industries, developing outreach programs to graduates of agriculture and forestry programs, implementing initiatives to support agriculture and forestry product processing operations, and improving access to markets, including more efficient logistics.

Cropland, Farmland, and Timberland

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 limited useable acreage exists. 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 due to 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.

Age of Farmers

The average age of farmers in the region has increased. This trend exists despite the presence of several well-recognized agriculture colleges within the region. While there are several factors contributing to this trend, the need for workforce training and wage competition, the high cost of starting a farm business, the long hours, high financial risks, and generally low rates of compensation are a concern. In order to maintain and expand a viable workforce of trained farmers, the region must undertake outreach initiatives and generate incentives to promote maintenance of these knowledge bases and skill sets within the region. Occupational training in agricultural and forestry related science and technology may need to be expanded at the secondary school level. In addition, new farmers must be linked to available and affordable farms, and farmers need more local resources to process and sell their products efficiently and at higher profit margins. These last factors depend on improvements of other indicators and collectively would result in farming becoming a more lucrative profession.

Net Farm Operator Income and Farming as Primary Occupation

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.

Local Processing Operations

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.

Local Food Markets

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 farmers 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.

9 Governance

9.1 Introduction

Governance, i.e., local government policies that support sustainability goals, is an overarching topic that is pertinent to all sustainability goals and indicators. Each of the subject areas in the Sustainability Plan were surveyed to identify the extent that policies and plans are in place that support sustainability. The governance indicator discussed below supports the regional objective(s) as well as the specific objectives of the individual regional issues that intersect with governance initiatives and policies.

9.2 Governance Sustainability Indicator

9.2.1 Smart Growth/Sustainability Regulatory or Tax Policies or Incentives

This indicator summarizes regulatory or tax policies that encourage the following:

- Developments in municipal centers that use existing infrastructure
- Brownfield and waterfront redevelopment
- Energy efficiency and renewable energy
- Local and regional transportation planning initiatives
- Climate change adaptation
- Water conservation and/or waste reduction
- Preservation of agricultural and/or forest lands.

Unlike numerical indicators used in the other subject areas, such as the amount of energy use, or the miles driven per person, the Governance indicator is a simple list of appropriate actions – it is an indicator of planning commitments and enhanced regional cooperation.

Regulatory initiatives and tax incentives are means to control behavior. The sustainability planning effort would not presume that additional governance actions are the best way to alter behaviors, so no numeric targets for meeting goals

through governance are proposed here. Since the specific goals and numeric targets are addressed in each of the subject area sections, this Governance section simply lists the appropriate actions.

Smart growth/sustainability, regulatory, or tax policies or incentives in the region would also be an indicator of enhanced regional cooperation. Therefore, this indicator is consistent with the REDC goal to encourage regional strategies and mechanisms that promote regional brownfield redevelopment, urban cores and Main Street districts revitalization, and planning and zoning technical assistance. Additionally, the economic development working group FORGE goal speaks to the need for improved efficiency and cooperation within local government to enhance business success.

The required data for this indicator includes a survey of smart growth/ sustainability, regulatory, or tax policies or incentives in the region. In order to establish a baseline reflecting existing policies and/or incentives in the region a Governance Questionnaire was implemented via phone interviews based on the indicator definition. The phone interviews to discuss the questionnaire categories were conducted with Mohawk Valley Working Group and/or Consortium members, which included members from local government, private sector, and general Mohawk Valley public and interest groups. Information gathered on existing smart growth/sustainability, regulatory, or tax policies or incentives in the region are summarized below.

9.2.1.1 Baseline Status of Indicator

Smart Growth/Sustainability Regulatory, Tax Policies, or Incentives

Although New York State has had a smart growth policy in place at the state level since 2010— the NYS Smart Growth Public Infrastructure Policy Act—the Mohawk Valley region does not have any smart growth tax policies or regulatory policies marketed as "smart growth," at the regional or at the county level.

Locally, at the city level, there are no existing policies or incentives marketed specifically as smart growth. However, there are three cities in the Mohawk Valley region where recent initiatives and discussions are being informed by smart growth principles.

- The City of Rome currently has no existing smart growth policies but is exploring the possibility as part of the Brownfield Opportunity Area (BOA) planning process.

- The cities of Johnstown and Gloversville in Fulton County are located close to each other. There has been discussion of developing smart growth-related policies such as a potential tax sharing arrangement between the cities as part of a Wal-Mart location negotiation.

- There were similar discussions of expanding the City of Johnstown's industrial park into the Town of Mohawk in Montgomery County.

There are no municipal water and sewer services in Fulton County except in the cities of Johnstown and Gloversville. The remainder of the county relies on septic systems. Limiting the development of water and sewer infrastructure to just these cities within the MV region helps focus development in the cities, reduces sprawl and thereby is consistent with smart growth principles

The City of Gloversville recently passed a tax policy in fall 2012 that encourages downtown development by encouraging property owners to invest $10,000 in property improvements by waiving property taxes for a period of time. The properties would be returned to the city's tax rolls at a later time at a higher assessment rate. While this example of a recent initiative at the local level is not necessarily being marketed as a smart growth tax policy, the overall goal of fostering downtown development and Main Street revitalization is in line with smart growth principles.

Brownfield Redevelopment Initiatives

Brownfield redevelopment initiatives in MV include the New York Department of State's (DOS) BOAs program. The DOS provides financial and technical assistance to communities to complete revitalization plans and implement strategies for developing brownfield areas. The existing BOAs in the region include the following[35]:

- **City of Rome,** Oneida County. The Downtown Rome BOA encompasses 513 acres and the South Rome BOA encompasses 50 acres. There is also potentially an additional BOA in the pre-nomination stage.

- **City of Utica, Oneida** County. The Erie Canal Industrial Corridor BOA encompasses 1,580 acres and includes areas such as Bagg's Square, the industrial Broad Street and Oriskany Boulevard corridors, and Harbor Point in North Utica.

- **City of Amsterdam**, Montgomery County. The Downtown Via Ponte BOA encompasses 381 acres and the Northern/Eastern Neighborhoods BOA encompasses 50 acres.

- **The Village and Town of Frankfort**, Herkimer County. The Main Street and Mohawk River BOA encompasses 470 acres.

- **City of Johnstown**, Fulton County. Johnstown's BOA encompasses 4,000 acres of multiple brownfield sites where former leather mills had been located.

[35] http://www.dos.ny.gov/communitieswaterfronts/brownFieldOpp/BOA_Projects/region06.html

- **City of Oneonta**, Otsego County. The D&H rail yard BOA encompasses 460 acres and the Factory Street/New Island BOA encompasses 378 acres.

All of the existing BOAs listed above are at various stages of funding and implementation. In addition, the Village and Town of Boonville currently have a joint agreement and could potentially be the tenth BOA in the Mohawk Valley region to receive funding. The Village of Fort Plain also reportedly has submitted a BOA application and is waiting to hear about the determination. Other local brownfield redevelopment initiatives include cleanup initiatives related to leather mills in the cities of Gloversville and Johnstown.

Waterfront Revitalization Planning Initiatives

Several waterfront revitalization planning initiatives in the Mohawk Valley region are in progress. While there are some independent planning initiatives in communities that are located along waterfronts, the majority of the waterfront revitalization initiatives are linked to the New York State's Waterfront Revitalization of Coastal Areas and Inland Waterways Act, which allows local governments to voluntarily participate in the State's Coastal Management Program (CMP) by preparing and adopting local waterfront revitalization programs (LWRPs). An LWRP is both a plan and the program established to implement the plan. The DOS provides technical and financial assistance for the preparation and implementation of LWRPs. The LWRP also acts as a tool to coordinate local and state actions, including funding to achieve a community's waterfront goals.

Mohawk Valley LWRPs include the following:

- Mid-Montgomery Waterfront Program includes four jurisdictions (Town of Mohawk, Town of Glen, Village of Fonda, and Village of Fultonville in Montgomery County) and has an LWRP and a grant for a waterfront park in the Village of Fonda.

- Western Montgomery County has an established LWRP for four municipalities (Town of Minden, Village of Fort Plain, Village of St. Johnsville and Town of St. Johnsville). The plan was last updated in 2012. The City of Amsterdam in Montgomery County has had a waterfront planning initiative and LWRP, since the 1990s.

- The City of Utica, Oneida County has a Waterfront Access Plan as of December 2011 that was developed with funding assistance from the NY State LWRP

Other communities in the Mohawk Valley with LWRPs under way include the City of Oneonta, City of Little Falls, City of Frankfort, City of Boonville and, Village of Ilion.

Some of the other local waterfront revitalization planning initiatives that are not part of the LWRPs include the following:

- The City of Rome has participated in developing several waterfront revitalization plans and currently has two projects under way – the *Rome Navigation Center* as the official gateway to Bellamy Harbor Park and the *Harborway on the Erie Canal* project that will redevelop a brownfield area on the Erie Canal and also supports the building of a seawall to provide a physical connection to the existing Canalway Trail.[36]

- Ongoing waterfront restoration work in Schoharie County damaged by flooding from Hurricane Irene in 2011.

- Most cities along the Mohawk River and Erie Canal have been involved in waterfront revitalization initiatives. The Canal Corridor Initiative promoted development along the Erie Canal and received Community Development Block Grant (CDBG) programming in 1997-98. Towns such as Little Falls and other towns along the Erie Canal were also involved in waterfront planning initiatives. (Overall, the initiatives accounted for $60 million in grants and $60 million in subsidized loans). Off-road facilities and designated hiking/biking trails along the Erie Canal corridor are also supported by funding from other federal transportation programs such as ISTEA and TEA-21.

- The Village of Northville in Fulton County is working on a waterfront initiative.

- The John Smith Historic Trail is located along the Susquehanna River. The local community, including the Town of Milford is considering initiatives that will create tourism opportunities and thereby economic stimulus to local business from trail visits while also protecting the land. In addition, another potential initiative to increase access to the river includes creating an educational walkway on the river's shallows.

Policies that Support Energy Efficiency and Renewable Energy

Existing policies in the Mohawk Valley region that support energy efficiency and renewable energy include NYSERDA initiatives at the state level and the New York State building code for energy efficient buildings, but very few local policies are being developed.

The few examples of existing local policies on energy efficiency and renewable energy include the following:

- The Town of Otego is currently revising its comprehensive plan, including the development of policies related to overall energy efficiency and renewable energy. Leadership in Energy and Environmental Design (LEED) policies have also been considered in the past to support energy efficiency and renewable energy initiatives.

[36] http://www.dos.ny.gov/communitieswaterfronts/pdfs/2011EPF_LWRP_CFA_Awards.pdf

- The Town of Laurens is beginning to develop a comprehensive plan similar to the Town of Otego's.

- The City of Utica's master plan includes the following energy-related policies:
  - Requirement that municipal construction in Utica meet LEED standards
  - Development of technologies and delivery systems that generate power that are cost-efficient and environmentally friendly.

A few examples of local initiatives related to energy efficiency include the following:

- The City of Rome has conducted a citywide energy study.

- The wastewater treatment facility in the City of Johnstown reuses waste for energy.

- The Fulton County landfill generates electricity from methane.

- The City of Oneonta's municipal buildings were audited to identify lighting and insulation improvements.

- The Goodyear Lake (Colliersville) Project on the Susquehanna River in, Milford, Otsego County, New York was one of the earliest hydroelectric plants in New York State and is used for generating hydroelectic power.

- Based on wind resource analysis, the towns of Johnstown and Perth in Fulton County have considered possible locations for wind power turbines.

- Herkimer, Oneida, and Montgomery counties do not have county-wide policies addressing energy efficiency and/or renewable energy.

Policies that Promote Water Conservation and/or Waste Reduction

Abundant water supplies in the region have reduced the pressure on local government to create and promote water conservation policies. As a result there are limited existing local and county water conservation policies in the Mohawk Valley.

Otsego County's water conservation policies address drought conditions: The Town of Otego has adopted a policy on water conservation for drought. And the City of Oneonta reservoir (located in the Town of Oneonta) is subject to drought conditions and has a water conservation policy in place (e.g., limit watering of lawns in the city). In addition, new water meters have also been installed in the City of Oneonta to aid in water conservation. The City of Utica Master Plan's Infrastructure and Waterfront Development section encourages water conservation through installation of smart meters and recapture and recycling programs.

Examples of waste reduction policies implemented by solid waste authorities in the region include the following:

The Oneida-Herkimer Solid Waste Authority has progressive policies, including the implementation of single stream recycling throughout the two-county region.

- The City of Utica and Village of Ilion have adopted per bag fees, which have driven up recycling rates.
- A state-of-the art landfill serves Herkimer and Oneida counties.
- There is a 'no burning trash' clause in Herkimer and Oneida counties, but it is not always followed.

The Montgomery Otsego Schoharie Solid Waste Authority (MOSA) has certain policies related to waste reduction. Montgomery County is also developing a solid waste plan and it is estimated to be completed in about one year.

A few examples of local initiatives include the following:

- Fulton County's waste-energy recovery initiative. The waste treatment process at the water/sewer plant in the City of Johnstown is providing 98% of the energy needs of the plant.
- Although there is no specific economic incentive for recycling, residents of the City of Johnstown recycle regularly (pick-up is twice a week).
- The City of Oneonta's wastewater treatment plant is studying ways to reduce nitrogen/phosphorus levels and adding solar panels to the facility. The city is also trying to improve recycling rates.

Policies that Support the Preservation of Agricultural and/or Forest Lands

The preservation of forest lands in NYS is through state-level policies; preservation of agricultural land is managed at the county level through Agricultural Development and Farmland Protection Plans or Farmland Protection Districts Examples of existing county plans and/or local plans and policies that address preservation of agricultural land or established agricultural protection measures in the region include the following:

- Farmland protection boards have been established in Herkimer and Oneida counties.
- Fulton County has an Agricultural Development and Farmland Protection Plan. In addition, six townships in Fulton County are within a Farmland Protection Area District. An Agriculture Plan is being developed for Otsego County. The plan addresses dairy farming because of the strong renewed interest and popularity of yogurt and artisanal cheese making in the region. Additionally, there is an interest in developing microbreweries and promoting agritourism in the region to help preserve rural lands as well as expand the

economy. Montgomery County has an Agriculture and Farmland Protection Board and a county-wide Agriculture and Farmland Protection Plan in place.

- Conservation easements are tools that can be used to preserve open space but have not been extensively utilized. The comprehensive plans of the towns of Otego, Laurens, and Butternuts (including the Village of Gilbertsville) in Otsego County have provisions for the preservation of the limited remaining agricultural lands in the area. The Montgomery County LWRP has a provision for the protection of agricultural lands. The Town of Minden in Montgomery County has a comprehensive plan with provisions that protects farmland.

Examples of existing policies that support the preservation of forest lands include:

- Several portions of policies that support the preservation of forest lands are related to the Adirondack Park, which is protected at the state level by the "Forever Wild" provision of the State Constitution (Article 14). For example, approximately half of Fulton County is in the Adirondack Park, so there are state forest lands in the county but no local initiatives. There are also mostly state-owned forest lands in the Towns of Charleston and Root in Montgomery County.

- The Montgomery County LWRP has a provision to protect forest lands.

- The preservation of forest lands is included in the comprehensive plans of the towns of Otego, Laurens, and Butternuts (including the Village of Gilbertsville).

- The City of Rome has a watershed protection plan for the lands around the city reservoir. The city has also worked with the Nature Conservancy to establish easements within the city.

Transportation Policies that Support Local and Regional Planning Initiatives

Transportation policies that support local and regional planning initiatives in the Mohawk Valley are limited, except where there is an existing multi-jurisdictional planning entity in place. The entire Mohawk Valley region is not covered under a single Metropolitan Planning Organization (MPO); only Herkimer and Oneida counties have a joint MPO in place.

The Herkimer-Oneida Counties Governmental Policy and Liaison Committee (GP&L) is the designated MPO for these counties. The regional transportation planning is carried out by the Herkimer/Oneida Counties Transportation Study (HOCTS) and is a cooperative effort between local, state and federal agencies. Other transportation initiatives focus mainly on local and/or regional bus programs. These transportation initiatives include the following:

- The City of Rome and Utica and towns of Kirkland, Whitestone and New Hartford have a public bus service in place for the cities and surrounding areas through Centro of Oneida bus transportation service.

- The City of Utica Master Plan's Infrastructure and Waterfront Development section addresses the development of a multi-modal transportation system. Additionally, there is a proposed initiative to build a bike trail connecting Philip A. Rayhill Memorial Recreational Trail to the Erie Canalway trail.

- Private tour bus operators also provide regularly serviced public transport in the region. For example, Brown Coach provides commuter service to Albany and Schenectady from Johnstown, Gloversville and Amsterdam

- The Town of Milford's comprehensive plan includes discussion on traffic usage and finds that local roads are not sufficient. At the policy level, the plan advocates studying the transportation network at the town level and advocates for local initiatives

- The City of Gloversville has a transportation department and Fulton County serves as a pass-through for a bus company. Fulton County is also working with Montgomery County on a bypass project for truck traffic (from a Walmart Distribution Center). This would alleviate truck traffic in the Village of Fonda. Fulton County also works with the City of Gloversville on a bus route for commuters to General Electric.

Policies that Support Climate Change Adaptation

Although climate change awareness is beginning to increase overall, there are no existing policies within the Mohawk Valley region that specifically support climate change adaptation.

Events such as Tropical Storm Irene caused extensive flooding in the region and have focused discussions on climate change.

9.3 Summary

While there are a number of existing regulatory or tax policies or incentives in the Mohawk Valley region that speak to smart growth/sustainability initiatives, the existing policies/incentives relate to only a few very specific categories, and other sustainability related topics have yet to be addressed through policies and incentives in the region.

Areas where the Mohawk Valley region has existing policies/incentives established and that relate directly to sustainability include brownfield redevelopment initiatives, waterfront revitalization planning initiatives, and the preservation of agricultural lands.

- Brownfield redevelopment initiatives are continuing in the local communities, and many are linked to the nine existing New York State DOS BOAs.

- Waterfront revitalization is relevant only to particular areas of the region. While there are some independent planning initiatives in communities that are located along waterfronts, the majority of the waterfront revitalization initiatives in the Mohawk Valley are linked to the preparation and adoption of LWRPs.

- The majority of the Mohawk Valley counties either have an established Agricultural Development and Farmland Protection Plan in place and/or there are Farmland Protection Districts within the counties.

- Flood mapping is the basis of managing damage from flooding. Flood maps are prepared by the Federal Emergency Management Agency (FEMA). These maps are used to revise the Digital-Flood Insurance Rate Maps (D-FIRMS). D-FIRMS are the basis insurance availability and for zoning and other regulatory activity that limits growth in flood-prone areas. New D-FIRMS are in preparation by FEMA for the Mohawk Valley. Their release will alter zoning maps as municipalities adopt the mapping into their zoning. No new zoning has been initiated, but this is an area where local Governance activities could mitigate flood risks.

Smart Growth Policy Challenges

Smart growth and sustainability related topics that have yet to be addressed at a large-scale in the Mohawk Valley region through policies and incentives include smart growth tax or regulatory policies, policies that support energy efficiency and renewable energy, water conservation, and climate change adaptation. While New York has a smart growth policy, known as the NYS Smart Growth Public Infrastructure Policy Act, which has been in place at the state level since 2010, there are no smart growth taxes or regulatory policies marketed as "smart growth" at the regional, county, or local level within the Mohawk Valley. There are also only a few examples of existing policies in the Mohawk Valley region that support energy efficiency and renewable energy at the local level. There are limited existing policies that promote water conservation in the region since the Mohawk Valley region is described as a "water rich" area. Although climate change awareness is beginning to increase overall, there are no existing policies within the Mohawk Valley region that specifically support climate change adaptation. These topics represent areas that can be improved upon by developing regional, county, and local level policies and incentives in the future.

Sustainability-related topics that are being addressed through policies and incentives in some select locations within the Mohawk Valley region, although not others, include waste reduction policies, policies supporting the preservation of forest lands, and transportation policies that support local and regional planning initiatives. There are a few examples of waste reduction policies stemming from multi-jurisdictional solid waste authorities in the region. With transportation policies only Herkimer and Oneida counties have an MPO to address regional transportation planning initiatives. Therefore, both regional transportation planning and waste reduction policies stemming from the solid waste authorities in the region

could be strengthened in the future by establishing additional regional planning initiatives. The preservation of forest lands is mainly a state responsibility because Adirondack Park is located in the region. Establishing local policies and initiatives related to the preservation of forest lands may not be needed or necessarily designated as a future priority within the region.

10 Climate Change Adaptation and GHG Emissions

10.1 Introduction

As discussed in the report "Responding to Climate Change in New York State" (NYSERDA 2011), 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. 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. Temperatures are increasing, precipitation patterns are changing, and sea level is rising. These climatic changes are projected to occur at much faster than natural rates because of increased amounts of greenhouse gases in the atmosphere.

Climate changes are already having impacts in some aspects of society, the economy, and natural ecosystems. Not all of these changes will be gradual. When certain tipping points are crossed, impacts can increase dramatically. Past climate is no longer a reliable guide to the future. This affects planning for water and energy infrastructure and all other social and economic systems.

The state climate change report identified the following effects for the Mohawk Valley region:

Heat Waves

Heat waves will become more frequent and intense, increasing heat-related illness and death and posing new challenges to the energy system, air quality, and agriculture. Impacts in the region could include the following:

- Increased fatigue of materials in water, energy, transportation, and telecommunications infrastructure
- Decreased quality of drinking water supply
- Greater frequency of summer heat stress on people, plants, and animals
- Altered pest populations and habits, affecting agriculture and ecosystems

- Changes in the distribution of key crops such as apples, cabbage, and potatoes
- Reduced dairy milk production
- Increased electricity demand for cooling
- Declines in air quality that are linked to respiratory illness
- More heat-related deaths.

Heavy Downpours and Intense Weather Events

Heavy downpours and intense weather events are increasing and are projected to increase further. These can lead to flooding and related impacts on water quality, infrastructure, and agriculture. Impacts in the region could include the following:

- Increased river and stream flooding, both in frequency and intensity, resulting in increased damage to public and private property as well as key rail lines, roadways, and transportation hubs
- Increased effort and cost to maintain management and quality of the drinking water supply
- Increased delays and hazards related to extreme weather events and increased expense and effort for their management.

Summer Drought

Summer drought and higher average temperatures are projected to increase, affecting water supply, agriculture, ecosystems, energy production. Impacts in the region could include the following:

- Need for irrigation of high-value crops
- Reduced overall or average water volumes causing reduced hydropower production
- Milk production losses due to low water and feed supply (higher feed costs)
- Invasive insects, weeds, and other pests moving north
- Decline of popular apple and grape varieties with specific climate requirements
- Decline of native brook trout, replaced by bass.

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.

10.2 Indicators

The overarching goal and purpose of the entire sustainability plan are adaption to climate change and the reduction of GHG emissions. Seven technical working groups and a review of governance issues related to all the other subjects were convened as part of the Mohawk Valley Regional Sustainability Planning process to report to the public and develop recommendations for an economically and environmentally sustainable future. Since climate change and GHG emissions were determined to be pertinent to all subject areas, specific sustainability goals and indicators relevant to climate change adaptation and GHG emissions have been developed within these subject area working groups.

As part of the regional sustainability planning process, the goals of the seven technical working groups and the suggested indicators provided by NYSERDA were reviewed to consider any metrics that relate to climate change adaptation and GHG emissions. Many of the sustainability indicators selected by the working groups demonstrate how the region will become more resilient in the face of climate change and reduce GHG emissions. In particular, indicators chosen by the energy, land use and livable communities, water, and agriculture working groups will address climate adaptation and mitigation that will be critical to the region's future.

NYSERDA required the selection of at least one specific indicator for climate change adaptation and one for GHG emissions. Because the region is at risk of flooding, the climate change indicator recommended is "Climate Change Adaptation – Flood Zones – Economic value of property vulnerable to storm surges and flooding." To demonstrate the accumulated data collected as part of the GHG inventory, the GHG emission indicator that has been chosen is "Greenhouse Gas Emissions - CO_2e emitted, absolute and on a per capita basis.

10.2.1 Climate Change Adaptation – Flood Zones – Economic Value of Property Vulnerable to Storm Surges and Flooding

10.2.1.1 Baseline Status of Indicator

This indicator provides a view to the potential economic impact of climate change. There are several rivers and major creeks in the Mohawk Valley, and communities have already experienced damage from flooding. Tracking the potential extent of economic value at risk and reducing this risk will prevent loss in the region's communities.

In 2012, The Bureau of Flood Protection and Dam Safety NYSDEC contracted with Ecology and Environment, Inc. (E & E) to complete a floodplain assessment for a portion of the Mohawk River from the city of Utica in Oneida County through Herkimer County, Montgomery County, and Schenectady County (E & E 2012) (see Figure 10-1). The purpose of the project was to estimate the extent of potential damage to structures at risk from various future flooding scenarios. The

primary tool used to map structures, overlay potential flood risks, and assess damage to critical facilities in the various flood zones was Hazards US Software (HAZUS). HAZUS was developed by FEMA as a nationally applicable standardized methodology to estimate potential losses from earthquakes, floods, and hurricanes. HAZUS models present output using GIS technology to estimate physical, economic, and social impacts of disasters.

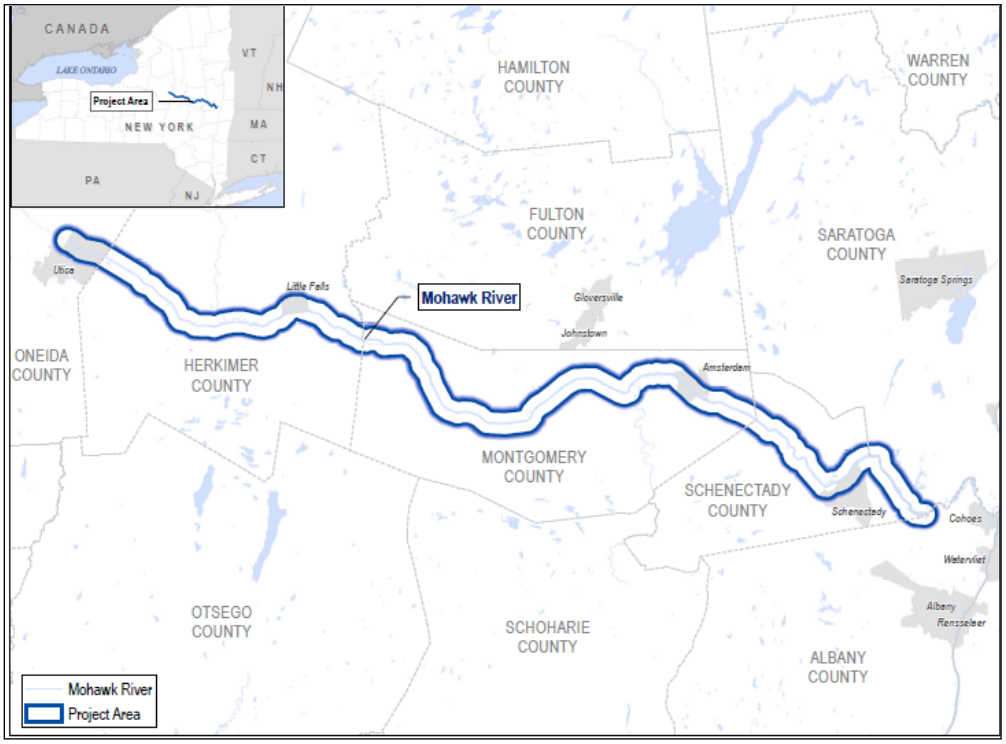


Figure 10-1 Floodplain Coordination and Outreach Project, Mohawk River Project Area

The project provided extensive maps and tables and the final report describes the facilities that are at risk of flooding. Maps were prepared that display the flood zones, the location and type of facilities in and near the flood zones, and the following numeric estimates:

- Total square footage of buildings lost
- Total economic loss of buildings in thousands of dollars
- Tons of debris generated
- Number of people required to shelter
- Number of employees at the largest employers.

Communities in the region along the Mohawk River from Utica to Montgomery County's border with Schenectady were evaluated. Table 10-1 summarizes the

data from this report on the total of the economic value of buildings within the 100- and 500-year flood plains along this stretch of the Mohawk River.

Table 10-1 Building Value of Property within Flood Plains along the Mohawk River

County	100-year Flood Plain	500-year Flood Plain
Oneida	$ 38,900,000	$ 67,790,000
Herkimer	$ 31,420,000	$ 59,200,000
Montgomery	$ 103,430,000	$ 245,800,000
Total	$ 173,750,000	$ 372,790,000

10.2.1.2 Future Status of Indicator: Targets

Numeric targets for this indicator have not been set because more discussion and consideration is required to determine goals for addressing this indicator. Whether the value of property within the flood plains goes up or down may not be as important as the consideration of how well these assets are protected or how critical they are to the functioning of the community. This indicator will provide a baseline for assessing these conditions. The target will be to protect these assets, or relocate them, so that in the future the value of the resources at risk decreases.

10.2.2 Greenhouse Gas Emissions - CO_2e Emitted By Emission Source (Fuel Combustion, Industrial Production, Agriculture, Transportation), Absolute and Per Capita

10.2.2.1 Baseline Status of Indicator

As calculated in the Tier II Regional GHG Emission Inventory, this indicator provides an overview of all GHG emissions from all sources, and the per capita average provides a scale that is highly understandable by individuals. Understanding the sectors of GHG emission sources related to each other can be very effective in illuminating the most prevalent sources of emissions. While the New York State 2050 Vision outlined in the New York Climate Action Plan (Interim) calls for an 80% reduction in GHG emissions from 1990,[37] it acknowledges that without significant changes, GHG emissions from all sources, included energy, will continue to increase, resulting in an 8% increase in GHG emissions between 1990 and 2030. The targets established for the region reflect support for the ambitious goal of 80% reductions by 2050, but also acknowledge the need for reversal of increasing emissions with more modest short- term and mid-term targets. The 2015 and 2025 targets can be accomplished with the technology we have through programmatic changes—the target of 80% reduction will require a significant paradigm shift in the region and the state. Other sections of the plan have detailed specific goals, indicators, and targets that will impact the region's total GHG emissions.

To calculate the value for this indicator, energy data are needed from all sectors (residential, commercial, industrial, and transportation), as well as other emission-related data for waste wastewater, agricultural, and forestry sectors as selected by

[37] http://www.dec.ny.gov/energy/80930.html

the New York Greenhouse Gas (NYGHG) Protocol Group. Data for this indicator were collected and/or calculated in accordance with the agreed-upon NYSGHG Protocol Methods and reported in the Regional Tier II GHG Inventory. GHG Emissions are calculated in accordance with NYSGHG Protocol Methods, using various methods and modeling, including EPA's eGRID, Mandatory Reporting Rule (MRR) GHG emission factors, and the State Inventory Tool. All details and calculations are provided in the NYSGHG Inventory Protocol Template.

10.2.2.2 Future Status of Indicator: Targets

This indicator measures all the GHG emissions from all sources. It is the source of the Energy Indicator (see Section7.1), which is a measure of emissions from building heating only. Methods are described in the GHG Inventory. The values noted in Section 7.1 are about one-third of these totals.

2010 Baseline: 12.45 $MTCO_2e$ per capita
6.2 million $MTCO_2e$ total

Targets

- **2015:** 10% reduction: 5.6 million MT CO_2e total, 11.2 MT CO_2e per capita
- **2025:** 25% reduction: 4.7 million MT CO_2e total, 9.2 MT CO_2e per capita
- **2050:** 80% reduction (same and NYS goal): 1.2 million MT CO_2e total; 2.5 MT CO_2e per capita (80% reduction)

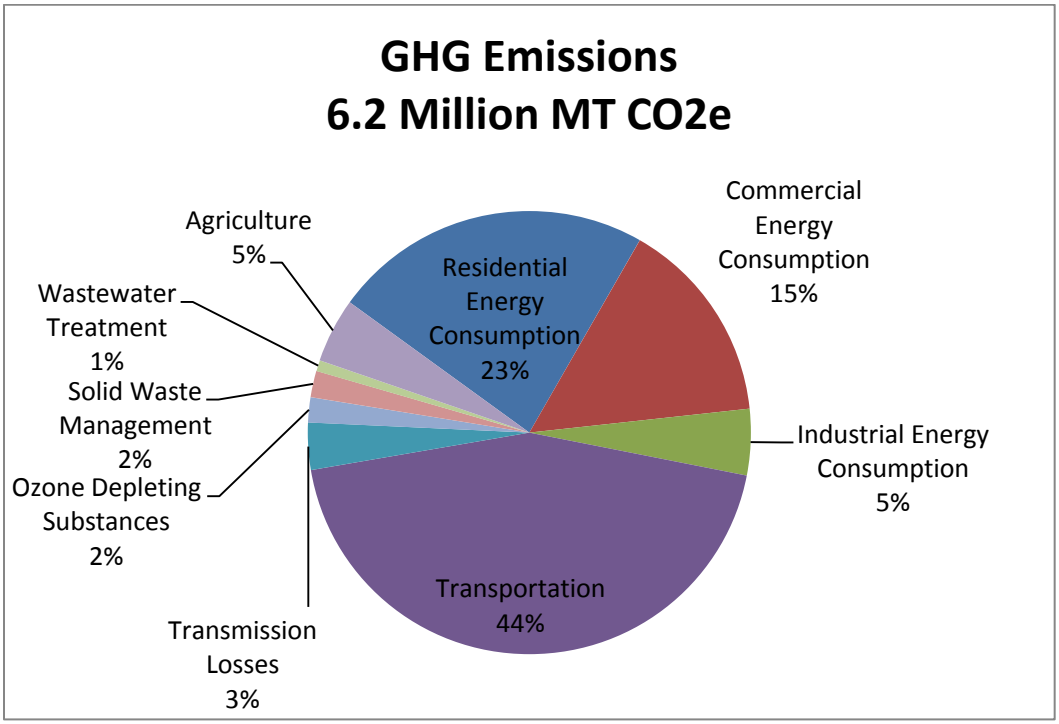


Figure 10-2 Baseline GHG Emissions in the Mohawk Valley in 2010

Appendix C
Case Examples from Region

EDUCATION Case Examples

Case Example: Northern Oneida County Council of Governments (NOCCOG) Coalition

The Northern Oneida County Council of Governments is a coalition of 19 towns and villages in the northern half of Oneida County, NY. Situated at the southern side of the Tug Hill Plateau, NOCCOG provides an outreach of technical and planning assistance to smaller and more rural communities of the county. The program was enacted in 1981 as a way to provide guidance for small communities, not as a mandate or directive, but as a support network.

Structure: Northern Oneida County Council of Governments is only one of multiple Council of Governments (COG) program that include circuit riders. NOCCOG's Executive Board, made up of five elected officials from member towns and villages oversees the programs completed by staff. All circuit riders work under the direction of the local COG and their Board of Directors. Others include the following:

- Cooperative Tug Hill Council
- North Shore Council of Governments
- Salmon Rivers Council of Governments
- River Area Council of Governments.

Structure considerations for a similar program: Depending on the geographic region for the program, a regional Council of Governments may or may not already be in place. If a regional government is not in place, management of the program may need to be provided by an existing governmental entity.

Staffing and Resources: To serve these communities with technical and planning assistance, the NOCCOG supports one full-time and two part-time circuit riders. Each circuit rider (part-time staff) has four to five communities that they provide assistance to, and the full time staff has ten communities with administrative/management responsibilities. In addition to working on land use projects, they research grant opportunities, coordinate training and issues workshops, and help interpret state and federal requirements for local officials. Staff complete their functions from a home office, which keeps the staff visible in the community while keeping expenses low. They keep flexible hours, traveling to communities and attending evening community meetings.

The NOCCOG the full time circuit rider /municipal management consultant is an employee of the State of New York, and salaries and expenses are supported by the Tug Hill Commission. The part -time or associate circuit riders are independent contractors and their hourly salary is paid by local jurisdictions (as dues to the NOCCOG) and revenues from grants and other programs. For inquiries beyond a circuit rider's immediate knowledge, the resources of the NYS Tug Hill Commission are called upon, with additional resources drawn from Oneida County Planning, the NYS Department of State, the Office of the State Comptroller, Real Property Services, Cooperative Extension, and Soil & Water Conservation, among other regional sources of assistance.

Staffing considerations for a similar program: Staffing levels would depend on the number of communities requesting assistance. Part-time staff would be assigned to two or three communities; full-time staff would also be assigned to a number of communities and would be responsible for overall project coordination and management. The full-time circuit rider visits all the town and villages at least twice a year because he/she oversees the program. The part- time associates provide a monthly summary of activities to the full-time circuit rider.

A home office arrangement will also allow savings from normal office rental and utility expenses while helping to accommodate a circuit rider's unusual, unpredictable long hours.

Budget: The primary expenses include staff time and travel. Other budget items include training for staff to keep current on developing issues, postage, typical office supplies, and a stipend for the phone/internet expenses for full-time circuit riders because they are regional coordinators.

Budget considerations for a similar program: Staff salaries would vary, depending on the number of staff needed for a start-up program. The program could also include office space rental, if the home office model was not used. Appropriate staffing levels are important for making the program work—circuit rider staff should have a consistent presence at municipal meetings in order to collect information and be credible about local issues. Meetings are often held at least monthly and often many municipalities meet on the same night,so a circuit may be required to attend more than one meeting a night, depending on location and travel time. Set-up of the program may require an initial grant until the revenues from the local jurisdictions can be collected. In order to maintain and sustain a program, consistent sources of revenue need to be identified.

The example budget noted below illustrates revenues as a result of contributions from local jurisdictions participating in the program. Additional revenues are noted from the regional organizations' contribution.

Revenues:	
Regional and Municipal (80% regional and 20% local contributions)	$103,000
Grant or other contribution/source	$5,450
TOTAL Revenue	***$103,000***
Expenses:	
Full time Municipal Mgmt. Consultant (Circuit Rider) salary/fringes	$84,000
Two part time Assistant Circuit Riders	$13,000
Full time staff travel, postage and expenses	$6,000
Part-time staff travel, telephone and postage	$3,000
Office equipment and supplies	$2,000
Staff Training, publications and subscriptions	$450
TOTAL Expenses	***$ 108,450***

Source: NOCCOG 2013 budget

Assessment of outcomes/Application to meeting Regional LULC Targets: The NOCCOG program has been in continuous operation for more than 30 years. Benefits for the local community include the development or updating of comprehensive plans; established history of working together on projects, which fosters regional cooperation; responding to technical assistance questions as they come up; and responding quickly to training needs that may be regional issues or just for one or two municipalities. The Working Group recognized, through the Goals and Indicators, the need to have updated land use plans and the benefits of additional assistance to the region for development of land use plans and/or updated zoning codes. These updates can be provided in a streamlined manner by the circuit riders. Depending on the organization of the overseeing body or council of governments, the organization is able to gather information and share information on a consistent basis, making them a go-to resource on many issues in the communities.

Applying the Indicators and Targets proposed as part of the Land Use and Livable Communities Working Group, Oneida County has a significant number of projects within the Main Street Revitalization Program (7 of 12), and this can be attributed to the resources provided by the circuit riders. Additionally, Oneida County communities have average percentages for the number of communities with comprehensive plans and, on average, jurisdictional comprehensive plans or recent updates have been completed or are under way in 17 of the 19 NOCCOG towns and villages.

Case Example: Mohawk Valley Main Street Program, Cooperstown, Otsego County

With 650,000 tourist visits a year, Cooperstown's Main Street and the Baseball Hall of Fame is the economic engine that drives this community in Otsego County. Like many villages, broad expanses of cracked concrete detract cosmetically, cause storm water flows that harm water quality, and create safety and maintenance issues. A grant from the Environmental Facilities Corporation Green Innovation Grant Program is permitting the following $2 million project:

- Replacement of 42 conventional streetlights with energy efficient LED lights
- Replacement of 40,000 sq. ft. of concrete and curbing
- Replacement of trees that have buckled sidewalks with new trees
- Collection of runoff into rain gardens and bio-retention devices to treat water before release to Otsego Lake and the Susquehanna River (left, below)
- Addition of 6,000 sq. ft. of porous pavers (right, below).

Case Example: The Syracuse City Schools Green Schools Program (Green SCSD) team (http://www.syracusecityschools.com/about/curriculum/science/GreenSCSD)

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.

The program's goals are to:

- Raise a generation of environmental stewards to tackle the unique environmental issues associated with urban living
- To bring some positive attention to an inner city whose population is in decline
- To stimulate a desire to learn through proactive education
- Promote green jobs
- To save money by increasing efficiency where possible.

Perhaps the most innovative aspect of this program is that it focuses on both increasing efficiencies within the school district to save money but also provides details on these efficiencies so that students may learn more about why they are important and the potential impacts on the environment. Additionally, the program has found that many children have applied at home what they learned in school and helped parents work on their family's energy efficiency. The Green SCSD also tracks energy use and savings (EPA Grant Schools Only).

Clary Middle School

Entries in red indicate an increase in usage

December	Electricity Use (kWh)	Elect. Demand (kW)	Electricity $$	Gas Use (Therms)	Gas $$	Gas BTU's	Current Heating Index BTU/SF/HDD
Baseline	94,383	238	$ 12,621.77	12,634	$ 11,437.11	1,585,530,317	12.11
This Month	73,500	221	$ 9,152.87	9,370	$ 6,665.35	937,000,000	6.8128
Savings	20,883.00	17.50	$ 3,468.90	3,264.00	$ 4,771.76	648,530,317.00	5.30
% Savings	22%	7%	27%	26%	42%	41%	44%

The team offers periodic challenges, for example, a "Power Down Challenge" to shut down all unnecessary equipment and lighting, by having people consider the electricity we use unnecessarily or could do without for all or part of the day. The program is one of overall sustainability and includes a waste management efficiency program that led to each school in the district developing a recycling program. In 2010, the schools saved an average of 48 lbs. of paper per student.

Case Example: The Mohican Farm Composting Facility is located 7 miles north of Cooperstown, New York and is owned by the Clark Foundation. The farm serves as 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 landscaping, with the 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.

Case Example: Fulton – Montgomery Community College Center (FMCC) Workforce Training Program

The Community College's Center for Energy Efficiency and Building Science provides training to construction industry professionals to enhance their skills and abilities in building science technology. This enables them to provide more efficient heating and cooling energy solutions for their customers. This program is offered in collaboration with the New York State Energy Research and Development Authority (NYSERDA).

The programs at the College focus on two aspects of green building: development of technical proficiencies in building envelope/building analyst and the development of technical proficiencies in photovoltaics. This program is in direct support of Implementation Action *Leverage the capacity and concentration of regional job training institutions and programs,* for the following reasons:

- Strong ability to leverage the existing connections that the community college has within the region as access to resources and local businesses.
- Ability to link with existing programs of Hamilton, Fulton, and Montgomery BOCES Programs of area high schools and community colleges.
- Provide job training and employment in a growing field of renewables and sustainable construction for living wage jobs.

Partners: F-MCC collaborates with the partners listed below, among others. This collaboration has helped to increase regional communications and promote local training programs—addressing a challenge noted by the Working Group. For example, Hudson Valley Community College (HVCC) has developed programs emphasizing a technical specialty in building design and construction, whereas FMCC has focused on photovoltaics and application of renewable energy. The result has been a region with a collaborative approach that provides comprehensive education offerings, rather than duplicative programs that may waste resources and compete.

Solar panels at FMCC

- Multiple accreditation bodies, including Building Performance Institute (BPI) and the North American Board of Certified Energy Production (NABCEP)
- Hudson Valley Community College (HVCC) as the lead grantee and community college regional coordinator
- Hamilton, Fulton, and Montgomery BOCES Program with area high schools

Solar panels at FMCC

Timing and Resources: The original grant from NYSERDA was $115,000 and the grant supported the equipment, staffing instruction certification, curriculum development and on-site coordination. The development of the photovoltaic program was a grant for approximately $42,000 for faculty development and travel. The original work in development of the program began in April 2009, with the grant expiring in December 2012. The photovoltaic grant with the Department of Energy kicked off in August 2010 and is set to expire in December 2014.

Sources:

- http://www.fmcc.edu/workforcetraining/the-center-for-energy-efficiency-building-science/ Phone conversation with Laura LaPorte 518-736-FMCC (3622), Ext. 8300. Laura.laporte@fmcc.suny.edu, February 19, 2013
- Potential additional sources:
  - Dr. Dustin Swanger (President, Fulton Montgomery Community College - dustin.swanger@fmcc.suny.edu
  - Todd Stallmer, BOCES contact in the program for the region.

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.

The Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD) provides the national standards for traffic control devices, including road markings, highway signs, and traffic signals. States, counties, and municipalities are required to adhere to the MUTCD, and the 2009 edition set new guidelines for the retro-reflectivity of traffic signs, meaning their ability to reflect light back to the driver of a vehicle so signs can be clearly seen.

HCHD sign crew staff testing sign retro-reflectivity with RoadVista 922 Retroreflectometer

HCHD undertook two important measures to improve the maintenance of its signs and ensure all signs would comply with the new federal guidelines, which are supplemented by additional guidelines from the New York State Department of Transportation. First, HCHD began sending a laptop into the field in the sign truck so staff could update the sign inventory directly and have immediate access to the full history and details of any sign on their roads, rather than keeping paper records in the truck and then transferring new information to the digital file back at the department office. HCHD uses the Cartegraph operations management software and the staff finds it easy to use.

Second, HCHD invested in a retroreflectometer, a device which can be held up to any sign in order to immediately determine its reflective power. Having this tool has resulted in being able to determine and keep good signs in use past the expiration of the manufacturer's warranty, rather than doing blanket replacements of older signs or needing to dedicate staff for more subjective nighttime visual testing.

Prior to testing sign retro-reflectivity, the department had estimated that 3,000 of its traffic signs had been in use longer than the warranty period of the sign face material. By testing these signs with the reflectometer, it was determined that approximately 150 of these signs required replacement because they did not meet MUTCD standards for reflectivity. This was equivalent to saving $85,000 of the cost for blanket replacement in sign face materials alone. HCHD expects continued annual savings through this practice by testing signs approaching the manufacturer's warranty limits and only replacing the signs failing to meet the MUTCD requirements, rather than blanket replacement at the sign warranty limits. The instrument also has GPS capabilities, which has helped in the location of the signs, and can be integrated into the department's GIS software.

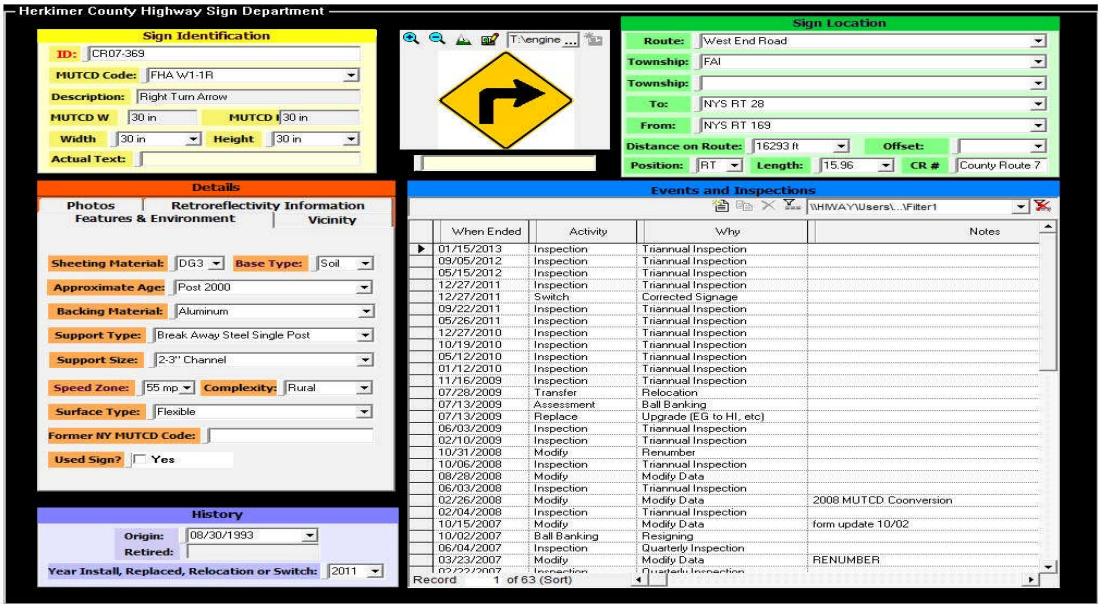
Nu-Metrics Nitestar DMI

The sign department is also equipped with electronic distance meters (Nu-Metrics Nitestar DMI) in their trucks to precisely measure distances as they maintain signs. Every county traffic sign is visually inspected three times a year and tested for retro-reflectivity based on its age, type, and history.

In the past, an employee at the office would spend up to 75% of their time transferring updated sign information from paper records to the digital inventory. By combining supportive technology (appropriate software, a laptop, a retroreflectometer and an electronic distance meter) with an approach that eliminates unnecessary paperwork (by placing the laptop in the sign truck), HCHD improved the quality of its inventory, reduced errors, and eliminated the staff time required to transcribe information from paper to a digital file.

The improved sign inventory process has reduced the number of vehicle trips and thus the number of miles and the amount of fuel required because repairs and maintenance can be tracked and mapped, allowing more efficient planning for work to be completed. It has also made it easier for the department to respond quickly to emergency repairs and information requests. The department uses the same software to maintain its inventory of bridges and culverts and to convert data to GIS-based maps.

At the municipal level, while the federal MUTCD guidelines require municipalities to implement sign assessment methods by January 2012 as a way to ensure that all signs meet minimum retro-reflectivity guidelines by 2015 and 2018 deadlines (depending on the type of sign), many municipalities may not even have complete inventories yet. Finding cost-effective ways to enable municipalities to inventory their signs would be a logical first step toward helping them ensure that reflectivity standards will be met and streamlining their sign maintenance processes, which may result in better use of staff time and a net reduction in vehicle miles, material, and fuel costs.



Cartegraph Software Signview Module Page: Used for sign-crew to enter, edit, and query specific sign data

Case Example: Cooperstown Transit Center, Linden Avenue Gateway, Otsego County.

The Linden Avenue Gateway Improvement Project provides a transit center that combines tourist information and reception with multi-purpose parking facilities and shuttle services in an attractive and carefully planned location (former landfill). The project incorporates safe pedestrian-oriented links with the village such as sidewalks, defined cross walks, landscaped sitting areas, and decorative lighting. Parking for tourists and other visitors to the community is integrated into the existing Cooperstown Trolley and Shuttle System, which is available to off-load hundreds of cars per day from the community. Among other advantages for the village, the new parking facilities provide additional locations for bus parking, which is now a major issue throughout the village when many tourists visit in the summer and large buses occupy much of the downtown parking areas. The design solutions included unique challenges not only dealing safely with a wide variety of uses, but from an environmental standpoint, working in an existing landfill and integrating on-site remediation and redevelopment for a clean and safe environment. CLA Site's design solution involved incorporating a number of environmentally sensitive design solutions and smart streetscape design concepts.

Innovative storm water design features are also incorporated into the project. Storm water is primarily treated in an underground detention/infiltration system. Storm water taken from the main parking areas and portions of Linden Avenue is directed to an infiltration area, outside the landfill area. Storm water is allowed to infiltrate the soils before being recharged to groundwater. This removes nutrients and controls water pollution of the nearby Susquehanna River. Street trees and parking lot plantings were added not only for their aesthetic quality but also to reduce air and noise pollution. In addition, the trees planted near the parking lot and street will help reduce the "heat island effect." Pavement areas were reduced as much as possible. Parking area travel ways and street widths were kept to the minimum allowed by local zoning in an effort to keep impervious areas to a minimum. The number of parking spaces were also kept to a minimum based on the amount of spaces the village anticipated needing.

Case Example: Hudson Valley Farm to School Program (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. They partner 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.

There are four major components of our Farm to School program.

- *Chef in the Classroom* is a program where students are given the opportunity to work side by side with a professional chef and create a dish featuring a locally grown vegetable.
- *Fresh From the Farm* is a program that allows schools to procure fresh local foods for use in their cafeterias.
- *School Vegetable Garden* helps the schools build raised beds and prepare them for the students to begin planting with vegetables. Through a partnership with the PTA, family volunteers will cultivate and tend to the vegetable garden over the summer and donate the harvest to the local community food pantry.
- *Farm Tours* – once a year, each school tours a partner farm. Students learn about the growing season, see first-hand how vegetables grow, and participate in the planting and the harvesting. The class that goes on these tour have their Chef in the Classroom (first program) activity in the garden.

HVFS will be going into its third year this coming fall and is adding a third school to its program: South Avenue Elementary School in Beacon, NY. The success and sustainability of Hudson Valley Farm to School's programs in Cold Spring and Garrison, NY serve as models for the feasibility and sustainability of this new project at South Avenue.

Examples show that when children understand where their food comes from and how their food choices impact their bodies, their environment, and their communities, they are more motivated to change behavior. The goal of Hudson Valley Farm to School 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.

Sources:

- Hudson Valley Farm to School: http://www.hvfs.org/
- Cornell University Farm To School Extension and Research Program: http://farmtoschool.cce.cornell.edu/what-is-farm-to-school.html

Case Example: Project Learning Tree (PLT) program

Project Learning Tree® is an award-winning, multi-disciplinary environmental education program for educators and students in Pre K to grade 12. PLT, a program of the American Forest Foundation, is one of the most widely used environmental education programs in the United States and abroad. PLT continues to set the standard for environmental education excellence. PLT helps students learn **how** to think, not **what** to think, about the environment.

PLT meets state and national education standards. The curriculum materials provide the tools educators need to bring the environment into the classroom and their students into the environment. Topics range from forests, wildlife, and water, to community planning, waste management, and energy. PLT is a network of 3,000 grassroots volunteers and more than 120 coordinators world-wide that work with formal and non-formal educators, school staff, state agencies, foresters, businesses, civic organizations, museums, nature centers, and youth groups to provide professional development programs. 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. To date, more than 500,000 educators have been trained in using PLT materials, reaching approximately 26 million students in the United States and abroad.

Sources:

- Project Learning Tree (PLT) Website: http://www.plt.org/
- DEC PLT website: http://www.dec.ny.gov/education/1908.html

EFFICIENCY Case Examples

Case Example: Ecology and Environment, Inc. Corporate Rideshare.
Ecology and Environment is an international consulting firm with headquarters in Western New York. Some urban offices are amenable to public transportation, others 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 a lucky winner who is in the program. At the end of the year, $1,000 is raffled to one employee participating in the program. This is in addition to the $1 a day (or $1.50 a day for walk/bike or carpool with two or more) that is paid to all participants. The program reduces the corporate carbon footprint, limits the necessity to provide parking and, at the Buffalo Headquarters, made it unnecessary to build a very expensive parking facility.

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, hardwood floors, and 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 including 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 with Basset's information technology department has led to a savings of 373,008 sheets of paper annually or roughly $7,000 a year. Finally, the Food Service worked with the Green Team to invest $4,500 in the purchase of reusable non-skid trays that do not require mats, which now saves the hospital more than $6,900 annually in paper tray mat costs.

In 2009, Basset received a NYSERDA grant that helped to pay for energy improvements throughout the hospital and included money for a Flex Tech assessment of Basset's Energy Center In total, the NYSERDA grant covered ~$500,000 in retrofits that included everything from a computer system upgrade that allows settings to adjust themselves automatically for the day and the night, to motion-sensitive lighting involving 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

NYSERDA offers incentives and financing to help home owners afford the necessary retrofits. One successful project located in the village of Gilbertsville illustrates the potential economic and energy benefits of energy retrofits. Having purchased a Victorian home, the homeowners were disappointed to find it was extremely drafty and that the 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 made a NYSERDA-funded free energy audit and identified a set of improvements that would reduce those costs. The scope of work for the project included dense pack cellulose insulation in side walls, spray foam insulation in basement walls and crawl space, cellulose attic insulation to R49, replacing the propane water heater with a heat pump water heater, replace old furnace with a higher efficiency model, seal all ducts and install pipe insulation, and finally add weather strips and air seal doors.

The project qualified for NYSERDA's Home Performance with ENERGY Star incentive program as well as Green Jobs Green New York financing.

	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		

Case Example: "Renew Websites" - 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 in the form of a local website, "ask the expert" resource, and workshops/events. These websites, such as www.Rome13440zone.org, provide a one-stop shop for federal, state, and utility incentives and an "ask the expert" resource available via phone or email. Outreach events include NYSERDA, utility, and federal programs and provide an easy first step to get started (e.g., sign up for energy audit) at the event. These local government web portals across upstate New York had 1,325,920 web visits. More than 1,100 home and business owners attended events, with approximately 40% taking the first step towards an energy audit.

Case Example: City of Rome Energy Management Program

For the past decade, Rome has been formulating a 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. Revitalizing Rome's housing stock and commercial property has been a priority and a challenge. In 2009, the city launched a series of housing rehabilitation and redevelopment programs that focused on energy efficiency, durability, and long-term affordability through lower utility and maintenance costs. In March 2012, the city completed an Energy Management Plan, which 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 Rome. http://www.romenewyork.com/organization.asp?orgid=179 .

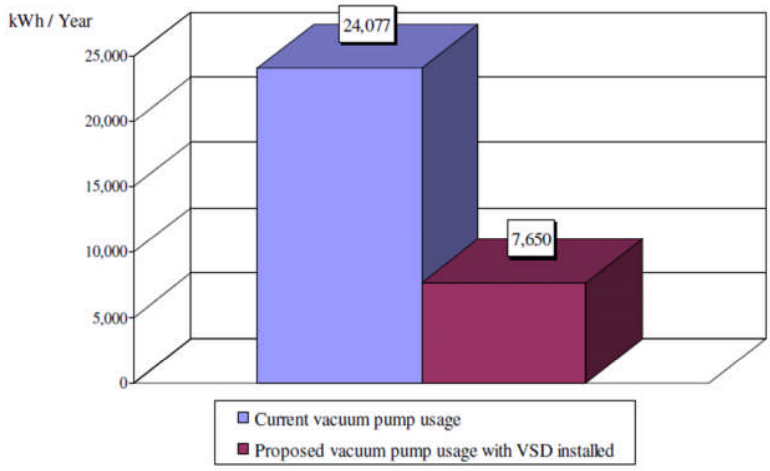
Case Example: Energy Performance Contracting and Energy Service Providers (ESCO)

NYSERDA provides lists of Flextech providers http://www.nyserda.ny.gov/Contractors.aspx for energy efficiency audits, where NYSERDA will pay 50% of the cost of the audits. In addition, many of these providers will offer Energy Performance Contracting, where the costs of the implementation of recommendations are guaranteed to be offset by the energy cost savings, thereby eliminating capital upfront costs for implementation. Flextech Commercial Lighting listed for the region includes City Electric http://www.cityelectricweb.com/ in Rome and Oneida. Other Flextech Energy service providers that will provide services in the region are located in nearby regions. Refer to the NYSERDA website for up-to date contact information http://www.nyserda.ny.gov/Contractors/Find-a-Contractor.aspx

Case Example: Agricultural Energy Management Plans (Ag EMPs)

USDA Natural Resources Conservation Service's (NRCS) Environmental Quality Incentives Program (EQIP) cost-shares development of Ag EMPs. 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



Source: EnSave, Inc.

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 that 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. A planned expansion of the Fage yogurt facility in 2013 will create jobs for the region and provide more high-strength wastewater that will enable the GJJWTF to meet all its energy needs and become a net exporter of energy. The table below shows the dramatic impact of energy production on the WWTP energy balance.

Energy Use at the Gloversville-Johnstown Wastewater Treatment Facility

	Average Plant Energy Use (KWH/day)[1]	**Average Flow (MGD)[1]**	**Energy (KWH/day) Used per MG[1]**	**Average Electricity Generated In-House[1]**	**Estimated Annual Savings[2]**
2011	15,262	6.7	2,475	91%	$625,188
2012	15,970	5.3	3,151	90%	$615,644

Sources:

1 Gloversville-Johnstown Joint Wastewater Treatment Facility, Received December 7, 2012

2 U.S. Department of Energy, Energy Information Administration, "Electric Power Monthly." http://www.nyserda.ny.gov/en/Page-Sections/Energy-Prices-Supplies-and-Weather-Data/Electricity/Monthly-Avg-Electricity-Commercial.aspx

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$2,600.00 in their solid waste collection and disposal contract. The school system was able to reduce the frequency of collection and garbage dumpster size from 8 cubic yards to 6 cubic yards at all school buildings.

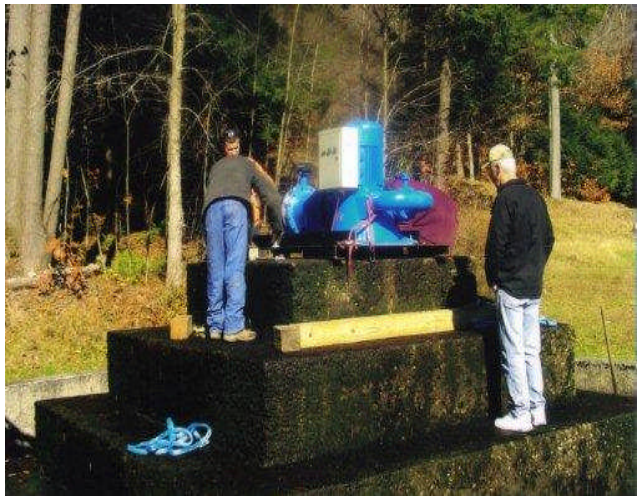
The Oneida-Herkimer Solid Waste Authority and Camden Elementary School of the Camden School District (Oneida County) partnered with Bliss Environmental Services, Inc. (school waste hauler) to work on improving the school's recycling efforts while tracking pertinent data. Bliss Environmental Services, Inc. was able to track the weight of the school's trash and recyclables as well as keep the school informed of items ending up in the wrong dumpster. Through the development of and aggressive school recycling program and participation in the Authority's Go Green School Recycling Program, Camden Elementary School (Oneida County) was able to decrease their average daily garbage generated by close to 200 pounds and increase their daily recycling by 63%. This partnership will allow the Camden Elementary School to sustain these results through the ongoing monitoring of trash and recyclables generated.

With assistance from the Oneida-Herkimer Solid Waste Authority, Mohawk LTD developed a program that recycles 25 tons of corrugated cardboard and office paper annually and recycles 6 tons of batteries annually and reduces hazardous waste generation for 2.9 tons to .25 tons.

Case Example: Small-Scale Hydropower - Gloversville Water Department Hydro Turbine project

The Gloversville Water Department began their Hydro Turbine project in September 2008. Hydropower was determined to be best suited technically if constructed on top of the existing aeration block. Water flows through this aeration block 24 hours a day and enters Rice Reservoir. The water that flows over this aeration block comes from the Jackson Summit Reservoir via a 16-inch main. The length of pipe from Jackson Summit to the Rice watershed is approximately 4 miles. Currently 2 million gallons a day (mgd) flows from Jackson Summit to the Rice watershed and through the turbine at a rate of 1,390 gallons per minute (gpm).

Once the site was selected, the design process began. The intake on the turbine had to be sized perfectly to sit down in the outlet end of the pipe in the aeration block. It also needed to be determined how much pressure was going to be put on the turbine since it would be sitting on the aeration block. It was decided an elaborate plan was needed to keep the turbine in its place with all the pressure that would be on the unit.



Once the Gloversville Water Department decided to go ahead with this project, it had to apply for a Conduit Exemption License from the Federal Energy Regulating Commission (FERC). The reason for this process was because the proposed turbine was supplying potable water. This process took nearly a year to complete. Many federal, state, and local agencies had to be contacted via letters letting them know of the desire to generate power with water. After concerns were identified, a second application was sent to FERC to await their approval, which took several months. Since the Gloversville project was implemented, FERC's rules have been relaxed. The turbine took about three to four months from when it was ordered to when it was brought on-site, delivered in October 2010. At that point the turbine was set in place on top of the aeration block. Three inverters were installed inside a building next to the turbine site because the system is interconnected into the electrical grid. The power from the inverters is sent to the filtration plant a quarter of a mile away via three-phase wiring that was already in place underground.

The system was put into service during August 2011. The turbine is an 18kW Turgo style turbine, currently running at 7kW 208 volts. At present, Gloversville Water will not increase the kW, because in doing so it would increase pressure on the 16-inch water main, which is one of the oldest in our system. If Gloversville Water were to increase water flow to the turbine it would double the energy output, but the Water Department is not willing to increase pressures in the piping at this time.

The total cost of this project was $70,000. No grant money was obtained. The Gloversville Water Department has cut electric purchases in half since the turbine became operational, from an average of 4500 kWh to 2200 kWh per month. This saves about $345 per month and represents a payback on investment of 17 years. If operations were increased to full capacity these figures would double.

ECONOMICS Case Examples

Case Example: Main Street Restoration, 47 Main Street Fort Plain, Montgomery County, NY

Friends of Fort Plain is a not-for-profit organization currently bringing new life to a building located at 47 Main Street in Fort Plain, NY. Once known as Diefendorf Hall, the three-story Italianate brick structure was built in 1861. The building was the site of talks by Elizabeth Cady Stanton and Susan B. Anthony regarding universal suffrage for woman and African-Americans in 1867. The building served as the Rialto Theater in the early 1900s and later as the American Legion building in the mid-20th century. A number of businesses have occupied the store fronts, but increasing vacancies forced the building into foreclosure in 2001. The Village of Fort Plain acquired the building in 2008 and entered into a 25-year lease with the Friends of Fort Plain. The Friends of Fort Plain formed as a 501(c)3 with a mission to preserve the architectural and cultural heritage of the Village of Fort Plain. In 2009, the group began cleanup of the interior and used volunteers to remove debris and begin temporary repairs to the building's façade.

The community of Fort Plain recognized the importance of its Main Street and the value of historic buildings. Thanks to the dedication of a number of concerned citizens, a building that was once threatened with demolition will once again serve as an important community center. The project will continue to face challenges with limited funding sources to tap into. This project represents a great example of how non-profits can work with local governments to preserve and restore the region's Main Streets. Additional funding sources and technical resources will ensure that this and other similar projects are successful. Next steps include repairs to outer brick work and the roof to eliminate water infiltration. Future plans for 47 Main Street include the opening of a storefront to sell local products and a community café that would operate as a cooperative and benefit other not-for-profits in the area. In addition, a meeting room would host public events.

Partners: Support for the success of 47 Main Street has come from the following programs and organizations, among others:

- The Village of Fort Plain
- The Preservation League of New York State

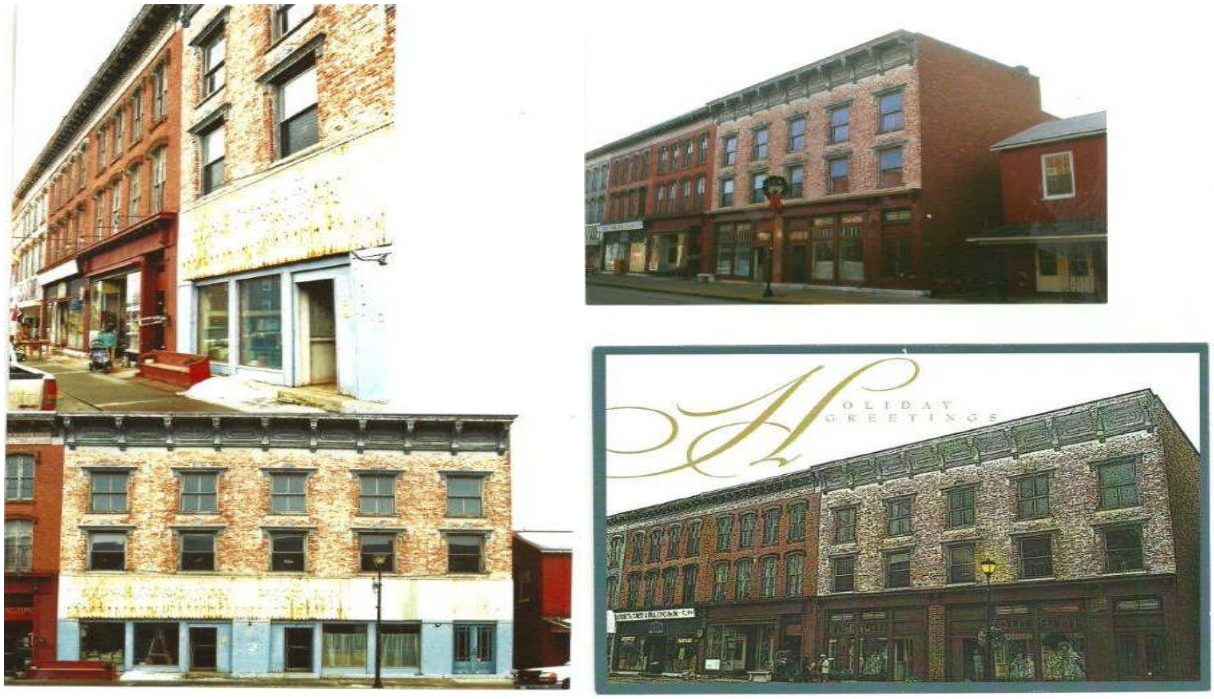


Figure Top Left: 47 Main Street prior to façade repairs; Bottom Left: 47 Main Street prior to façade repairs; Top Right: 47 Main Street following façade repairs; Bottom Right: 47 Main Street highlighted on Preservation League of New York's 2011 holiday card.
Photo Courtesy: Micki Lieber, Chair of Fort Plain Planning Board.

A $7,500 grant was awarded by the Preservation League of New York State in 2011 that allowed for the development of a conditions assessment and feasibility example for reuse of the building. The project has utilized more than 1,000 volunteer hours and has raised more than $20,000 through donations, fundraisers, and foundations to cover liability insurance and other fees over the last four years.

Sources:

- Contact: Micki Lieber, Immacpugliese@roadrunner.com
- Friends of Fort Plain, Diefendorf Hall, February 20, 2013, http://friendsoffortplain.org/diefendorf.html
- Courier Standard Enterprise, April 14 2011, http://www.courierstandardenterprise.com/News/04142011_milestone
- Courier Standard Enterprise, December 20 , 2012, http://www.courierstandardenterprise.com/News/12202012_openhouse
- Little Falls Times, May 9, 2011, http://www.littlefallstimes.com/news/x242758798/Fort-Plain-group-receives-inaugural-grant-from-Preservation-League-Fund
- Montgomery County, Minden Fort Plain, https://www.co.montgomery.ny.us/sites/public/government/historian/Underground%20Railroad%20documents/Minden%20and%20Fort%20Plain.pdf

Case Example: East Rome Business Park, Rome, NY

The East Rome Business Park is located directly southeast of Rome, NY's downtown district. The 200-acre park is largely made up of brownfields that were once the home to the former General Cable Company. General Cable produced steel rope and wire at the property from 1920 until operations ceased in 1972. The site long sat vacant while several attempts were made for redevelopment. Contamination of the site included process equipment, tanks, sumps and drains containing petroleum products, oil spills and stained soils, manufactured gas plant residuals (coal tar and purified box waste), elevated metal concentrations in soil, asbestos, and PCB-containing equipment.

In 1996, the City of Rome partnered with the property owner of 17 acres to conduct an environmental site assessment. The property owner deeded 3 acres to the city and took advantage of the State's Voluntary Cleanup Program (now Brownfield Cleanup Program) for remediation of the remaining 14 acres. Additional property has been donated to and purchased by the city. Remediation has included demolition of buildings and foundations and removal of subsurface utilities and contaminated soil. The city later put in a new access road and utilities on the site.

Site remediation, coupled with public-private partnerships and an investment in new infrastructure made this an attractive location for American Alloy Steel. This site represents a small portion of contaminated land in the East Rome Business Park and is one of many brownfields in the Mohawk Valley region. Redevelopment of other sites in the region will benefit from similar partnership, but high costs associated with environmental contamination will continue to be a significant barrier to development. Similar projects will need to include site assessments, market evaluations, and strategies as either part of the BOA program or another planning process. Existing funding sources to assist with remediation are limited. A Brownfield Revolving Loan Fund will increase the opportunities for private investment in brownfield remediation and the potential for redevelopment of underutilized sites.

Partners: The City of Rome's Community & Economic Development Department coordinated the process and worked with Empire State Development, Rome Industrial Development Corporation, Mohawk Valley EDGE, and private landowners.

The former General Cable site, prior to remediation.
Photo Courtesy:
C. Mercurio, City of Rome Community & Economic Development Department.

The New American Alloy Steel facility on site of former General Cable.
Photo Courtesy:
C. Mercurio, City of Rome Community & Economic Development Department.

Timing and Resources: The success of this project was realized in 2009, when American Alloy Steel constructed a new $6 million 58,000 square foot facility on the site employing 23 workers. An 18,000 square foot expansion was built in 2012. This development also utilized demolished concrete for the structural sub-base and bioretention to manage 100% of storm water on-site. In addition, the facility included a rail spur for the efficient movement of product.

Funding sources contributing to the remediation and redevelopment of the property included:

- EPA Brownfields Site Assessment Pilot Program: $200,000 – Environmental Assessment of city property
- NYS Department of Environmental Conservation Clean Water/Clean Air Bond Act: $332,234 – Environmental Site Assessments; $1.8 million – remediation of city property
- RestoreNY Round 1: $1,542,747

Sources:

- Contact: Chris Mercurio, cmercurio@romecitygov.com
- Mohawk Valley Edge, Local Businesses in the Mohawk Valley, February 15, 2013, http://www.mvedge.org/local_business.asp
- New York State Department of Environmental Conservation, Brownfields Financial Resources Manual, November 2003, http://www.dec.ny.gov/docs/remediation_hudson_pdf/brownmanual.pdf
- The United States Conference of Mayors, Brownfield Redevelopment: A Compendium of Case Studies, Volume I, 2005, http://usmayors.org/brownfields/library/BP2005BPvol1.pdf

Case Example: Cities of Rome and Utica, NY - Green Infrastructure and Tree Inventory

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. David Short of Utica and Chris Mercurio of Rome, co-chairs of Leatherstocking ReLeaf, are the city personnel leading these respective projects.

The City of Rome used a three-part strategy to complete their first major GIGP—a project inventory and analysis of trees and available planting sites, installation of 450 street trees, and retrofitting paved surfaces in downtown with Cornell University structural soil and a pervious paving material made from recycled tires.

The inventory and analysis of the street and park trees of Rome was completed for the purpose of providing a solid scientific basis for management and planning. The project engaged the services of a consultant to collect field data in 2007 and again in 2010. The City of Rome hoped to accomplish two things: 1) to solidify green infrastructure as a permanent investment in the health and vitality of our urban centers and 2) to contribute to the scientific record on the relative impact of green infrastructure development on urban ecosystems. In the cities of Rome and Utica, the data, and associated grant application led directly to a 2012 Utica-Rome Tree Planting Grant - the first and only one of its kind in the region; as well as an urban canopy maintenance grant for Rome.

With respect to considerations for similar programs in other jurisdictions, it may make sense to pool resources across jurisdictions interested in participating and utilize a common staff person or consultant. The size of the example area and the number of trees to be assessed will impact the cost of the program. Information gained as part of a regional tree inventory could provide data and documentation toward the participation in Main Street Revitalization programs, for example. Tree inventories can better help a community assess the cost effectiveness of creating a small-scale orchard within the community, as well as increasing community access to local food.

Partners: The success of these initiatives can be attributed to the efforts of the cities of Rome and Utica working with New York State Environmental Facilities Corporation

Timing and Resources: This project received more than $1 million in competitive funding from the NYS Environmental Facilities Corporation as part of their Green Innovation Grant Program (GIGP). The tree assessment project utilized a local urban forestry consultant with coordination assistance from city staff. The tree inventory, total of both phases, cost $40,000 total, or about $5/tree. Annual maintenance costs for the newly planted and existing trees were estimated at $200,000 for staff, contractual services, planting and supplies/materials.

Utilizing the globally recognized iTree software suite to perform a comprehensive Ecosystem Benefits Analysis of municipal street trees in Rome, it has been calculated that for every $5 spent on urban forestry and horticulture, the city receives $8 to $10 back in annual ecosystem benefits, including storm water interception and runoff reduction, pollution capture, carbon sequestration, property value enhancement, and decreases in energy consumption. This assessment has provided the City of Rome with science-based metrics for the benefits of trees, including storm water percolation, carbon sequestration among others. For example:

- On average, each tree provides $13.90 worth of annual storm water reduction or in total, $70,741
- Based on a CO_2 ratio of .00334/per pound, trees save the city approximately $7,273 in CO_2

Additionally, street trees provide a value to the city's streetscape, providing support for Main Street Revitalization Programs. Increasing participation in this program is noted as a target in the Land Use and Livable Communities Target: Percentage of Communities with a Main Street Revitalization program.

Sources:

- Analysis of Public Trees, City of Rome, NY, August 2010, http://www.rome13440zone.org/docs/App-2_Analysis_of_Public_Trees.pdf

Case Example: Delta Hardwoods Project, Boonville, NY

Delta Hardwood Flooring, currently located in Lee Center, has purchased a vacant Ethan Allen plant in Boonville, New York, and is in the process of transitioning all of its operations. In addition to the change of space, the company plans to at least double its current staff of 20 by the end of 2013. The company has appeared to successfully weather the economic storm while maintaining a high level of environmental and technical commitment in preparing hardwood flooring from local sources.

The original structures of the Ethan Allen plant dates from the 1920s but was expanded periodically, so components of the site were in very good shape, requiring little improvements. The plant ceased operation in 2006. The site has not needed any upgrades to public services, such as water or sewer, saving Delta additional costs as well.

For the company, the decision to reuse an existing building rather than building a new structure from the ground up, was a simple case of economics—the costs associated with building new, were too high when compared with reusing an existing building. The company is currently completing some improvements to the Ethan Allen site, including roofing, doors, and other minor improvements. The company's base processing for the flooring also reuses existing wood and wood products, also contributing to the overall sustainability of the company.

Partners: Support for the success of Delta Hardwoods has come by the involvement and support of the following programs and organizations, among others:

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

Timing and Resources: Delta Hardwood Flooring was a business start-up in 2009, when it won a three-year contract to exclusively manufacture product for Green River Flooring/American Heritage Flooring out of Oswego, New York. The company has experienced steady growth and expansion since that time. They have expanded their capability as a result of new machinery (from Portland, Oregon) and a $50,000 loan from the Rural Development and Agri-Business Assistance Program.

Relevance to Economic Development Working Group Goals: This project supports the following goals identified by the Economic Development Working Group.

Goal #1: GROW Business: Enhance regional concentrations to retain and create businesses in key growth sectors.

The processes and innovations that Delta Hardwoods uses to develop and manufacture its flooring also fits in well with *Goal #3: CREATE Pathways to Innovation: Create innovation-enabling infrastructure that will drive entrepreneurialism* as well as assisting with waste reduction and energy conservation measures associated with *Goal #4: REVIVE Infrastructure: Increase spatial efficiencies that will revitalize existing urban and town centers.*

By reducing building and construction costs associated with expansion of the facility, Delta is able to devote additional resources toward manufacturing and business development—increasing the opportunities for employment in the manufacturing and construction sectors. The use of existing buildings and its accompanying infrastructure reduces future costs for taxpayers and local governments to develop new infrastructure, allowing the funding to be used elsewhere.

Lastly, by redeveloping in alignment with existing infrastructure and development, Delta Hardwoods is able to minimize transportation costs for the employees, reducing the amount of true transportation costs. *Housing and Transportation Index, Economic Development Sustainability Indicator #1.*

Sources:
Press Release from November 2012
Contact: Randy Bowers randy@deltahardwoodflooring.com
Phone interview with Josh Bowers, 2/19/2013
josh@deltahardwoodflooring.com
Contact with MVEDGE representative: Peter Zawko, Finance

Delta Hardwood Flooring President Randy Bowers, Rome Sentinel

Case Example: Central New York Conservancy, Inc.

Since its inception as a not-for-profit in 2002, the Central New York Conservancy Inc. has advocated for the stewardship, historic preservation, restoration, and sustainable maintenance of public spaces. As an organization, it has been modeled after other park conservancy organizations, such as the Central Park Conservancy that manages Central Park in New York City.

The Central New York Conservancy, Inc. works as a partner with the City of Utica to assist the city in preserving and restoring the city-owned Utica Parks and Parkway system, which includes FT Proctor Park, TR Proctor Park, Roscoe Conkling Park/Valley View and the Memorial Parkway. Efforts include cooperative management of key park structures and maintenance and restoration of trees, shrubs, lawns and flowerbeds. The Conservancy provides volunteer hours and private funding to manage and maintain a public asset, contributing to the economic development of the city. Through partnerships with multiple agencies and organizations, the Conservancy has enabled the following advancements:

- Inclusion in the New York State and National Registers of Historic Places (2008)
- Site improvements to the Parks, including a butterfly garden, fencing, and additional tree plantings (2009)
- Increased use of the parks by the public and as a venue for major community celebrations, such as the Utica Boilermaker Road Race, July 4th Celebration and others
- Supported the promotion of the Parks' 100th Anniversary (2009)

Partners: Each of these successes has been a result of extended partnerships with private organizations as well as city, state, and federal agencies. Improvements to the FT Proctor Park have included collaborating with the City of Utica on multiple restoration projects utilizing the original Olmsted design plans and elements.

Timing and Resources: Through the development of the non-profit and key partnerships, private funding, and volunteer staff provide support for a key public asset that municipal government could no longer afford to manage and operate at its highest and best use – a model that will hopefully translate into greater private involvement in shared public assets across the region.

Relevance to Economic Development Working Group Goals: The Central New York Conservancy project relates to Economic Development Goals as follows:

ED Goal #3: CREATE Pathways to innovation and enabling infrastructure that will drive entrepreneurialism

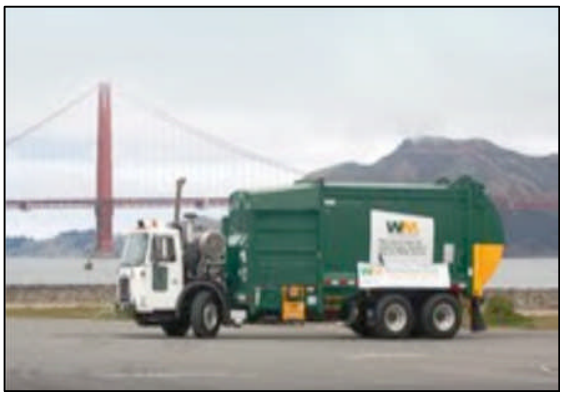
ED Goal #5: FORGE Partnerships that strengthen government and civic effectiveness to provide a more vibrant economy.

Sources:

- Landmark Society of Greater Utica, Fall 2004 newsletter, www.uticalandmarks.org/Newsletters/FallLMNL04.pdf
- Mohawk Valley Regional Economic Development Council 2012 Action Plan, September 2012
- Utica Observer Dispatch, June 9, 2009 http://www.uticaod.com/news/x313681644/City-parks-become-part-of-national-state-registries#sthash.YDIz7vUa.dpuf

Case Example: Altamount Landfill uses landfill gas to fuel 300 to 400 refuse trucks.

Since September 2009, Waste Management (WM), in collaboration with New Jersey-based Linde NA, an international gas-producer, has successfully operated the largest renewable compressed natural gas (RCNG) plant in the world at the Altamont Landfill in Livermore, CA. The facility produces up to 13,500 gallons of clean-burning RCNG daily, enough to power a fleet of more than 300 WM collection trucks. By using RCNG, 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. WM estimates the supply of RLNG at Altamont will last for at least 30 years. WM has already converted one-third of its Alameda County waste collection trucks to natural gas. In part due to the success of the Altamont facility, the company plans to convert the entire WM Alameda County fleet to natural gas in the coming years.



Partners: Waste Management, Linde North America, Gas Technology Institute

Timing and Resources: The Altamont Landfill project is cited by many as the greatest evidence for the economic viability of RCNG. Of the more than $16 million in initial capital investment required to build the facility, $14 million was privately funded by Linde NA and WM. Public funding sources for the remaining amount included California Air Resources Board ($610,000), CalRecycle ($740,000), Southern California Air Quality Management District ($250,000) and California Energy Commission ($990,000). Subsidies and tax credits earned under the "Advanced Biofuel" section of the Federal Renewable Fuel Standard continue to offset costs, but unlike many other renewable energy projects, the Altamont facility is largely a private endeavor.

Sources:

- Ken Lewis, Director of Landfill Operations, California Bay Area, Waste Management, 510-613-2158, klewis@wm.com
- Energy Vision: www.energy-vision.org

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. In operation since 1986, the pipeline is jointly owned and operated by North Carolina-based Duke Energy and Montauk Energy Capital, of Pittsburgh, PA. Until recently, landfill gas from the facility has been used solely for electrical power generation, supplying enough energy to power 25,000 homes a year. However, 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. To fuel these 10 vehicles will require less than 10% of the total landfill gas being produced, suggesting that expansion to a larger fleet of R-CNG trucks would be feasible at this location.

Timing and Resources: The $3.1 million project was funded through the combination of an $800,000 Clean Fuels Ohio grant in addition to $2.3 million in private investment by Rumpke. If the pilot is successful, Rumpke could lead the way for other large landfills, with existing gas-to-pipeline facilities, to use RCNG as a vehicle fuel.

Partners*:** Rumpke Consolidated Companies, Montauk Energy Capital, Duke Energy, ***Location: Cincinnati, OH,

Sources:

- Amanda Pratt (Amanda.Pratt@rumpke.com)
- Energy Vision: www.energy-vision.org

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. Through the collaboration of quasar energy, Kurtz Bros. and the Solid Waste Authority of Central Ohio (SWACO), a large-scale facility has been constructed outside Columbus, Ohio, to convert bio-solids (from wastewater treatment), food and beverage waste, and fats, oils, and greases (FOG) to biogas and R-CNG for use as electricity and vehicle fuel respectively. The facility utilizes Ohio-based quasar energy's ecoCITY System 1325, patented technology comprised primarily of a large anaerobic digester adjacent to waste storage tanks, which combine to turn approximately 50,000 wet tons of waste (annually) into enough electricity to power 750 homes, and RCNG to fuel a local municipal fleet. The remnants of the conversion process will be used, distributed or sold by Kurtz Bros., Inc., a local leading resource management company specializing in recycled lawn and garden products. The Columbus plant is one of four operational digesters (and four more under construction) designed and built by quasar, with a long-term focus on using RNG as vehicle fuel.

Timing and Resources: State funds, dedicated to alternative energy and green job creation projects, made available to quasar accounted for a large portion of the total facility construction costs. A small grant was also given to Kurtz Bros. from the Ohio Department of Natural Resources to help purchase organic waste recycling equipment. The facility expects to create and sustain, directly and indirectly, more than 20 jobs.

Partners: Quasar Energy Group, Solid Waste Authority of Central Ohio, Kurtz Bros. Inc.

Sources

- Sam Spofforth, Clean Fuels Ohio, (614) 884–7336, sam@cleanfuelsohio.org
- Energy Vision: www.energy-vision.org

CLEANER GREENER COMMUNITIES

The New NY WORKS for Business

Mohawk Valley Regional Sustainability Plan

MOHAWK VALLEY GHG INVENTORY

ecology and environment, inc.
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NYSERDA CGC Regional GHG Inventory Process

- Regional GHG Inventory
  - Assess annual total GHG emissions from the region
  - Provide information in detail needed to inform the planning process
- GHG Inventory Protocol Working Group
  - Designed the protocol and reporting template to be used by all regions
- Mohawk Valley GHG Inventory Results
  - Region-wide totals and summary, Indicators
  - Specific data provided to Working Groups to help assess regional priorities and the benefits of recommended actions

NYSERDA CGC Regional GHG Inventory Protocol

NYSERDA GHG Inventory Protocol Working Group

- Began meeting in March 2012, finished in Sept 2012
- Consultants from CGC Regional planning teams throughout the state
- Facilitated by Jim Yienger of Climate Tools and Peggy Foran of the Climate Registry
- Supported by representatives of NYS agencies such as NYSERDA, NYSDEC, NYSDOT
- Reviewed data, procedures, and methods from Federal, State and NGO (Climate Registry, ICLEI) sources
- Designed Protocol to best represent regional and state wide emissions
- Designed template for reporting data to NYSERDA

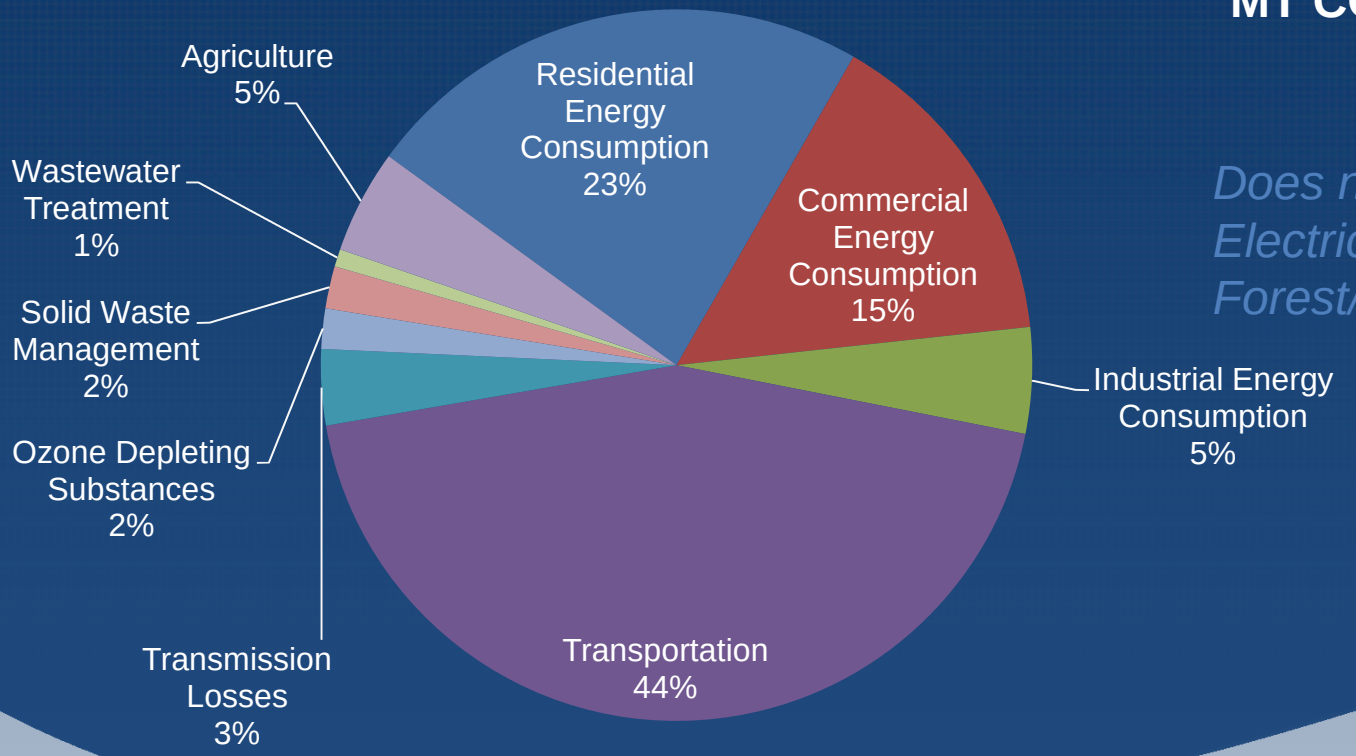
Regional GHG Inventory: Protocol Methods

- GHG Inventory Categories:
  - Energy
    - Electricity Generation
    - Electricity Consumption
    - Direct Consumption of Fuel(Natural Gas, Fuel Oil, etc.)
  - Transmission Losses
  - Industrial Uses and Processes
  - Transportation
    - On-road Transportation
    - Rail, Aviation, and Marine Vessels
    - Non-road Mobile (Construction, Recreation, etc.)
  - Waste and Wastewater
  - Agriculture
    - Animal Management(Manure, Enteric Fermentation)
    - Agricultural Management(Fertilizer, Nitrogen fixing crops)
  - Forest Carbon and Urban Trees

Regional GHG Inventory: Preliminary Results

GHG Emissions
6.2 Million MT CO2e

12.45
MT CO2e/person



Does not include Electricity Generation or Forest/urban tree sinks

Regional GHG Inventory: Energy

- GHG Inventory Energy Categories:
  - Electricity Generation by Fuel Type
  - Electricity Consumption for Residential, Commercial, and Industrial Use
  - Direct Consumption of fuels (Kerosene, Oil, Natural Gas, LNG, Propane, Wood and Bio-Mass) for Residential, Commercial, and Industrial Use

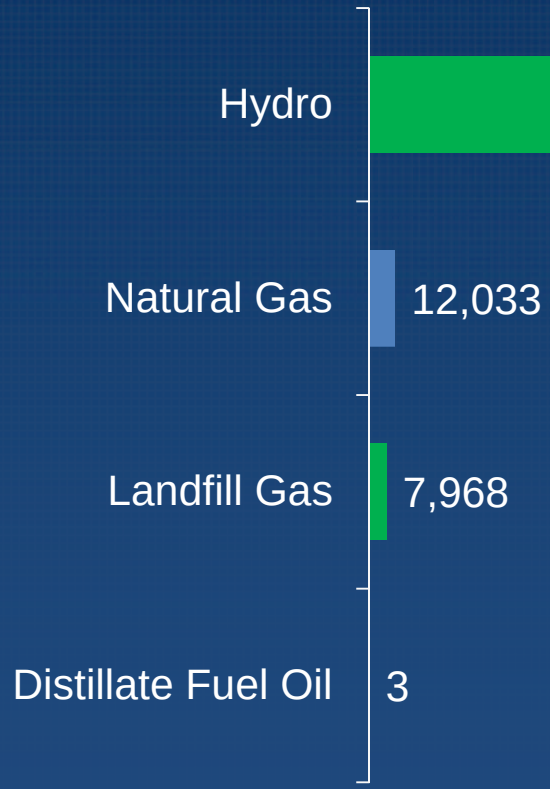
Transportation Energy is a separate category, to be discussed in Transportation Sector

Electricity Generation GHG Emission Calculations

- Electricity Generation by Fuel Type
  - 0.5 Million MWh generated
  - 5,779 MT CO2e
  - *Not included as % of Regional Energy Roll up*
  - Data collected from Department of Energy (DOE) Energy Information Administration (EIA) reporting programs (Form 923) for all electricity generators in NYS
  - GHG Emission Factors for each fuel type from 2009 EPA GHG Mandatory Reporting Rule (MRR) Calculation Methodology Requirements

Grid-Tied Electricity Generation(MWh)

Electricity Generation: 484,334 MWh Total



98% of Electricity Generated in the Region is from Renewable Sources (Hydro and Landfill Gas—there is no large wind generation in the region).

Does not include photovoltaic, small co-gen and small wind sources

Electricity Consumption GHG Emissions

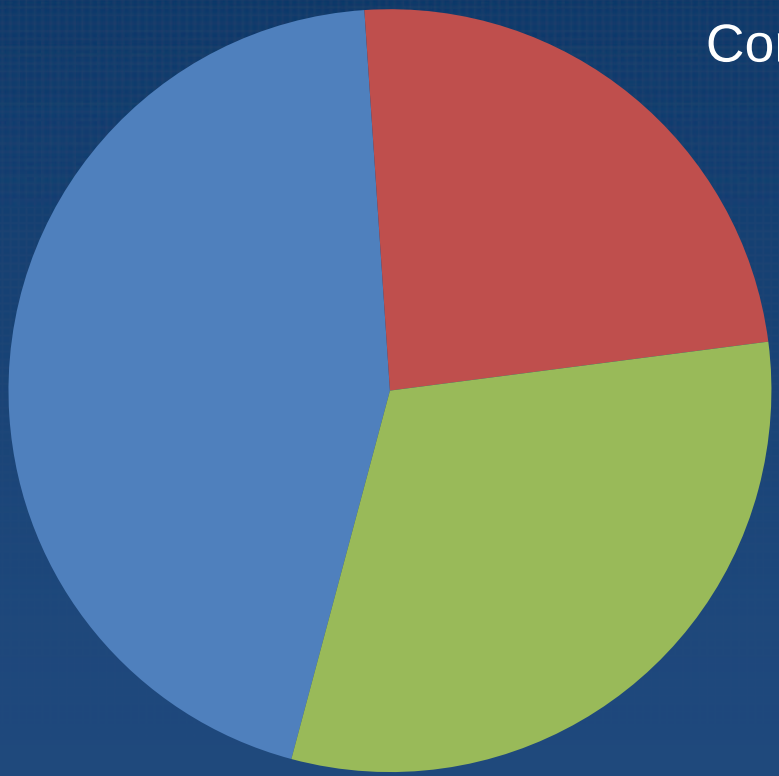
- Electricity Consumption for Residential, Commercial, and Industrial Use
  - 3.3 Million MWh
  - 0.74 Million MT CO2e
  - 12% of Regional GHG Emissions
  - Data collected from National Grid, NYSEG and Municipal Electricity Suppliers
  - GHG emissions calculated based on eGRID2012 Emission Factors for Update NY (NYUP)

NY eGRID GHG Emission Factors for Electricity Consumption

	CO_2 lbs/MWh
eGRID2012, NYUP (All Upstate NY)	497.92
eGRID2012, NYCW (NYC/Westchester)	610.67
eGRID2012, NYLI (Long Island)	1347.99

Electricity Consumption

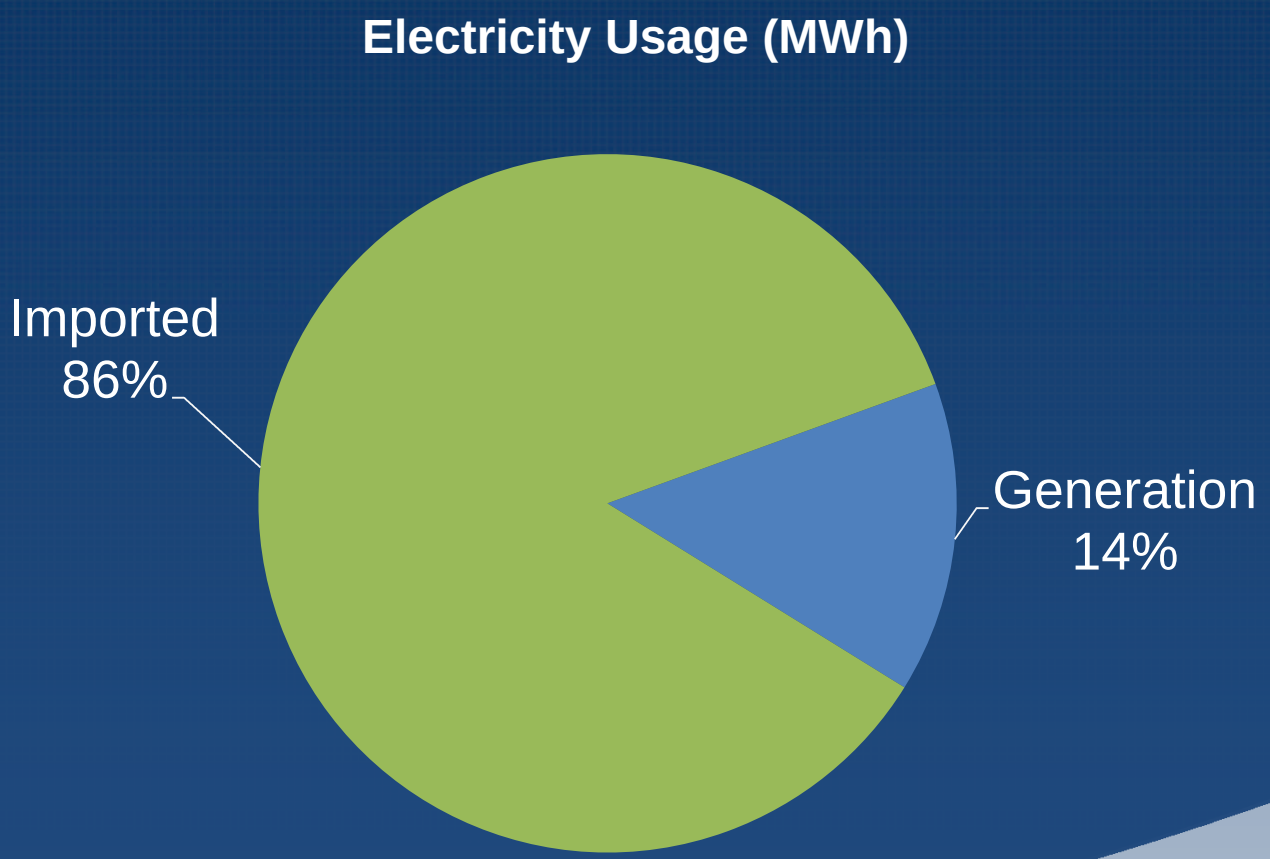
3.3 Million MWh
0.74 Million MT CO2e



Electricity Consumption vs. Generation

	Consumption	Generation
Data source	Electricity sales within region, from Utilities	EIA 923 Reporting for fuel use and electricity generated, by facility
Subcategories	Usage Sectors (Residential, Commercial, Industrial)	Fuel used (Natural Gas, Fuel Oil, Landfill Gas, and Hydro)
Emissions calculations	eGRID 2012 NYUP emission factors (497.92 CO2/MWh)	EPA MRR emission factors for each fuel (Average 25.47 CO2/MWh, due to high Hydro %)
2010 MWh Totals	3.3 Million MWh	0.496 Million MWh (0.484 Million MWh renewable)
2010 GHG Emissions	0.74 Million MT CO2e	0.0058 Million MT CO2e

Mohawk Valley Electricity Sources



Direct Energy Consumption GHG Emissions

- Direct Consumption of other fuels for Residential, Commercial, and Industrial Use
  - 2 Million MT CO2e
  - 32 % of Regional GHG Emissions
  - Direct use of fuels such as:
    - Natural Gas
    - Distillate and Residual Fuel Oil (but not gasoline)
    - Propane and LNG
    - Wood/Bio-mass

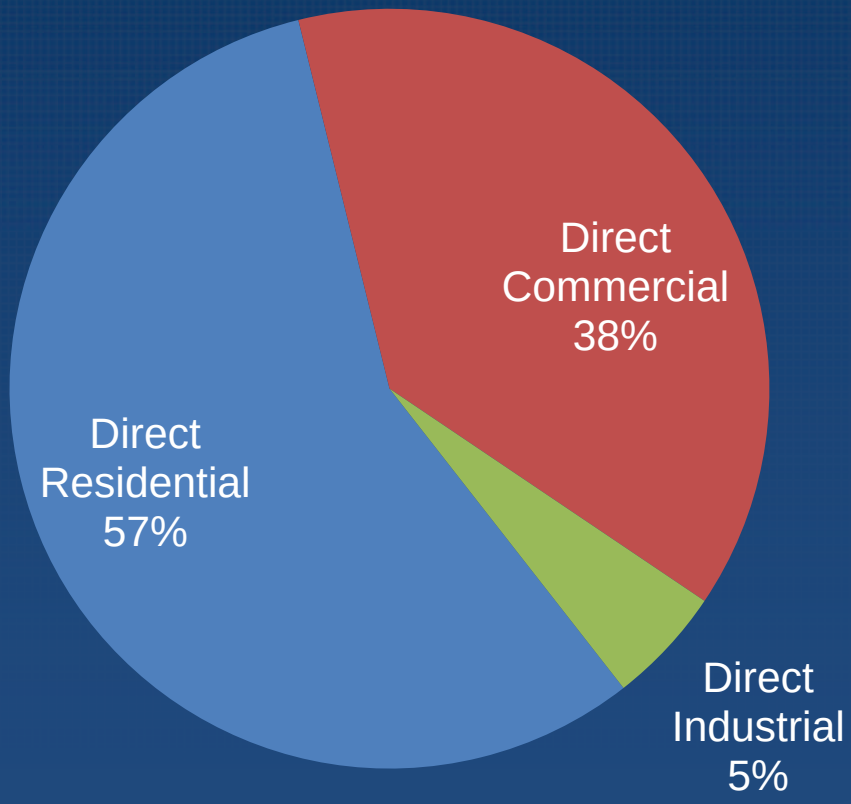
Does not include Electricity Generation or Transportation

Direct Energy Consumption GHG Emissions

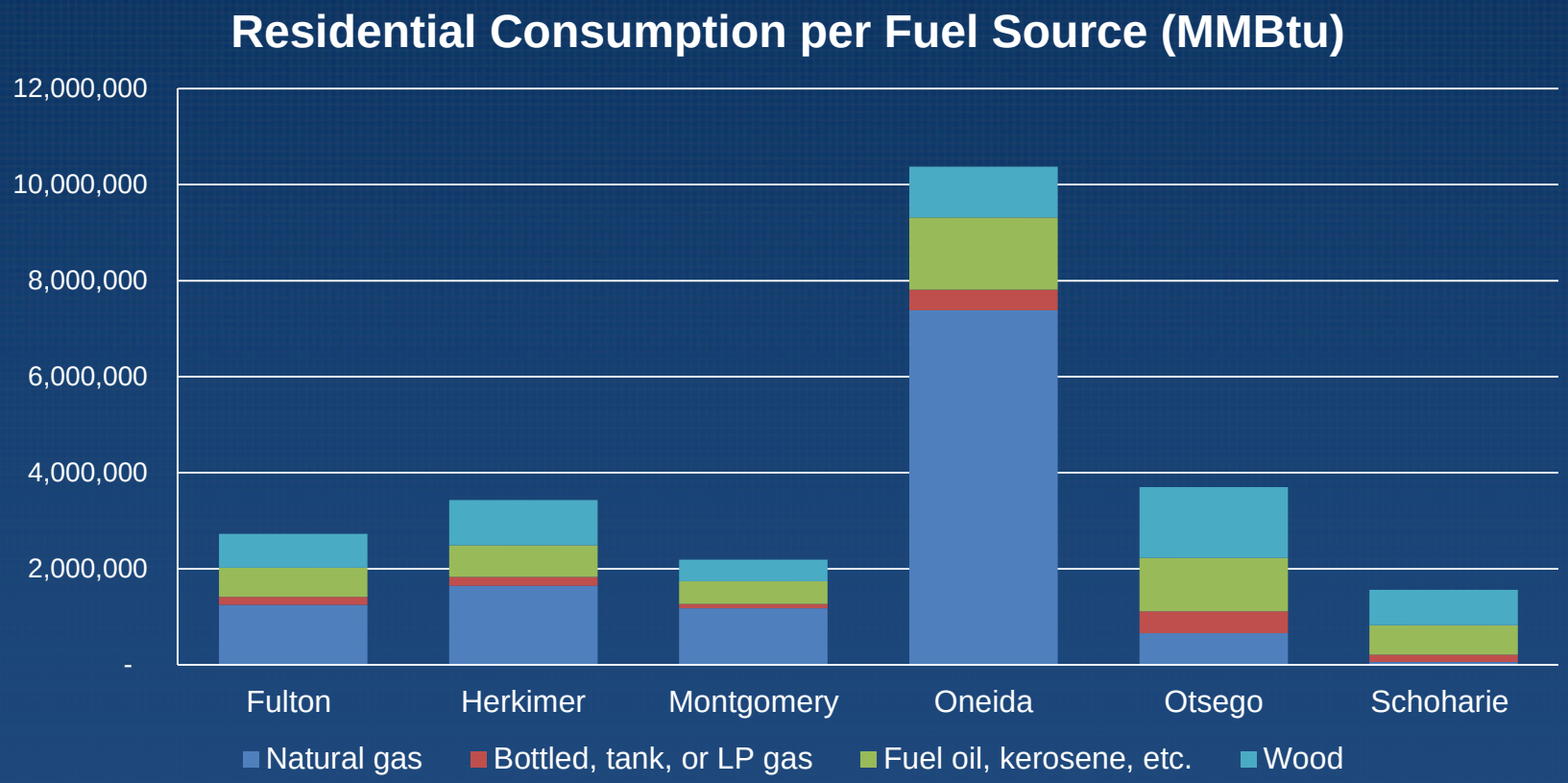
- Direct Consumption of fuels (NOT Electricity) for Residential, Commercial, and Industrial Use
  - Primary usage: heating, hot water
  - 2010 state wide fuel use data collected from EIA State Energy Data System (SEDS)
  - State wide data allocated to each region based on:
    - Residential: Heating Degree Days (HDD), # and size of households
    - Commercial: HDD, # of employees by business type and average energy use per employee by type of business
    - Industrial: Reported energy use collected from NYS Department of Environmental Conservation (NYSDEC) Title V Air Quality Permitting information
  - GHG Emission Factors for each fuel type from 2009 EPA GHG Mandatory Reporting Rule (MRR) Calculation Methodology Requirements

Direct Energy Consumption GHG Emissions, By Sector

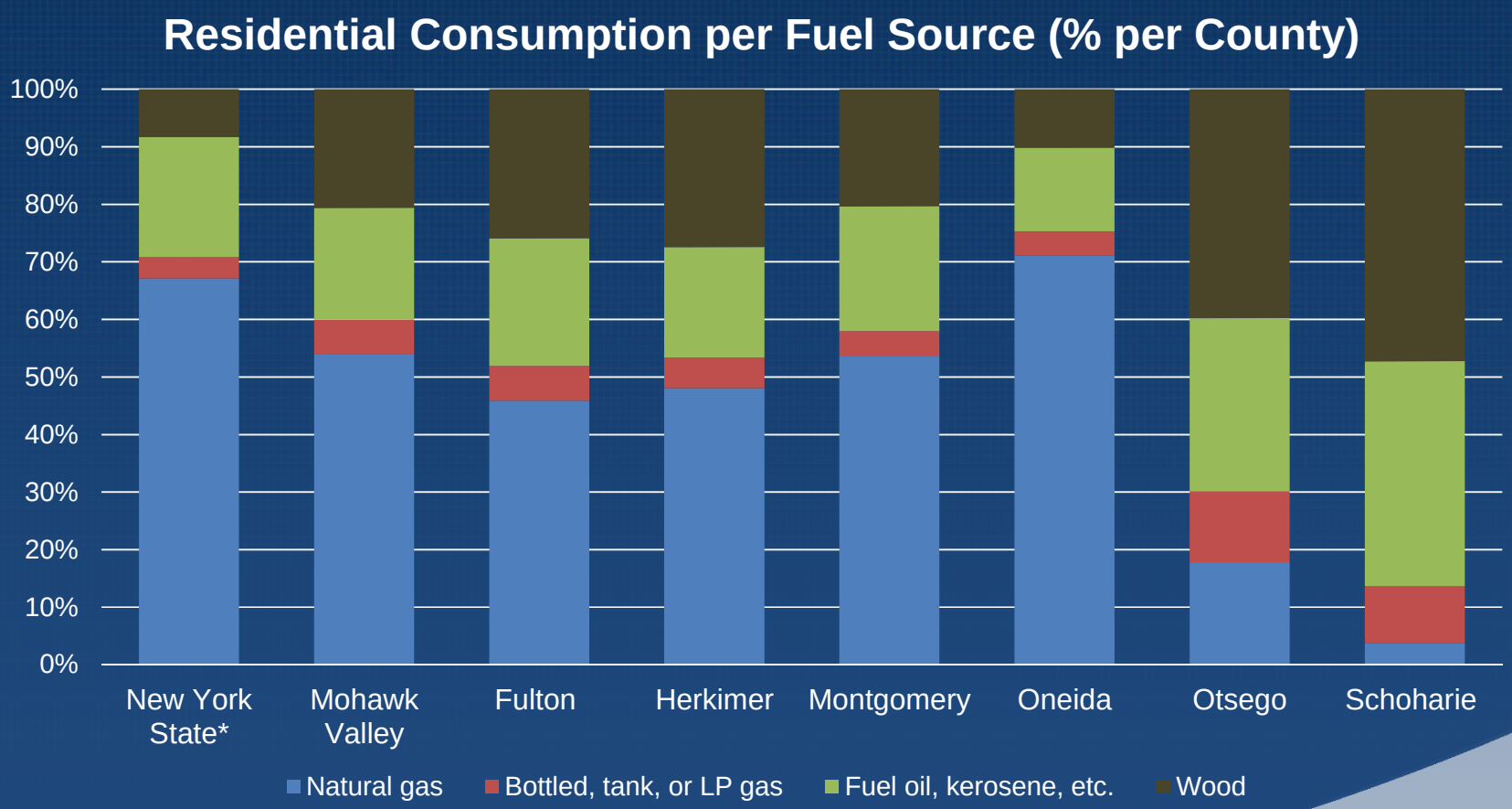
2 Million MT CO2e



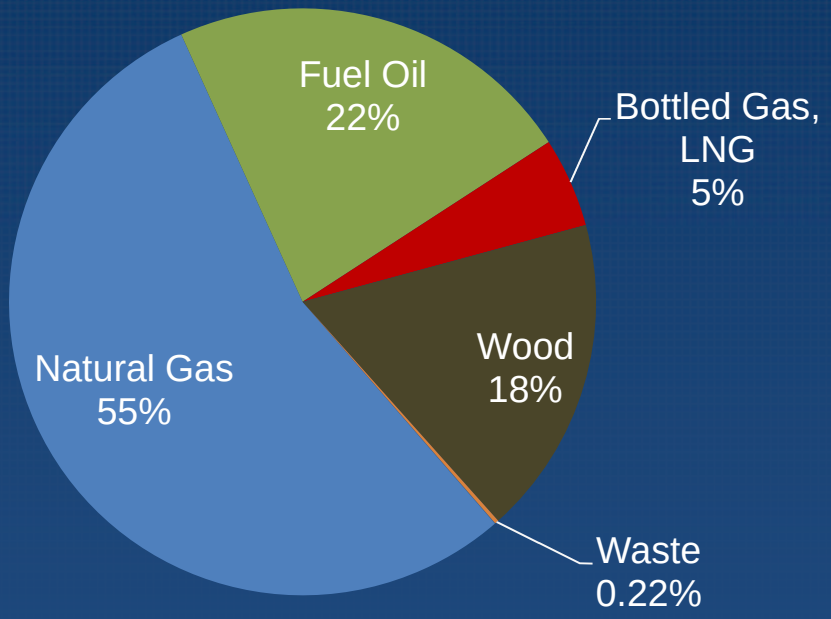
Direct Residential Energy Consumption (Heating), MMBtu



Direct Residential Energy Consumption (Heating), %



Total Regional Energy Use, (MMBTU)



Includes Electricity Generation, does not include Transportation

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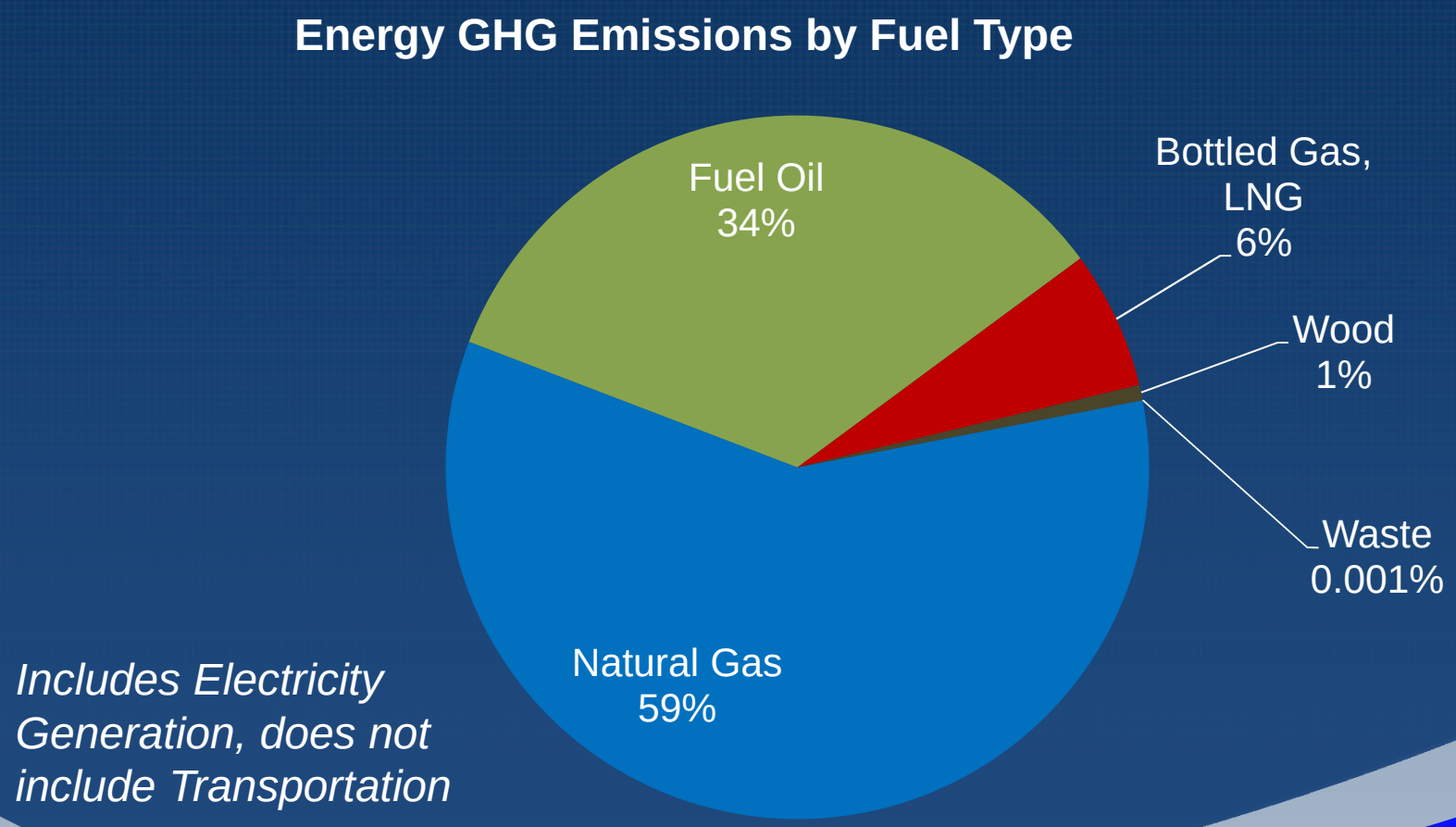
Total Regional Energy Use, GHG Emissions



Includes Electricity Generation, does not include Transportation

Regional GHG Inventory: Industrial Sources

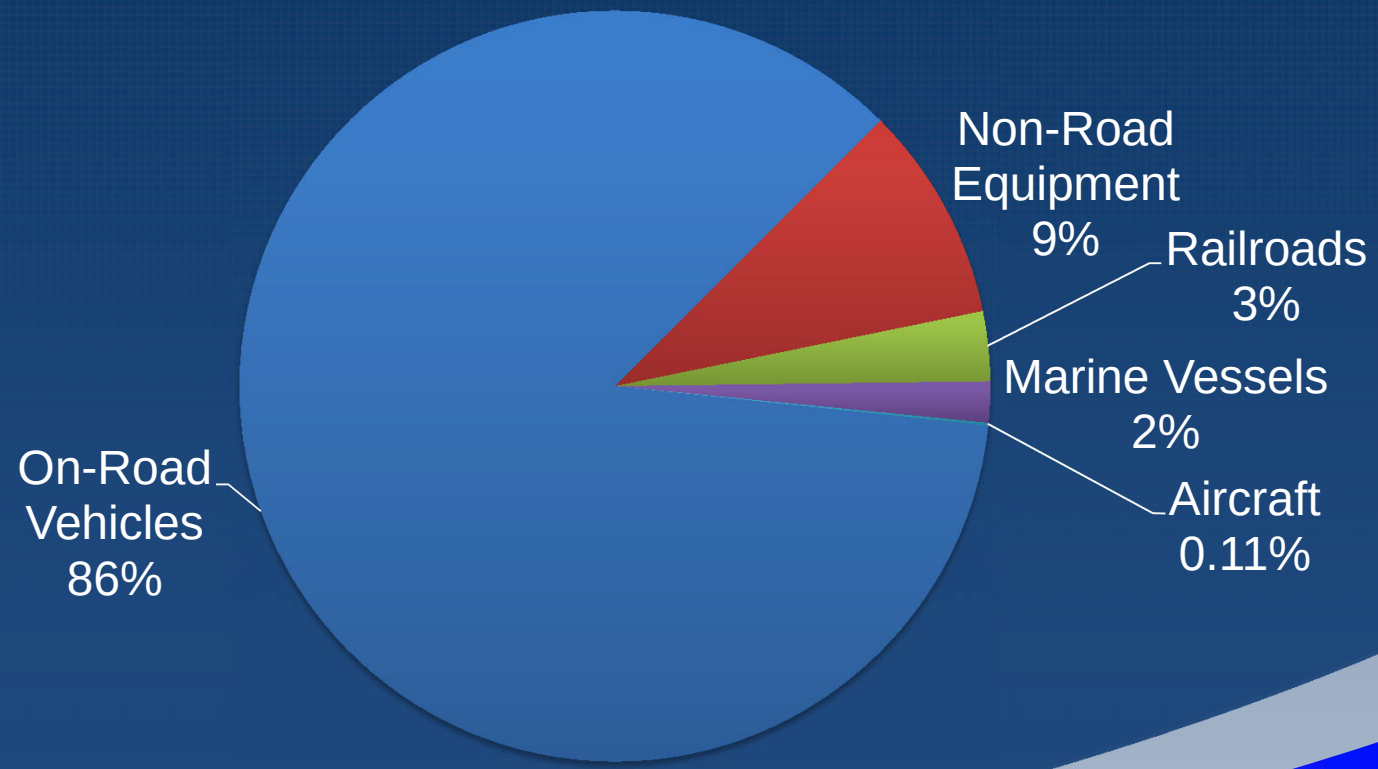
- Transmission and Distribution Losses
  - Electricity and Natural Gas Systems
  - 0.2 Million MT CO2e
  - 3% of Regional GHG Emissions
- Ozone Depleting Substances
  - 0.1 Million MT CO2e
  - 2% of Regional GHG Emissions
- Utility Industry Use of SF6
  - 0.01 Million MT CO2e
  - < 0.1% of Regional GHG Emissions
- Industrial Process Sources
  - No Major Sources Reported to EPA MRR

Regional GHG Inventory: Transportation

- 2.75 Million MT CO2e
- 44% of Total North Country GHG Emissions
- GHG Inventory Categories:
  - On-Road Transportation
  - Rail
  - Aviation
  - Marine Vessels
  - Non-road Mobile

Regional GHG Inventory: Transportation

GHG Emissions

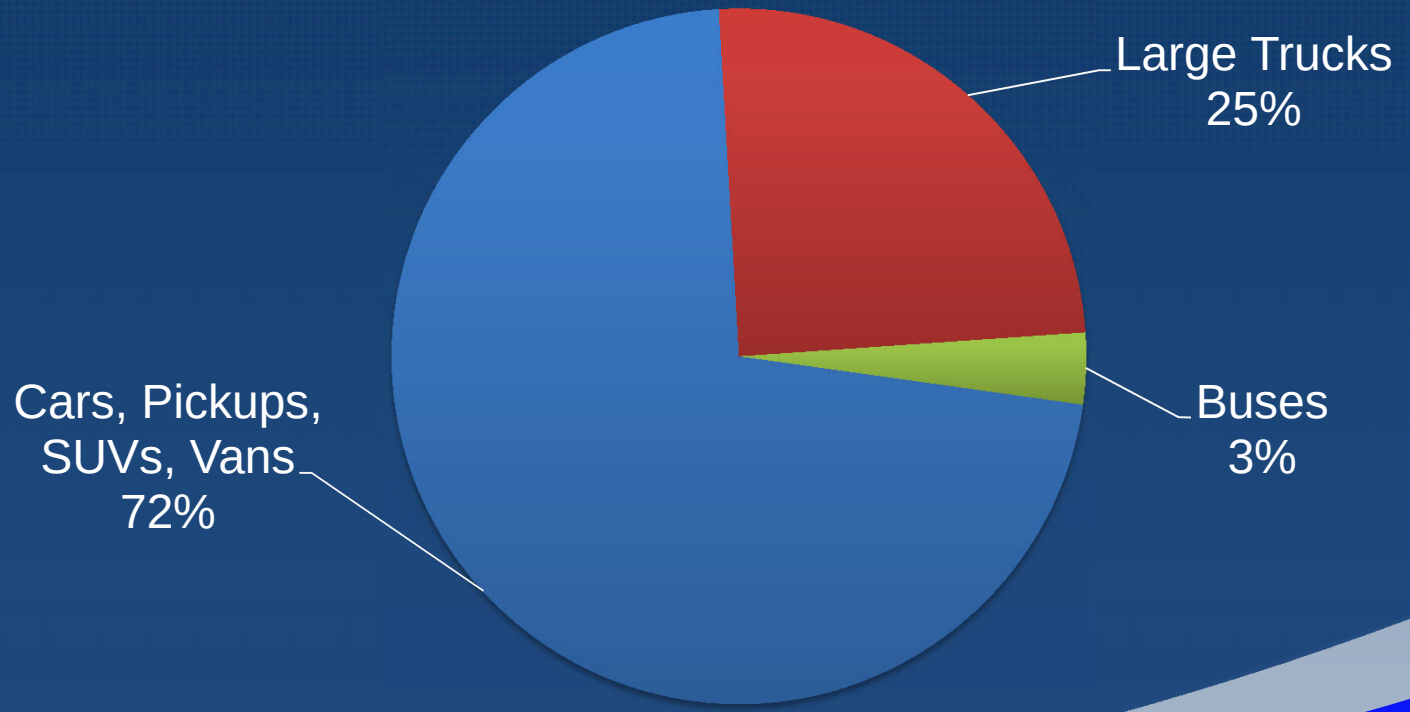


Regional GHG Inventory: Transportation

- On-Road Transportation
  - 2.3 Million MT CO_2e
  - 38 % of Regional GHG Emissions
  - Based on Vehicle Miles Travelled (VMT) within each County and Vehicle types by County from NYSDOT
  - 5.36 Billion VMT in the Region
  - 10,722 miles per person
  - Latest VMT data is from 2009

Regional GHG Inventory: Transportation

On Road GHG Emissions by Vehicle Type



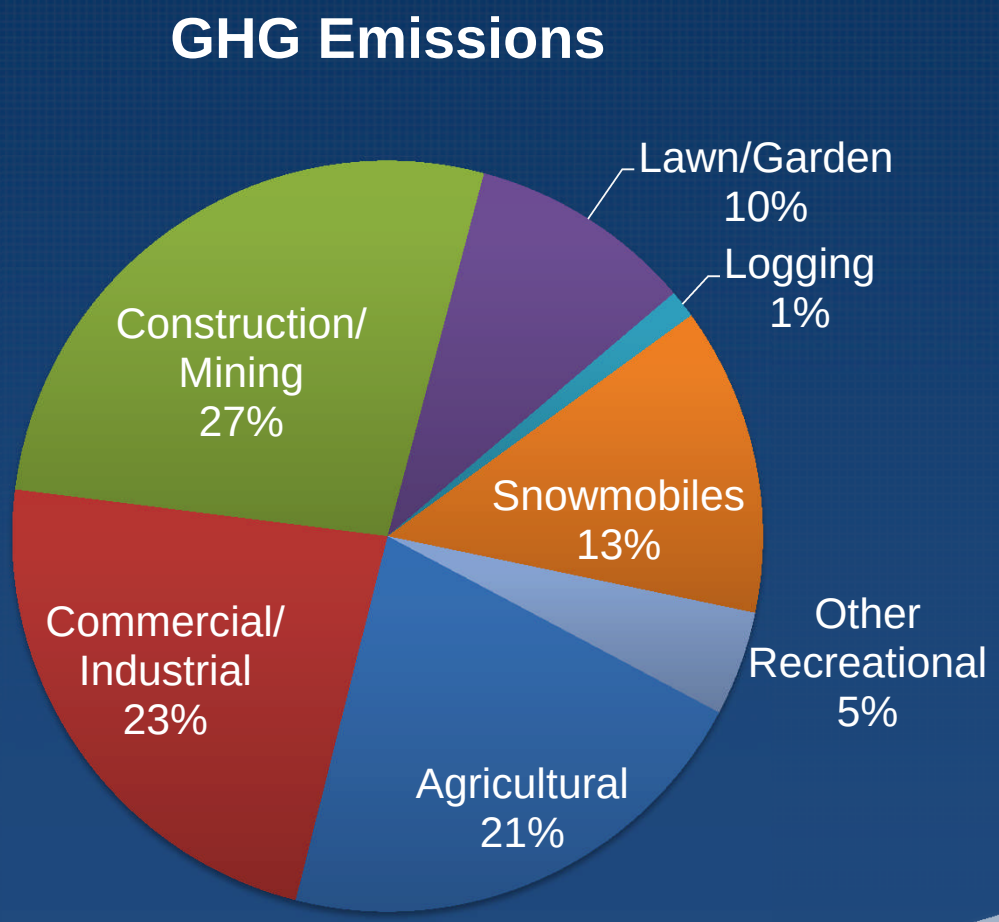
Regional GHG Inventory: Transportation

- Rail, Aviation, and Marine Vessels
  - 0.09 MT CO2e
  - 1.4 % of Regional GHG Emissions
  - Based on operations data and methods from NYSERDA, NYSDEC, and FAA
  - Annual data is the latest available, but comes from 2002-2009

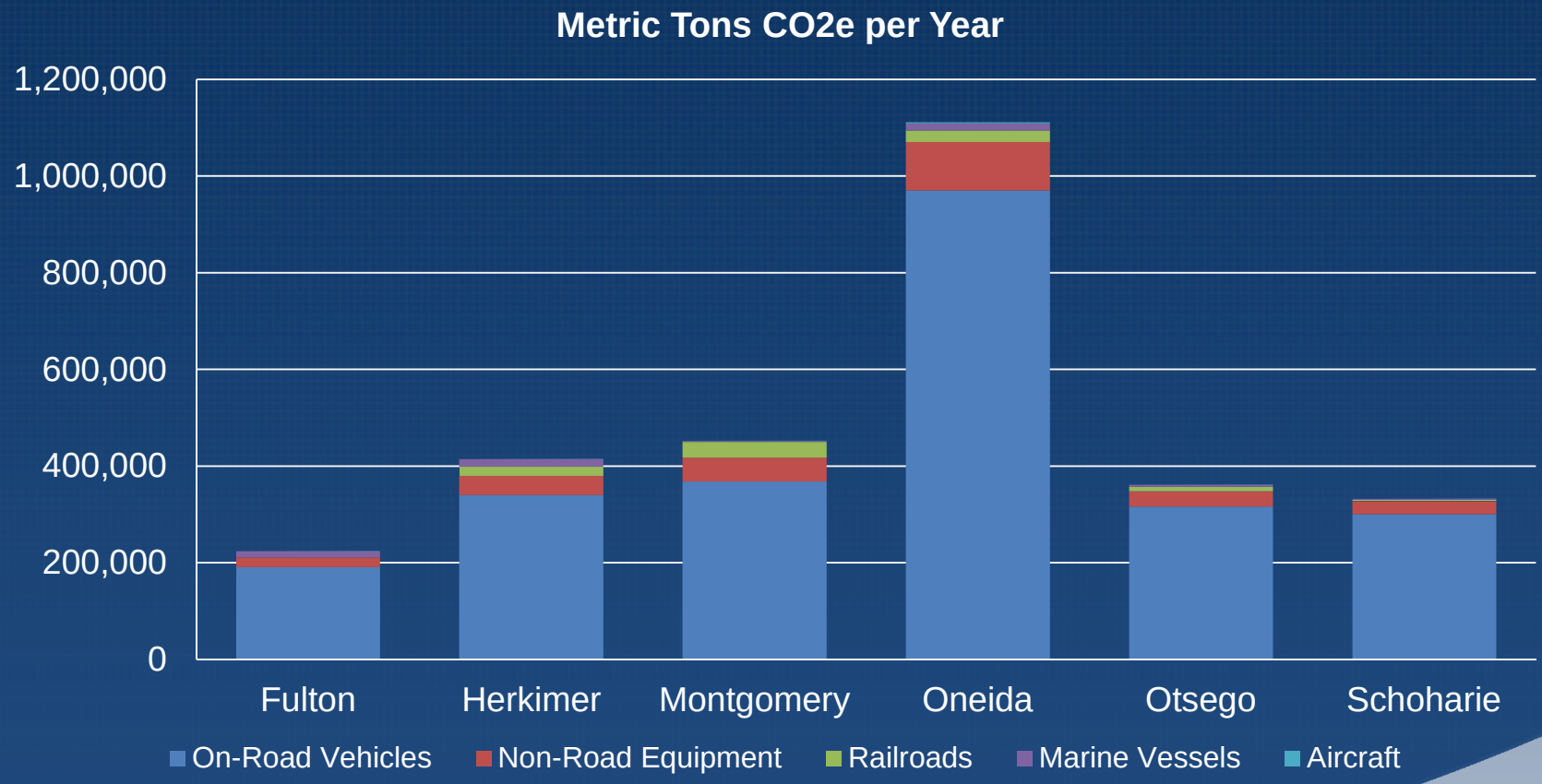
Regional GHG Inventory: Transportation

- Non-road Mobile
  - 0.32 Million MT CO_2e
  - 5 % of Regional GHG Emissions
  - GHG Emissions from sources such as:
    - Construction equipment and vehicles
    - Landscaping equipment
    - Snowmobiles
    - Pleasure boats
  - Calculated using EPA NONROAD emission modeling software

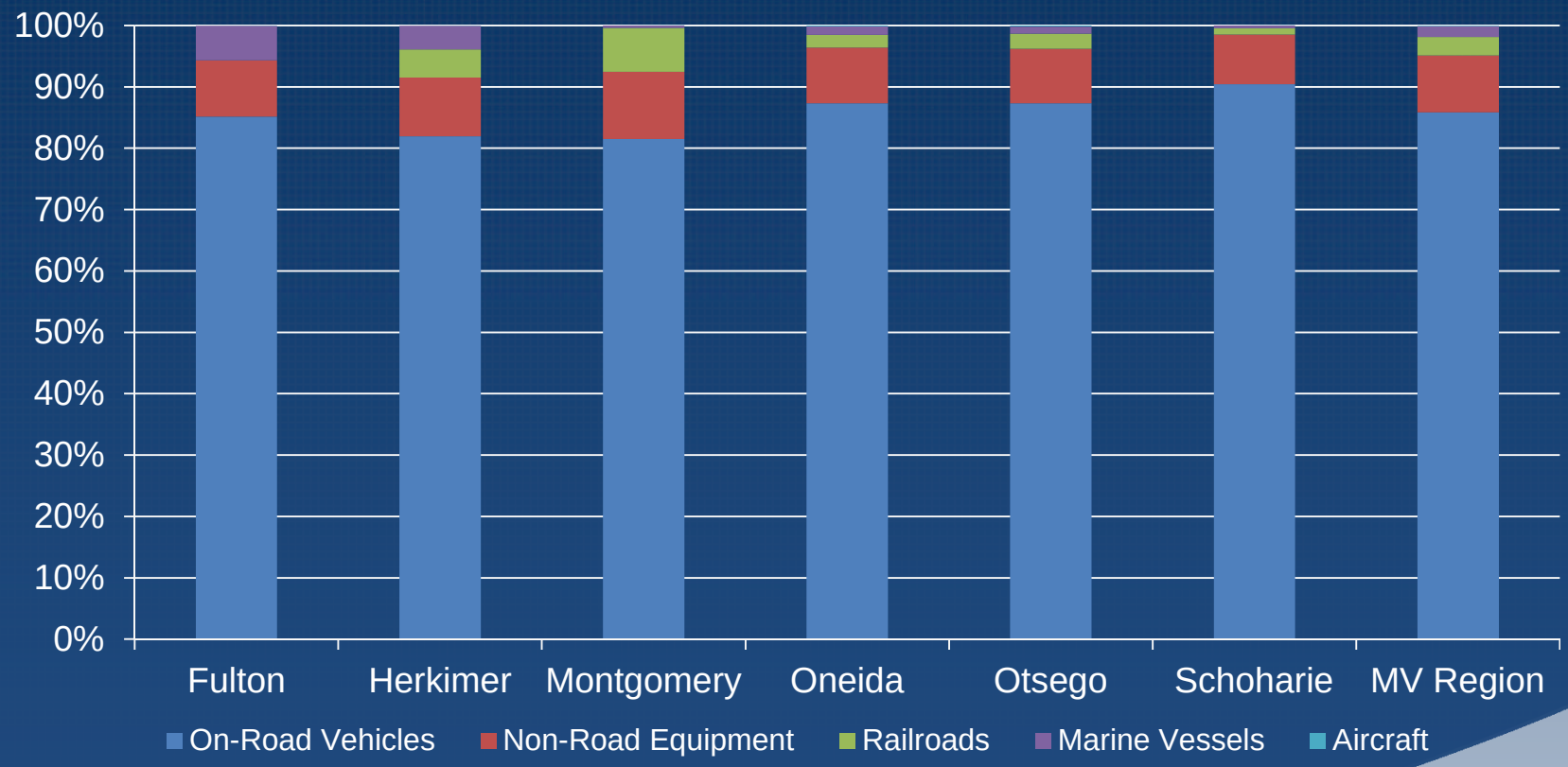
Regional GHG Inventory: Transportation Off-Road Emissions



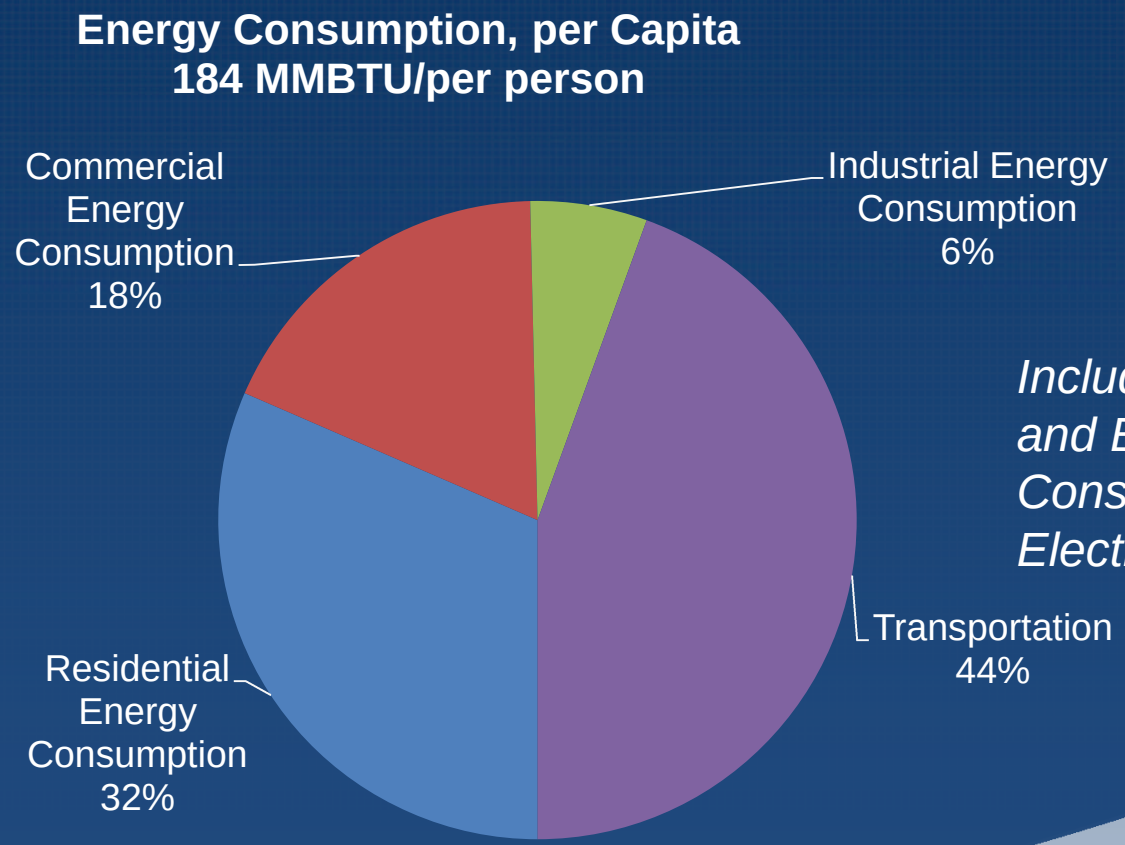
Transportation Annual GHG Emissions



Transportation
Annual GHG Emissions, %



Sustainability Indicator 1A: Regional Energy Use, per Capita (MMBTU/person),%



Includes Transportation and Electricity Consumption, not Electricity Generation

Regional GHG Inventory: Waste and Wastewater

- Waste
  - 152,006 MT CO_2e emissions (from current open and closed landfills), as reported for EPA MRR—NOT included in roll up total
  - 85,764 MT CO_2e attributed to waste generation in the region, calculated using Future Order Decay (FOD) Modeling, based on annual waste generation per county reported to the NYSDEC—included in roll up total
  - FOD total is 1.4 % of Regional GHG Emissions
- Wastewater
  - 50,000 MT CO_2e
  - 0.8% of Regional GHG Emissions
  - Calculated using EPA State Inventory Tool and allocated by population per county

Regional GHG Inventory: Agriculture

- Enteric Fermentation
  - 215,881 MT CO_2e
  - 3.5% of Regional GHG Emissions
- Manure Management
  - 56,250 MT CO_2e
  - 0.9% of Regional GHG Emissions
- Crop Production and Soil Management
  - 21,599 MT CO_2e
  - 0.4% of Regional GHG Emissions

Emissions calculated using EPA State Inventory Tool emission factors and regional animal numbers and fertilizer application by county from USDA

Regional GHG Inventory: Sustainability Indicators

- 1A: Energy Consumption per Capita:
  - Total Energy Consumption: 91,353,804 MMBTU
  - Total Population: 500,155
  - Energy Consumption/person: 183 MMBTU
- 2B: Transportation VMT per Capita
  - Total Transportation VMTs: 5,362,874,684
  - VMT/person: 10,722 miles
- 9A: GHG Emissions per Capita:
  - Total Emissions: 6,226,224 MT CO2e
  - Regional Average GHG Emissions/person: 12.45 MT CO2e

Regional GHG Inventory: Forestry

Research into the carbon stored in trees and forests used to estimate the total CO2e stored within the region's forests, and also the annual amount of GHG Emissions absorbed by Urban trees.

Methods and data are subjective, therefore not included in roll up totals.

- 2 types:
  - Total Forest Carbon
    - Based on types and amount of forest land in the region
    - X Million MT CO2e sequestered in regional forests
  - Urban Forest Carbon
    - Annual total based on estimated density of trees in amount of urban space within the region
    - X Million MT CO2e annually sequestered in urban trees within the region

Regional GHG Inventory: Terms and Definitions

- Important terms
  - MT CO2e = Metric tons of Carbon Dioxide Equivalent, the standard unit for GHG Emissions
    - Other emissions are converted to CO2e by using their Global Warming Potential (GWP)—for example, Methane has a GWP of 21,as it has 21 times more impact than CO2.
  - MMBTU = Million British Thermal Units, a standard unit for energy
    - "MM" = 1000 x 1000 in Roman numerals
    - All energy can be stated as MMBTUs
  - MWh = Megawatt-hours, the standard for electrical energy supply
    - 1 MWh = 1000 kilowatt hours (kwh)
    - 1 MWh also equals 3.412 MMBTU

Regional GHG Inventory: Terms and Definitions

- **Greenhouse Gas (GHG):** There are six emissions as defined in the Kyoto Protocols, that contribute to the Greenhouse Effect, which is causing Global Warming. These include:
  - Carbon Dioxide (CO_2);
  - Methane (CH4);
  - Nitrous Oxide (N2O);
  - Perfluorocarbons (PFCs);
  - Hydrofluorocarbons (HFCs); and
  - Sulfur Hexafluoride (SF6).
- **Direct Emissions**: Emissions generated from the immediate action, such as the burning of fuel for heat or transportation
- **Indirect Emissions**: Emissions attributed to an action that do not occur at the same time or place as the action, such as electricity use, or waste generation. Average emission factors are used to calculate indirect emissions, because additional factors can effect the emission levels (such as what fuel is used to generate emissions, or if landfill methane is captured at the site of waster disposal)
- **Distilled and Residual Fuel Oil:** Fuel Oil is refined to various standards and properties, each category providing a different purpose and slightly different GHG Emissions. Distilled Fuel is similar to Diesel Transportation fuel, while Residual Fuel is fuel that remains when other fuels have been "distilled off," leaving a thicker fuel with more impurities.
- **Enteric Fermentation Emissions**: Methane emissions from food digestions in animals.

NYSERDA

Cleaner Greener Communities / Climate Smart Communities
Regional Level GHG Reporting Template

Instructions

Please use this template to report summary regional GHG inventories to NYSERDA as part of your final deliverables for the regional GHG inventory. Fill it out and rename the sheet "**REDC_NAME.CGC Final GHG Inventory.2010.xlxs**".

In this template there are two tabs, "Emissions by Source" and the "Roll Up Report". Emissions by Source shows all direct and indirect emissions sources considered by the GHG Working Group for inclusion in the inventory, and the Roll Up Report reflects the consensus decision for which sources are to be included when totaling the regions GHG inventory into a single number . The final submission should the two tabs for the REDC in total, and two additional tabs for each county separately. For county tab names, please rename "REDC" to the name of the county.

We understand each region will have its own custom way of managing data and calculations so please cut and paste summary results from from your own data sheets into this template. Although you may create dynamic links to this template from your analysis sheets when filling it out, please submit this template without these links.

Protocol Compliance Statements. In the REDC level tabs only, please fill in Columns P through R, and indicate if your methods adhered to methods in Column O that summarize NY GHG Working Group consensus decisions with "Rec" standing for the recommended methods and "Alt" standing for an acceptable alternative methods. Its not required that all methods adhere to the recommended or alternate methods, but please indicate any deviations, justifications, findings, or recommendations you have for additional methods to consider. It may help you to select Columns O-P and choose the "wrap text" format to help you read the methods.

Please Fill in the Summary Table on the Cover Sheet tab to the right at the conclusion of filling out there data sheets. You may dynamically link these numbers to the other sheets in this template.

Color Coding- in general a Green cell requires a value or entry, a while cell is optional.

Reporting Region	Mohawk Valley

REDC Emissions Summary CO2e Roll Up Numbers (MTCDE)		Population	MT CO2e per capita
Fulton County	#REF!	55,531	#REF!
Herkimer County	#REF!	64,519	#REF!
Montgomery County	#REF!	50,219	#REF!
Oneida County	#REF!	234,878	#REF!
Otsego County	#REF!	62,259	#REF!
Schoharie County	#REF!	32,749	#REF!
Sum Total of Counties	#REF!	500,155	#REF!
REDC in Total	#REF!		

REDC Emissions By Source and Sector
Year: 2010

REDC / County Name	Mohawk Valley

Color Code

	REQUIRED, though some data may be zero or considered to small to count
	OPTIONAL
	DO NOT Report Data in these cells

DRAFT Reporting Template CGC. Emissions in MTCDE						Rolled Up?	Related GHG Metrics / Activity Data		
		Scope 1	Scope 2	Scope 3	Biogenic		Metric	Unit	Value
Built Environment	**Residential Energy Consumption**								
MV Electricity Consumption	Electricity / Steam		330,885			Yes	Consumption	MMBTU	4,974,350
MV Direct Residential Fuel Consumption	Natural Gas	646,304				Yes	Consumption	MMBTU	12,177,874
MV Direct Residential Fuel Consumption	Propane / LPG	94,014				Yes	Consumption	MMBTU	1,486,885
MV Direct Residential Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	368,268				Yes	Consumption	MMBTU	4,962,574
MV Direct Residential Fuel Consumption	Wood	10,589			503171.207	Yes	Consumption	MMBTU	5,364,299
	Commercial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		177,504			Yes	Consumption	MMBTU	2,668,502
MV Commercial Direct Fuel Consumption	Natural Gas	429,023				Yes	Consumption	MMBTU	8,083,786
MV Commercial Direct Fuel Consumption	Propane / LPG	29,746				Yes	Consumption	MMBTU	470,455
MV Commercial Direct Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	293,888				Yes	Consumption	MMBTU	3,960,278
MV Commercial Direct Fuel Consumption	Residual Fuel Oil (#4 and #6)	-				Yes	Consumption	MMBTU	-
MV Commercial Direct Fuel Consumption	Coal	421				Yes	Consumption	MMBTU	4,095
MV Commercial Direct Fuel Consumption	Wood	2,902			137876.076	Yes	Consumption	MMBTU	1,469,894
	Industrial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		230,780			Yes	Consumption	MMBTU	3,469,426
MV Industrial Title V Consumption	Natural Gas	96,170				Yes	Consumption	MMBTU	1,812,060
MV Industrial Title V Consumption	Propane / LPG	77				Yes	Consumption	MMBTU	1,221
MV Industrial Title V Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	882				Yes	Consumption	MMBTU	11,889
MV Industrial Title V Consumption	Residual Fuel Oil (#4 and #6)	1,465				Yes	Consumption	MMBTU	19,448
MV Industrial Title V Consumption	Coal	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Wood	262			12462.1761	Yes	Consumption	MMBTU	132,859
Energy Generation and Supply	**Energy Generation and Supply**								
MV Elec Generation GHG Analysis	Coal	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Natural Gas	5,741				No	Consumption	MMBTU	108,173
MV Elec Generation GHG Analysis	Distillate Fuel Oil (#1, #2 and #4)	15				No	Consumption	MMBTU	204
MV Elec Generation GHG Analysis	Residual Fuel Oil (#4 and #6)	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Wood / Biomass	-			0	No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	MSW	23			4,618	No	MSW Combusted	MMBTU	88,685
MV Elec Generation GHG Analysis	Other	-							4,507,423
MV Electricity Consumption	Electricity T/D Losses		43,020			Yes	Losses	MMBTU	289,507
MV Elec Generation GHG Analysis and MV Direct Fuel Consumption	Natural Gas T/D Losses	#REF!				Yes	Losses	MMBTU	
MV Electricity Consumption	Use of SF6 in the Utility Industry	9,895				Yes	Consumption	MMBTU	-
Industrial Processes	**Industrial Processes**								
Not Reported	Cement Production					Yes			
Not Reported	Iron and Steel Production					Yes			
Not Reported	Ferroalloy Production					Yes			
Not Reported	Aluminum Production					Yes			
Not Reported	Paper and Pulp					Yes			
Not Reported	Limestone Use					Yes			
Not Reported	Soda Ash Use					Yes			
Not Reported	Semi-Conductor Manufacturing					Yes			
MV Industrial Sources	Glass Production					Yes			
Not Reported	Chemical Manufacturing					Yes			
Product Use (Ozone Depleting Substances)	**Product Use (Ozone Depleting Substances)**								
MV Industrial Sources	All Refrigerants- except SF6	114,513				Yes			
Transportation Energy	**On-road**								
MV Emission Summary - Onroad	Motor Gasoline (E-10)	1,936,345			140,535	Yes	Consumption	MMBTU	29,529,656
MV Emission Summary - Onroad	Diesel	408,014				Yes	Consumption	MMBTU	5,635,324
Not Reported	Ethanol (E-85)					No	Consumption	MMBTU	
Not Reported	Biodiesel					No	Consumption	MMBTU	
Not Reported	Electricity Consumption					No	Consumption	MMBTU	
	Rail								
MV Emission Summary - Rail	Diesel	86,902				Yes	Consumption	MMBTU	1,171,042
MV Emission Summary - Rail	Coal Consumption		-			Yes	Consumption	MMBTU	-
	Marine								
MV Emission Summary -Com Marine	Gasoline					Yes	Consumption	MMBTU	
MV Emission Summary -Com Marine	Distillate Fuels	3				Yes	Consumption	MMBTU	21
MV Emission Summary -Com Marine	Residual Fuels	-				Yes	Consumption	MMBTU	-
	Air								
MV Emission Summary-Aircraft	All Fuels (Jet and Aviation Gasoline)	3,106				No	Consumption	MMBTU	43,515
	Off-road Mobile								
MV Emission Summary-Nonroad	All Fuels (Diesel and Gasoline)	320,037				Yes	Consumption	MMBTU	4,466,754
Waste Management	**Solid Waste Management**								
MV Waste	Landfill (Scope 1), allocated FOD (Scope 3) used in roll up	152,006		85,764	0	Yes - ONLY Scope 3	MSW+CD Generated	Tonnes	267,043
Not Reported	MSW incineration (non grid connected)					Yes	MSW+CD Processed	Tonnes	213,573
	Sewage Treatment						MSW Sent for Incineration	Tonnes	-
MV Waste water	Central WWTPs and Septic Systems	50,000				Yes	MSW incinerated in Boundary	Tonnes	-
Agriculture	**Livestock**								
GHF_MV_Agriculture	Enteric Fermentation	215,881				Yes			
GHF_MV_Agriculture	Manure management	56,250				Yes			
GHF_MV_Agriculture	**Crop Production and Soil Management**								
GHF_MV_Agriculture	Use of Fertilizer	21,599				Yes			
Not Reported	Crop Residue Incineration					No			
Land Use and Forestry									
GHG_MV_Forest	Urban Forest Annual Reserve	88,507				No			
GHG_MV_Forest	Forest Carbon Reserve (TOTAL)	411,498,822				No			

Grand Totals	Gross Totals	#REF!	782,189	85,764	798,662	#REF!
	Total with Aircraft (as reported in WNY Sustainability Plan)	#REF!	782,189	85,764	798,662	#REF!
	Net Totals					

Protocol Compliance Report Summary of Protocol Decisions for Required Tier II Source (Green Box Sources) "Rec" - recommended, "Alt" means acceptable alternative	Adherence		
	Yes	No	Brief Description of Method and Issues
(Rec) - Utility Supplied Data, (Alt 1) - extrapolation from partial set, (Alt 2) EIA allocation based HDD and Housing Unit Size	X		Actual electricity sales data is provided for National Grid, NYSEG and municipal utilities.
(Rec) - Utility Supplied Data, (Alt 1) - extrapolation from partial set, (Alt 2) EIA allocation based HDD and Housing Unit Size	X		Recommended method used
(Rec) Allocated EIA SEDS residential state consumption to counties based on Home Heating Fuel, HDD, and Housing Unit Size			Recommended method used
(Rec) Allocated EIA SEDS residential state consumption to counties based on Home Heating Fuel, HDD, and Housing Unit Size			Recommended method used
(Rec) Allocated EIA SEDS residential state consumption to counties based on Home Heating Fuel, HDD, and Housing Unit Size			
(Rec) - Utility Supplied Data, (Alt 1) - extrapolation from partial set, (Alt 2) EIA allocation based on Fuel Oil Recommended method.	X		Actual electricity sales data is provided for National Grid, NYSEG and municipal utilities.
(Rec) - Utility Supplied Data, (Alt 1) - extrapolation from partial set, (Alt 2) EIA allocation based on Fuel Oil Recommended method.	X		Recommended method used
(Rec) Allocated EIA SEDS commercial state consumption to counties based on Home Heating Fuel, HDD, employment and Commercial Square Footage. (Alt) Allocation based on Home Heating, HDD, and Employment only.	X		Recommended method used
(Rec) Allocated EIA SEDS commercial state consumption to counties based on Home Heating Fuel, HDD, employment and Commercial Square Footage. (Alt) Allocation based on Home Heating, HDD, and Employment only.	X		Recommended method used: includes all Fuel OIl
(Rec) Allocated EIA SEDS commercial state consumption to counties based on Home Heating Fuel, HDD, employment and Commercial Square Footage. (Alt) Allocation based on Home Heating, HDD, and Employment only.	X		Recommended method used: included in Row 24 totals
(Rec) Allocated EIA SEDS commercial state consumption to counties based on Home Heating Fuel, HDD, employment and Commercial Square Footage. (Alt) Allocation based on Home Heating, HDD, and Employment only.	X		Recommended method used
(Rec) Allocated EIA SEDS commercial state consumption to counties based on Home Heating Fuel, HDD, employment and Commercial Square Footage. (Alt) Allocation based on Home Heating, HDD, and Employment only.	X		Recommended method used
(Rec) - Utility Supplied Data, (Alt 1) - extrapolation from partial set, (Alt 2) allocate SEDS EIA data based allocated by industrial employment	X		Actual electricity sales data is provided for National Grid, NYSEG and municipal utilities.
(Rec) - Pie Slice Method. (1) Allocate directly all Title 5 / MMR reporting industrial facilities to the counties / municipalities. (2) compute total statewide industrial fuel use for all Title 5 / EPA MMR reporting facilities and subtract that from the EIA SEDS reported fuel use for the industrial sector (3) allocate the balance from step 2 to counties by industrial employment for manufacturing. The balance is assumed to represent smaller industry that does not report under Title 5 regulations.		X	Direct energy use as reported for Title 5 industrial facilities only, additional allocation based on statewide emissions by industrial employees is not representative of the region, therefore not included
(Rec) - Pie Slice Method. (1) Allocate directly all Title 5 / MMR reporting industrial facilities to the counties / municipalities. (2) compute total statewide industrial fuel use for all Title 5 / EPA MMR reporting facilities and subtract that from the EIA SEDS reported fuel use for the industrial sector (3) allocate the balance from step 2 to counties by industrial employment for manufacturing. The balance is assumed to represent smaller industry that does not report under Title 5 regulations.		X	Direct energy use as reported for Title 5 industrial facilities only, additional allocation based on statewide emissions by industrial employees is not representative of the region, therefore not included
(Rec) - Pie Slice Method. (1) Allocate directly all Title 5 / MMR reporting industrial facilities to the counties / municipalities. (2) compute total statewide industrial fuel use for all Title 5 / EPA MMR reporting facilities and subtract that from the EIA SEDS reported fuel use for the industrial sector (3) allocate the balance from step 2 to counties by industrial employment for manufacturing. The balance is assumed to represent smaller industry that does not report under Title 5 regulations.		X	Direct energy use as reported for Title 5 industrial facilities only, additional allocation based on statewide emissions by industrial employees is not representative of the region, therefore not included
(Rec) - Pie Slice Method. (1) Allocate directly all Title 5 / MMR reporting industrial facilities to the counties / municipalities. (2) compute total statewide industrial fuel use for all Title 5 / EPA MMR reporting facilities and subtract that from the EIA SEDS reported fuel use for the industrial sector (3) allocate the balance from step 2 to counties by industrial employment for manufacturing. The balance is assumed to represent smaller industry that does not report under Title 5 regulations.		X	Direct energy use as reported for Title 5 industrial facilities only, additional allocation based on statewide emissions by industrial employees is not representative of the region, therefore not included
(Rec) - Pie Slice Method. (1) Allocate directly all Title 5 / MMR reporting industrial facilities to the counties / municipalities. (2) compute total statewide industrial fuel use for all Title 5 / EPA MMR reporting facilities and subtract that from the EIA SEDS reported fuel use for the industrial sector (3) allocate the balance from step 2 to counties by industrial employment for manufacturing. The balance is assumed to represent smaller industry that does not report under Title 5 regulations.		X	Direct energy use as reported for Title 5 industrial facilities only, additional allocation based on statewide emissions by industrial employees is not representative of the region, therefore not included
(Rec) - Direct Allocation from Title 5, MMR, or EIA 923 Database. All Grid Connected Power Generators with Nameplate capacity of 1 MW or greater shall be reported. For overlap, prioritize EIA 923 Database.	X		EIA 923 database used
(Rec) - Direct Allocation from Title 5, MMR, or EIA 923 Database. All Grid Connected Power Generators with Nameplate capacity of 1 MW or greater shall be reported. For overlap, prioritize EIA 923 Database.	X		EIA 923 database used
	X		EIA 923 database used
(Rec) - Direct Allocation from Title 5, MMR, or EIA 923 Database. All Grid Connected Power Generators with Nameplate capacity of 1 MW or greater shall be reported. For overlap, prioritize EIA 923 Database.	X		EIA 923 database used
(Rec) - Direct Allocation from Title 5, MMR, or EIA 923 Database. All Grid Connected Power Generators with Nameplate capacity of 1 MW or greater shall be reported. Wood CO2 emissions reported optionally as biogenic CO2, Ch4 and N2 Emissions required to be reported to Scope 1	X		EIA 923 database used
(Rec) - Direct Allocation from Title 5, MMR, or EIA 923 Database. All Grid Connected Power Generators with Nameplate capacity of 1 MW or greater shall be reported. MSW CO2 emissions split as 44% reported as Scope 1 as part of non-biogenic (plastics etc), and 56% can be reported as option biogenic based data for 2005 on http://www.eia.gov/cneaf/solar.renewables/page/mswaste/msw_report.html. All Ch4 and N2O shall be reported under required Scope 1.	X		EIA 923 database used
(Rec) - Acquire utility specific estimate of T/D (in %) and apply that to all consumption (res/commercial/industrial). Report emissions as Scope 2 using regional EGRID emission factors consistent with all Scope 2 calculations. (Alt) use a statewide average T/D loss of 5.28% as documented by EPA's EGRID reporting for New York.	X		Alternative method as stated
(Rec) - Acquire utility specific estimate of T/D (in %), compute as percentage of total residential/commercial/industrial/energy generation. Report as Scope 1 CH4 emissions. (Alt) use a statewide average of 1.8% as documented by National Grid in 2010 PSC Reporting.			Alternative method as stated
(Rec) - acquire utility specific estimate and report as SF6. (Alt) Apportion NYSERDA 2009 Emission Inventory Total for the state to counties based ration of EIA reported total electricity demand to computed regional or county demand for all sectors.		X	Based on conversations with P Groth and J Yeinger, used national 2010 emission inventory total (alternative method)
	X		Nothing to report
	X		Nothing to report
	X		Nothing to report
	X		Nothing to report
(Rec) Direct Allocation from from EPA MMR only. Small Sources to not to be included at this time.	X		Nothing to report
	X		Nothing to report
	X		Nothing to report
	X		Nothing to report
	X		Nothing to report
	X		Nothing to report
(Rec) Use EPA 2009 Draft Guidance method. Allocate national per/capita emissions to counties based on population. Methods include mobile refrigeration	X		Recommended method used
(Rec) Use MPO-provided VMT data local to your region, supplemented by DOT provided data (on Wiggio). Use regional-specific data on fleet profile and national fleet fuel economy data (on Wiggio) to estimate county-level GHG emissions. (Alt) Use EPA MOVES GHG module customized for your region-appropriate if you are running this model. Assume on-road fuel is 10% ethanol and report this fraction as Optional biogenic emissions.	X		Recommended method used
(Rec) Use MPO-provided VMT data local to your region, supplemented by DOT provided data (on Wiggio). Use regional-specific data on fleet profile and national fleet fuel economy data (on Wiggio) to estimate county-level GHG emissions. (Alt) Use EPA MOVES GHG module customized for your region-appropriate if you are running this model. Assume on-road fuel is 10% ethanol and report this fraction as Optional biogenic emissions on the ethanol line item.	X		Recommended method used
Optional- Include regional E-85 consumption if you have it, and debit against your gasoline estimate create using VMT. Allocate 15% as gasoline to be reported as Scope 1, and 85% as ethanol to be reported as optional biogenic.	X		Not available
Optional- Include regional biodiesel consumption if you have it, and debit against your diesel estimate create using VMT. Because biodiesel blends change, allocate option biogenic component on this line item only, and retain the diesel fraction on the diesel line item.	X		Not available
Today this will be zero, but as NYSERDA pushes to electrify on-road transportation we will want to report here, debiting against electricity consumption in the other sectors as appropriate.	X		Not available
Freight and Passenger. (Rec) Use direct provider fuel consumption data allocated spatially to location of routes (Alt) Use Nyserda 2002 estimates of Diesel consumption by county directly.	X		Recommended method used
Passenger and Commuter (Rec) Use direct provider electricity consumption data allocated spatially to location of routes (Alt) None identified.	X		None to report
	X		As stated, except recreational boating included in non-road data
Rec - USE NYSDEC 2007 data from the state emission inventory for the small and pleasure craft categories reported by county (data on Wiggio). For commercial distillate and bunkers, No consensus method identified- please document methods used.	X		As stated, except recreational boating included in non-road data
	X		As stated, except recreational boating included in non-road data
Optional Scope 1- Estimate Landing and Take off Cycle emissions using a dispersion model such as EDMS, or with related data from the NYSDEC for the 2007 state emission inventory. Optional Scope 3, use FAA statistics on departure miles from regional airport, allocate jet fuel use to it, then allocate to counties by fraction of population served	X		Scope 1 option, using EDMS. Totals are also included in GHG Inventory reporting as part of Sustainability Plan
Rec - USE NYSDEC 2007 NONROAD data from the state emission inventory (data on Wiggio) for all categories except small marine.	X		As stated, but includes recreational marine
This is fugitive CH4 emissions from landfills. There are two required Scopes. Scope 1 - Estimate of actual emissions in regional boundary. (rec) use MMR or Title 5 (annual landfill reporting) data directly for facilities (data on Wiggio). For recently closed landfills or for areas without reported data, use a First Order Decay model to estimate emissions. Scope 3- emissions footprint attributed to current waste generation regardless of where it is treated. (rec) Estimate county level MSW and C/D waste generation and apply a representative FOD model with prevailing CH4 captures rates forward-casted 50 years to estimate the footprint.		X	Scope 1 reported as actual 2010 waste facility emissions reported (EPA MRR). Scope 3 calculated and reported as stated
Rec - for any MSW incinerated that does not generate grid connected power, compute emissions. MSW CO2 emissions split. 44% shall be reported as Scope 1 as part of non-biogenic (plastics etc), and 56% can be reported as option biogenic based data for 2005 on http://www.eia.gov/cneaf/solar.renewables/page/mswaste/msw_report.html. All Ch4 and N2O shall be reported under required Scope 1	X		None Reported
Determine population covered by WWTPs. (Rec)- Use the ICLEI Local Government Operations Protocol and apply to all facilities in the region. (Alt) use methods as described in the EPA 2009 Draft GHG guidance to translate populations served into emissions using default data. Determine population covered by Septic Systems, and apply the default emissions / capita as described in the ICLEI Local Government Operations Protocol.		X	Based on conversations with P. Groth and J. Yeinger, used State Inventory Tool and regional population, allocated to county by population
	X		Recommended method used
(Rec) Methods as described in the EPA 2009 guidance and executed in the EPA's State Inventory Tool. Use locally resolved fertilizer, crop, and livestock population from either the 2007 Ag census or the US NASS system to get county-level data and make calculations for each county.	X		Recommended method used
	X		Recommended method used
	X		None reported
Optional Source and Sink. Use methods described in the EPA 2009 Guidance. Use local forest inventory data, or use the US Forest Services online inventory tool for forests. For carbon stock factors use the National Council for Air and Stream Improvement's Carbon On-Line Estimator. (NCASI 2008) Use the	X		Recommended method used
		X	Total reported for information, change is not relevant to WG discussions

Sum Totals in columns for all EXCEPT ANY FORESTRY SINKS. Totals in the Scope 1 column can be a considered a physical roll up of emissions that occur in boundary, and is analogous to reporting that is done for state and federal GHG inventories, and for air quality management.

Value above MINUS and reported optional forestry sinks.

REDC Emissions By Source and Sector
Year: 2010

REDC / County Name	Mohawk Valley

Color Code

	REQUIRED, though some data may be zero or considered to small to count
	OPTIONAL
	DO NOT Report Data in these cells

DRAFT Reporting Template CGC. Emissions in MTCDE							Rolled Up?	Related GHG Metrics / Activity Data		
		Scope 1	Scope 2	Scope 3	Biogenic			Metric	Unit	Value
Built Environment	**Residential Energy Consumption**									
MV Electricity Consumption	Electricity / Steam		330,885	0	0		Yes	Consumption	MMBTU	4,974,350
MV Direct Residential Fuel Consumption	Natural Gas	646,304		0	0		Yes	Consumption	MMBTU	12,177,874
MV Direct Residential Fuel Consumption	Propane / LPG	94,014		0	0		Yes	Consumption	MMBTU	1,486,885
MV Direct Residential Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	368,268		0	0		Yes	Consumption	MMBTU	4,962,574
MV Direct Residential Fuel Consumption	Wood	10,589		0	503171.207		Yes	Consumption	MMBTU	5,364,299
	Commercial Energy Consumption				0					
MV Electricity Consumption	Electricity / Steam		177,504	0	0		Yes	Consumption	MMBTU	2,668,502
MV Commercial Direct Fuel Consumption	Natural Gas	429,023		0	0		Yes	Consumption	MMBTU	8,083,786
MV Commercial Direct Fuel Consumption	Propane / LPG	29,746		0	0		Yes	Consumption	MMBTU	470,455
MV Commercial Direct Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	293,888		0	0		Yes	Consumption	MMBTU	3,960,278
MV Commercial Direct Fuel Consumption	Residual Fuel Oil (#4 and #6)	-		0	0		Yes	Consumption	MMBTU	-
MV Commercial Direct Fuel Consumption	Coal	421		0	0		Yes	Consumption	MMBTU	4,095
MV Commercial Direct Fuel Consumption	Wood	2,902		0	137876.076		Yes	Consumption	MMBTU	1,469,894
	Industrial Energy Consumption				0					
MV Electricity Consumption	Electricity / Steam		230,780	0	0		Yes	Consumption	MMBTU	3,469,426
MV Industrial Title V Consumption	Natural Gas	96,170		0	0		Yes	Consumption	MMBTU	1,812,060
MV Industrial Title V Consumption	Propane / LPG	77		0	0		Yes	Consumption	MMBTU	1,221
MV Industrial Title V Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	882		0	0		Yes	Consumption	MMBTU	11,889
MV Industrial Title V Consumption	Residual Fuel Oil (#4 and #6)	1,465		0	0		Yes	Consumption	MMBTU	19,448
MV Industrial Title V Consumption	Coal	-		0	0		Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Wood	262		0	12462.1761		Yes	Consumption	MMBTU	132,859
Energy Generation and Supply	**Energy Generation and Supply**			0	0					
MV Elec Generation GHG Analysis	Coal	-		0	0		No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Natural Gas	5,741		0	0		No	Consumption	MMBTU	108,173
MV Elec Generation GHG Analysis	Distillate Fuel Oil (#1, #2 and #4)	15		0	0		No	Consumption	MMBTU	204
MV Elec Generation GHG Analysis	Residual Fuel Oil (#4 and #6)	-		0	0		No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Wood / Biomass	-		0	0		No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	MSW	23		0	4,618		No	MSW Combusted	MMBTU	88,685
MV Elec Generation GHG Analysis	Other	-		0	0					4,507,423
MV Electricity Consumption	Electricity T/D Losses		43,020	0	0		Yes	Losses	MMBTU	289,507
MV Elec Generation GHG Analysis and MV Direct Fuel Consumption	Natural Gas T/D Losses	#REF!		0	0		Yes	Losses	MMBTU	-
MV Electricity Consumption	Use of SF6 in the Utility Industry	9,895		0	0		Yes	Consumption	MMBTU	-
Industrial Processes	**Industrial Processes**			0	0					
Not Reported	Cement Production	-		0	0		Yes			-
Not Reported	Iron and Steel Production	-		0	0		Yes			-
Not Reported	Ferroalloy Production	-		0	0		Yes			-
Not Reported	Aluminum Production	-		0	0		Yes			-
Not Reported	Paper and Pulp	-		0	0		Yes			-
Not Reported	Limestone Use	-		0	0		Yes			-
Not Reported	Soda Ash Use	-		0	0		Yes			-
Not Reported	Semi-Conductor Manufacturing	-		0	0		Yes			-
MV Industrial Sources	Glass Production	-		0	0		Yes			-
Not Reported	Chemical Manufacturing	-		0	0		Yes			-
Product Use (Ozone Depleting Substances)	**Product Use (Ozone Depleting Substances)**			0	0					
MV Industrial Sources	All Refrigerants- except SF6	114,513		0	0		Yes			-
Transportation Energy	**On-road**			0	0					
MV Emission Summary - Onroad	Motor Gasoline (E-10)	1,936,345		0	140,535		Yes	Consumption	MMBTU	29,529,656
MV Emission Summary - Onroad	Diesel	408,014		0	0		Yes	Consumption	MMBTU	5,635,324
Not Reported	Ethanol (E-85)	-		0	0		No	Consumption	MMBTU	-
Not Reported	Biodiesel		-	0	0		No	Consumption	MMBTU	-
Not Reported	Electricity Consumption		-	0	0		No	Consumption	MMBTU	-
	Rail			0	0					
MV Emission Summary - Rail	Diesel	86,902		0	0		Yes	Consumption	MMBTU	1,171,042
MV Emission Summary - Rail	Coal Consumption		-	0	0		Yes	Consumption	MMBTU	-
	Marine			0	0					
MV Emission Summary -Com Marine	Gasoline	-		0	0		Yes	Consumption	MMBTU	-
MV Emission Summary -Com Marine	Distillate Fuels	3		0	0		Yes	Consumption	MMBTU	21
MV Emission Summary -Com Marine	Residual Fuels	-		0	0		Yes	Consumption	MMBTU	-
	Air			0	0					
MV Emission Summary-Aircraft	All Fuels (Jet and Aviation Gasoline)	3,106		0	0		No	Consumption	MMBTU	43,515
	Off-road Mobile			0	0					
MV Emission Summary-Nonroad	All Fuels (Diesel and Gasoline)	320,037		0	0		Yes	Consumption	MMBTU	4,466,754
Waste Management	**Solid Waste Management**			0	0					
MV Waste	Landfill (Scope 1), allocated FOD (Scope 3) used in roll up	152,006		85,764	0		Yes - ONLY Scope 3	MSW+CD Generated	Tonnes	267,043
Not Reported	MSW incineration (non grid connected)	-		0	0		Yes	MSW+CD Processed	Tonnes	213,573
	Sewage Treatment			0	0			MSW Sent for Incineration	Tonnes	-
MV Waste water	Central WWTPs and Septic Systems	50,000		0	0		Yes	MSW incinerated in Boundary	Tonnes	-
Agriculture	**Livestock**			0	0					
GHF_MV_Agriculture	Enteric Fermentation	215,881		0	0		Yes			-
GHF_MV_Agriculture	Manure management	56,250		0	0		Yes			-
GHF_MV_Agriculture	**Crop Production and Soil Management**			0	0					
GHF_MV_Agriculture	Use of Fertilizer	21,599		0	0		Yes			-
Not Reported	Crop Residue Incineration	-		0	0		No			-
Land Use and Forestry				0	0					
GHG_MV_Forest	Urban Forest Annual Reserve	88,507		0	0		No			-
GHG_MV_Forest	Forest Carbon Reserve (TOTAL)	411,498,822		0	0		No			-

Grand Totals	Gross Totals	#REF!	782,189	85,764	798,662	#REF!
	Total with Aircraft (as reported in WNY Sustainability Plan)	#REF!	782,189	85,764	798,662	#REF!
	Net Totals					

REDC GHG Emissions Roll Up Report
Year: 2010
(all emissions in Column D, when summed will equal the total County or REDC protocol compliant GHG emissions estimate)

REDC / County Name	Mohawk Valley

Color Code

REQUIRED for the Roll Up Report, though some data may be zero, N/A, or considered to small to count

Report NO Data in cell

DRAFT Roll Up Report CGC. Emissions in MTCDE								
		CO2e	CO2	CH4	N2O	PFC	HFC	SF6
Built Environment	**Residential Energy Consumption**							
	Electricity / Steam	330,885	329,276	221	1,388			
	Natural Gas	646,304	645,671	256	378			
	Propane / LPG	94,014	93,644	94	277			
	Distillate Fuel Oil (#1, #2, Kerosene)	368,268	367,032	313	923			
	Wood	10,589	-	3,605	6,984			
	Commercial Energy Consumption							
	Electricity / Steam	177,504	176,641	119	745			
	Natural Gas	429,023	428,602	170	251			
	Propane / LPG	29,746	29,629	30	88			
	Distillate Fuel Oil (#1, #2, Kerosene)	293,888	292,902	249	737			
	Residual Fuel Oil (#4 and #6)	-						
	Coal	421	418	1	2			
	Wood	2,902	-	988	1,914			
	Industrial Energy Consumption							
	Electricity / Steam	230,780	229,658	154	968			
	Natural Gas	96,170	96,075	38	56			
	Propane / LPG	77	77	0	0			
	Distillate Fuel Oil (#1, #2, Kerosene)	882	879	1	2			
	Residual Fuel Oil (#4 and #6)	1,465	1,461	1	4			
	Coal	-	-	-	-			
	Wood	262		89	173			
	Energy Generation and Supply							
	Electricity T/D Losses	43,020	42,810	29	180			
	Natural Gas T/D Losses	#REF!		#REF!				
	Use of SF6 in the Utility Industry	9,895						9,895
	Industrial Processes							
	Cement Production							
	Iron and Steel Production							
	Ferroalloy Production							
	Aluminum Production							
	Paper and Pulp							
	Limestone Use							
	Soda Ash Use							
	Semi-Conductor Manufacturing							
	Chemical Manufacturing							
	Product Use (ODS Substitutes)							
	All Refrigerants- except utility SF6	114,513					114,513	
Transportation Energy	**On-road ALL (Total reflects subtraction of ethanol)**							
	Motor Gasoline (E-10)	1,936,345	1,929,503	5,111	1,731			
	Diesel	408,014	406,704	963	347			
	Ethanol							
	Biodiesel							
	Rail							
	Diesel	86,902	86,610	218	74			
	Coal	-	-	-	-			
	Marine							
	Gasoline							
	Distillate	3	3	0	0			
	Residual Fuel Oil	-	-	-	-			
	Off-road Mobile							
	All Fuels (Diesel and Gasoline)	320,037	318,931	826	280			
Waste Management	**Solid Waste Management**							
	FOD from Waste Generation	85,764	-	85,764	-			
	MSW incineration (non grid connected)							
	Sewage Treatment							
	Central WWTPs and Septic Systems Total reflects roun	50,000		30,000	10,000			
Agriculture	**Livestock**							
	Enteric Fementation	215,881		215,881				
	Manure management	56,250		46,590	9,659			
	Crop Production and Soil Management							
	Use of Fertilizer	21,599			21,599			
	Crop Residue Incineration							
Grand Totals		#REF!	5,476,527	#REF!	58,758	-	114,513	9,895

REDC GHG Emissions Roll Up Report
Year: 2010
(all emissions in Column D, when summed will equal the total County or REDC protocol compliant GHG emissions estimate)

REDC / County Name	QAQC

Color Code

REQUIRED for the Roll Up Report, though some data may be zero, N/A, or considered to small to count

Report NO Data in cell

DRAFT Roll Up Report CGC. Emissions in MTCDE								
		CO2e	CO2	CH4	N2O	PFC	HFC	SF6
Built Environment	**Residential Energy Consumption**							
	Electricity / Steam	330,885	329,276	221	1,388	-	-	-
	Natural Gas	646,304	645,671	256	378	-	-	-
	Propane / LPG	94,014	93,644	94	277	-	-	-
	Distillate Fuel Oil (#1, #2, Kerosene)	368,268	367,032	313	923	-	-	-
	Wood	10,589	-	3,605	6,984	-	-	-
	Commercial Energy Consumption					-	-	-
	Electricity / Steam	177,504	176,641	119	745	-	-	-
	Natural Gas	429,023	428,602	170	251	-	-	-
	Propane / LPG	29,746	29,629	30	88	-	-	-
	Distillate Fuel Oil (#1, #2, Kerosene)	293,888	292,902	249	737	-	-	-
	Residual Fuel Oil (#4 and #6)	-	-	-	-	-	-	-
	Coal	421	418	1	2	-	-	-
	Wood	2,902	-	988	1,914	-	-	-
	Industrial Energy Consumption					-	-	-
	Electricity / Steam	230,780	229,658	154	968	-	-	-
	Natural Gas	96,170	96,075	38	56	-	-	-
	Propane / LPG	77	77	0	0	-	-	-
	Distillate Fuel Oil (#1, #2, Kerosene)	882	879	1	2	-	-	-
	Residual Fuel Oil (#4 and #6)	1,465	1,461	1	4	-	-	-
	Coal	-	-	-	-	-	-	-
	Wood	262	-	89	173	-	-	-
	Energy Generation and Supply					-	-	-
	Electricity T/D Losses	43,020	42,810	29	180	-	-	-
	Natural Gas T/D Losses	#REF!	-	#REF!	-	-	-	-
	Use of SF6 in the Utility Industry	9,895	-	-	-	-	-	9,895
	Industrial Processes					-	-	-
	Cement Production		-	-	-	-	-	-
	Iron and Steel Production		-	-	-	-	-	-
	Ferroalloy Production		-	-	-	-	-	-
	Aluminum Production		-	-	-	-	-	-
	Paper and Pulp		-	-	-	-	-	-
	Limestone Use		-	-	-	-	-	-
	Soda Ash Use		-	-	-	-	-	-
	Semi-Conductor Manufacturing		-	-	-	-	-	-
	Chemical Manufacturing		-	-	-	-	-	-
	Product Use (ODS Substitutes)		-	-	-	-	-	-
	All Refrigerants- except utility SF6	114,513	-	-	-	-	114,513	-
Transportation Energy	**On-road ALL (Total reflects subtraction of ethanol)**		-	-	-	-	-	-
	Motor Gasoline (E-10)	1,936,345	1,929,503	5,111	1,731	-	-	-
	Diesel	408,014	406,704	963	347	-	-	-
	Ethanol		-	-	-	-	-	-
	Biodiesel		-	-	-	-	-	-
	Rail		-	-	-	-	-	-
	Diesel	86,902	86,610	218	74	-	-	-
	Coal	-	-	-	-	-	-	-
	Marine		-	-	-	-	-	-
	Gasoline		-	-	-	-	-	-
	Distillate	3	3	0	0	-	-	-
	Residual Fuel Oil	-	-	-	-	-	-	-
	Off-road Mobile		-	-	-	-	-	-
	All Fuels (Diesel and Gasoline)	320,037	318,931	826	280	-	-	-
Waste Management	**Solid Waste Management**		-	-	-	-	-	-
	FOD from Waste Generation	85,764	-	85,764	-	-	-	-
	MSW incineration (non grid connected)		-	-	-	-	-	-
	Sewage Treatment		-	-	-	-	-	-
	Central WWTPs and Septic Systems Total reflects roun	50,000	-	30,000	10,000	-	-	-
Agriculture	**Livestock**		-	-	-	-	-	-
	Enteric Fementation	215,881	-	215,881	-	-	-	-
	Manure management	56,250	-	46,590	9,659	-	-	-
	Crop Production and Soil Management		-	-	-	-	-	-
	Use of Fertilizer	21,599	-	-	21,599	-	-	-
	Crop Residue Incineration		-	-	-	-	-	-
Grand Totals		#REF!	5,476,527	#REF!	58,758	-	114,513	9,895

REDC Emissions By Source and Sector
Year: 2010

REDC / County Name	Fulton County

Color Code

	REQUIRED, though some data may be zero or considered to small to count
	OPTIONAL
	DO NOT Report Data in these cells

DRAFT Reporting Template CGC. Emissions in MTCDE							Related GHG Metrics / Activity Data		
		Scope 1	Scope 2	Scope 3	Biogenic	Rolled Up?	Metric	Unit	Value
Built Environment	**Residential Energy Consumption**								
MV Electricity Consumption	Electricity / Steam		36,889			Yes	Consumption	MMBTU	554,567
MV Direct Residential Fuel Consumption	Natural Gas	66,441				Yes	Consumption	MMBTU	1,251,899
MV Direct Residential Fuel Consumption	Propane / LPG	10,427				Yes	Consumption	MMBTU	164,914
MV Direct Residential Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	44,973				Yes	Consumption	MMBTU	606,034
MV Direct Residential Fuel Consumption	Wood	1,395			66285.1378	Yes	Consumption	MMBTU	706,665
	Commercial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		13,864			Yes	Consumption	MMBTU	208,420
MV Commercial Direct Fuel Consumption	Natural Gas	34,816				Yes	Consumption	MMBTU	656,007
MV Commercial Direct Fuel Consumption	Propane / LPG	2,648				Yes	Consumption	MMBTU	41,886
MV Commercial Direct Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	28,058				Yes	Consumption	MMBTU	378,093
MV Commercial Direct Fuel Consumption	Residual Fuel Oil (#4 and #6)	-				Yes	Consumption	MMBTU	-
MV Commercial Direct Fuel Consumption	Coal	18				Yes	Consumption	MMBTU	174
MV Commercial Direct Fuel Consumption	Wood	308			14627.1074	Yes	Consumption	MMBTU	155,939
	Industrial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		22,233			Yes	Consumption	MMBTU	334,236
MV Industrial Title V Consumption	Natural Gas	854				Yes	Consumption	MMBTU	16,093
MV Industrial Title V Consumption	Propane / LPG	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Residual Fuel Oil (#4 and #6)	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Coal	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Wood	-			0	Yes	Consumption	MMBTU	-
Energy Generation and Supply	**Energy Generation and Supply**								
MV Elec Generation GHG Analysis	Coal	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Natural Gas	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Distillate Fuel Oil (#1, #2 and #4)	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Residual Fuel Oil (#4 and #6)	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Wood / Biomass	-			0	No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	MSW	23			4,618	No	MSW Combusted	MMBTU	88,685
MV Elec Generation GHG Analysis	Other	-							115,598
MV Electricity Consumption	Electricity T/D Losses		4,248			Yes	Losses	MMBTU	32,276
MV Elec Generation GHG Analysis and MV Direct Fuel Consumption	Natural Gas T/D Losses	#REF!				Yes	Losses	MMBTU	
MV Electricity Consumption	Use of SF6 in the Utility Industry	977				Yes	Consumption	MMBTU	-
Industrial Processes	**Industrial Processes**								
Not Reported	Cement Production					Yes			
Not Reported	Iron and Steel Production					Yes			
Not Reported	Ferroalloy Production					Yes			
Not Reported	Aluminum Production					Yes			
Not Reported	Paper and Pulp					Yes			
Not Reported	Limestone Use					Yes			
Not Reported	Soda Ash Use					Yes			
Not Reported	Semi-Conductor Manufacturing					Yes			
MV Industrial Sources	Glass Production					Yes			
Not Reported	Chemical Manufacturing					Yes			
Product Use (Ozone Depleting Substances)	**Product Use (Ozone Depleting Substances)**								
MV Industrial Sources	All Refrigerants- except SF6	12,714				Yes			
Transportation Energy	**On-road**								
MV Emission Summary - Onroad	Motor Gasoline (E-10)	151,209			10,974	Yes	Consumption	MMBTU	2,305,976
MV Emission Summary - Onroad	Diesel	28,490				Yes	Consumption	MMBTU	383,921
Not Reported	Ethanol (E-85)					No	Consumption	MMBTU	
Not Reported	Biodiesel					No	Consumption	MMBTU	
Not Reported	Electricity Consumption					No	Consumption	MMBTU	
	Rail								
MV Emission Summary - Rail	Diesel	-				Yes	Consumption	MMBTU	-
MV Emission Summary - Rail	Coal Consumption		-			Yes	Consumption	MMBTU	-
	Marine								
MV Emission Summary -Com Marine	Gasoline					Yes	Consumption	MMBTU	
MV Emission Summary -Com Marine	Distillate Fuels	-				Yes	Consumption	MMBTU	-
MV Emission Summary -Com Marine	Residual Fuels	-				Yes	Consumption	MMBTU	-
	Air								
MV Emission Summary-Aircraft	All Fuels (Jet and Aviation Gasoline)	168				No	Consumption	MMBTU	2,351
	Off-road Mobile								
MV Emission Summary-Nonroad	All Fuels (Diesel and Gasoline)	33,069				Yes	Consumption	MMBTU	466,767
Waste Management	**Solid Waste Management**								
MV Waste	Landfill (Scope 1), allocated FOD (Scope 3) used in roll up	70,948		6,855	0	Yes - ONLY Scope 3	MSW+CD Generated	Tonnes	21,344
Not Reported	MSW incineration (non grid connected)					Yes	MSW+CD Processed	Tonnes	41,742
	Sewage Treatment						MSW Sent for Incineration	Tonnes	-
MV Waste water	Central WWTPs and Septic Systems	5,551				Yes	MSW incinerated in Boundar	Tonnes	-
Agriculture	**Livestock**								
GHF_MV_Agriculture	Enteric Fermentation	9,601				Yes			
GHF_MV_Agriculture	Manure management	1,756				Yes			
GHF_MV_Agriculture	**Crop Production and Soil Management**								
GHF_MV_Agriculture	Use of Fertilizer	960				Yes			
Not Reported	Crop Residue Incineration					No			
Land Use and Forestry									
GHG_MV_Forest	Urban Forest Annual Reserve	13,062				No			
GHG_MV_Forest	Forest Carbon Reserve (TOTAL)	55,708,984				No			

Grand Totals	Gross Totals	#REF!	77,233	6,855	96,504	#REF!
	Total with Aircraft (as reported in WNY Sustainability Plan)	#REF!	77,233	6,855	96,504	#REF!
	Net Totals					

REDC GHG Emissions Roll Up Report
Year: 2010
(all emissions in Column D, when summed will equal the total County or REDC protocol compliant GHG emissions estimate)

REDC / County Name	Fulton County

Color Code

REQUIRED for the Roll Up Report, though some data may be zero, N/A, or considered to small to count

Report NO Data in cell

DRAFT Roll Up Report CGC. Emissions in MTCDE								
		CO2e	CO2	CH4	N2O	PFC	HFC	SF6
Built Environment	**Residential Energy Consumption**							
	Electricity / Steam	36,889	36,709	25	155			
	Natural Gas	66,441	66,376	26	39			
	Propane / LPG	10,427	10,386	10	31			
	Distillate Fuel Oil (#1, #2, Kerosene)	44,973	44,822	38	113			
	Wood	1,395	-	475	920			
	Commercial Energy Consumption							
	Electricity / Steam	13,864	13,796	9	58			
	Natural Gas	34,816	34,781	14	20			
	Propane / LPG	2,648	2,638	3	8			
	Distillate Fuel Oil (#1, #2, Kerosene)	28,058	27,964	24	70			
	Residual Fuel Oil (#4 and #6)	-						
	Coal	18	18	0	0			
	Wood	308	-	105	203			
	Industrial Energy Consumption							
	Electricity / Steam	22,233	22,125	15	93			
	Natural Gas	854	853	0	0			
	Propane / LPG	-	-	-	-			
	Distillate Fuel Oil (#1, #2, Kerosene)	-	-	-	-			
	Residual Fuel Oil (#4 and #6)	-	-	-	-			
	Coal	-	-	-	-			
	Wood	-		-	-			
	Energy Generation and Supply							
	Electricity T/D Losses	4,248	4,227	3	18			
	Natural Gas T/D Losses	#REF!		#REF!				
	Use of SF6 in the Utility Industry	977						977
	Industrial Processes							
	Cement Production							
	Iron and Steel Production							
	Ferroalloy Production							
	Aluminum Production							
	Paper and Pulp							
	Limestone Use							
	Soda Ash Use							
	Semi-Conductor Manufacturing							
	Chemical Manufacturing							
	Product Use (ODS Substitutes)							
	All Refrigerants- except utility SF6	12,714					12,714	
Transportation Energy	**On-road ALL (Total reflects subtraction of ethanol)**							
	Motor Gasoline (E-10)	151,209	150,675	399	135			
	Diesel	28,490	28,395	71	24			
	Ethanol							
	Biodiesel							
	Rail							
	Diesel	-	-	-	-			
	Coal	-	-	-	-			
	Marine							
	Gasoline							
	Distillate	-	-	-	-			
	Residual Fuel Oil	-	-	-	-			
	Off-road Mobile							
	All Fuels (Diesel and Gasoline)	33,069	32,953	86	29			
Waste Management	**Solid Waste Management**							
	FOD from Waste Generation	6,855	-	6,855	-			
	MSW incineration (non grid connected)							
	Sewage Treatment							
	Central WWTPs and Septic Systems Total reflects roun	5,551		3,330	1,110			
Agriculture	**Livestock**							
	Enteric Fementation	9,601		9,601				
	Manure management	1,756		1,459	296			
	Crop Production and Soil Management							
	Use of Fertilizer	960			960			
	Crop Residue Incineration							
Grand Totals		#REF!	476,720	#REF!	4,284	-	12,714	977

REDC Emissions By Source and Sector
Year: 2010

REDC / County Name	Herkimer County

Color Code

	REQUIRED, though some data may be zero or considered to small to count
	OPTIONAL
	DO NOT Report Data in these cells

DRAFT Reporting Template CGC. Emissions in MTCDE							Related GHG Metrics / Activity Data		
		Scope 1	Scope 2	Scope 3	Biogenic	Rolled Up?	Metric	Unit	Value
Built Environment	**Residential Energy Consumption**								
MV Electricity Consumption	Electricity / Steam		43,131			Yes	Consumption	MMBTU	648,401
MV Direct Residential Fuel Consumption	Natural Gas	87,458				Yes	Consumption	MMBTU	1,647,911
MV Direct Residential Fuel Consumption	Propane / LPG	11,610				Yes	Consumption	MMBTU	183,618
MV Direct Residential Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	48,784				Yes	Consumption	MMBTU	657,387
MV Direct Residential Fuel Consumption	Wood	1,857			88227.4659	Yes	Consumption	MMBTU	940,591
	Commercial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		17,603			Yes	Consumption	MMBTU	264,641
MV Commercial Direct Fuel Consumption	Natural Gas	38,390				Yes	Consumption	MMBTU	723,354
MV Commercial Direct Fuel Consumption	Propane / LPG	2,470				Yes	Consumption	MMBTU	39,066
MV Commercial Direct Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	25,495				Yes	Consumption	MMBTU	343,559
MV Commercial Direct Fuel Consumption	Residual Fuel Oil (#4 and #6)	-				Yes	Consumption	MMBTU	-
MV Commercial Direct Fuel Consumption	Coal	55				Yes	Consumption	MMBTU	538
MV Commercial Direct Fuel Consumption	Wood	343			16308.872	Yes	Consumption	MMBTU	173,869
	Industrial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		20,755			Yes	Consumption	MMBTU	312,024
MV Industrial Title V Consumption	Natural Gas	37,080				Yes	Consumption	MMBTU	698,676
MV Industrial Title V Consumption	Propane / LPG	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Residual Fuel Oil (#4 and #6)	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Coal	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Wood	-			0	Yes	Consumption	MMBTU	-
Energy Generation and Supply	**Energy Generation and Supply**								
MV Elec Generation GHG Analysis	Coal	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Natural Gas	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Distillate Fuel Oil (#1, #2 and #4)	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Residual Fuel Oil (#4 and #6)	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Wood / Biomass	-			0	No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	MSW	-			0	No	MSW Combusted	MMBTU	-
MV Elec Generation GHG Analysis	Other	-							1,881,994
MV Electricity Consumption	Electricity T/D Losses		4,743			Yes	Losses	MMBTU	37,737
MV Elec Generation GHG Analysis and MV Direct Fuel Consumption	Natural Gas T/D Losses	#REF!				Yes	Losses	MMBTU	
MV Electricity Consumption	Use of SF6 in the Utility Industry	1,091				Yes	Consumption	MMBTU	-
Industrial Processes	**Industrial Processes**								
Not Reported	Cement Production					Yes			
Not Reported	Iron and Steel Production					Yes			
Not Reported	Ferroalloy Production					Yes			
Not Reported	Aluminum Production					Yes			
Not Reported	Paper and Pulp					Yes			
Not Reported	Limestone Use					Yes			
Not Reported	Soda Ash Use					Yes			
Not Reported	Semi-Conductor Manufacturing					Yes			
MV Industrial Sources	Glass Production					Yes			
Not Reported	Chemical Manufacturing					Yes			
Product Use (Ozone Depleting Substances)	**Product Use (Ozone Depleting Substances)**								
MV Industrial Sources	All Refrigerants- except SF6	14,772				Yes			
Transportation Energy	**On-road**								
MV Emission Summary - Onroad	Motor Gasoline (E-10)	264,726			19,213	Yes	Consumption	MMBTU	4,037,129
MV Emission Summary - Onroad	Diesel	55,898				Yes	Consumption	MMBTU	753,247
Not Reported	Ethanol (E-85)					No	Consumption	MMBTU	
Not Reported	Biodiesel					No	Consumption	MMBTU	
Not Reported	Electricity Consumption					No	Consumption	MMBTU	
	Rail								
MV Emission Summary - Rail	Diesel	19,118				Yes	Consumption	MMBTU	257,624
MV Emission Summary - Rail	Coal Consumption		-			Yes	Consumption	MMBTU	-
	Marine								
MV Emission Summary -Com Marine	Gasoline					Yes	Consumption	MMBTU	
MV Emission Summary -Com Marine	Distillate Fuels	1				Yes	Consumption	MMBTU	5
MV Emission Summary -Com Marine	Residual Fuels	-				Yes	Consumption	MMBTU	-
	Air								
MV Emission Summary-Aircraft	All Fuels (Jet and Aviation Gasoline)	189				No	Consumption	MMBTU	2,662
	Off-road Mobile								
MV Emission Summary-Nonroad	All Fuels (Diesel and Gasoline)	55,517				Yes	Consumption	MMBTU	776,114
Waste Management	**Solid Waste Management**								
MV Waste	Landfill (Scope 1), allocated FOD (Scope 3) used in roll up	-		11,892	0	Yes - ONLY Scope 3	MSW+CD Generated	Tonnes	37,029
Not Reported	MSW incineration (non grid connected)					Yes	MSW+CD Processed	Tonnes	-
	Sewage Treatment						MSW Sent for Incineration	Tonnes	-
MV Waste water	Central WWTPs and Septic Systems	6,706				Yes	MSW incinerated in Bounda	Tonnes	-
Agriculture	**Livestock**								
GHF_MV_Agriculture	Enteric Fermentation	60,782				Yes			
GHF_MV_Agriculture	Manure management	12,219				Yes			
GHF_MV_Agriculture	**Crop Production and Soil Management**								
GHF_MV_Agriculture	Use of Fertilizer	3,919				Yes			
Not Reported	Crop Residue Incineration					No			
Land Use and Forestry									
GHG_MV_Forest	Urban Forest Annual Reserve	11,283				No			
GHG_MV_Forest	Forest Carbon Reserve (TOTAL)	142,558,823				No			

Grand Totals	Gross Totals	#REF!	86,232	11,892	123,749	#REF!
	Total with Aircraft (as reported in WNY Sustainability Plan)	#REF!	86,232	11,892	123,749	#REF!
	Net Totals					

REDC GHG Emissions Roll Up Report
Year: 2010
(all emissions in Column D, when summed will equal the total County or REDC protocol compliant GHG emissions estimate)

REDC / County Name	Herkimer County

Color Code

REQUIRED for the Roll Up Report, though some data may be zero, N/A, or considered to small to count

Report NO Data in cell

DRAFT Roll Up Report CGC. Emissions in MTCDE								
		CO2e	CO2	CH4	N2O	PFC	HFC	SF6
Built Environment	**Residential Energy Consumption**							
	Electricity / Steam	43,131	42,921	29	181			
	Natural Gas	87,458	87,372	35	51			
	Propane / LPG	11,610	11,564	12	34			
	Distillate Fuel Oil (#1, #2, Kerosene)	48,784	48,620	41	122			
	Wood	1,857	-	632	1,225			
	Commercial Energy Consumption							
	Electricity / Steam	17,603	17,518	12	74			
	Natural Gas	38,390	38,352	15	22			
	Propane / LPG	2,470	2,460	2	7			
	Distillate Fuel Oil (#1, #2, Kerosene)	25,495	25,410	22	64			
	Residual Fuel Oil (#4 and #6)	-						
	Coal	55	55	0	0			
	Wood	343	-	117	226			
	Industrial Energy Consumption							
	Electricity / Steam	20,755	20,654	14	87			
	Natural Gas	37,080	37,044	15	22			
	Propane / LPG	-	-	-	-			
	Distillate Fuel Oil (#1, #2, Kerosene)	-	-	-	-			
	Residual Fuel Oil (#4 and #6)	-	-	-	-			
	Coal	-	-	-	-			
	Wood	-		-	-			
	Energy Generation and Supply							
	Electricity T/D Losses	4,743	4,720	3	20			
	Natural Gas T/D Losses	#REF!		#REF!				
	Use of SF6 in the Utility Industry	1,091						1,091
	Industrial Processes							
	Cement Production							
	Iron and Steel Production							
	Ferroalloy Production							
	Aluminum Production							
	Paper and Pulp							
	Limestone Use							
	Soda Ash Use							
	Semi-Conductor Manufacturing							
	Chemical Manufacturing							
	Product Use (ODS Substitutes)							
	All Refrigerants- except utility SF6	14,772					14,772	
Transportation Energy	**On-road ALL (Total reflects subtraction of ethanol)**							
	Motor Gasoline (E-10)	264,726	263,791	699	237			
	Diesel	55,898	55,710	140	47			
	Ethanol							
	Biodiesel							
	Rail							
	Diesel	19,118	19,054	48	16			
	Coal	-	-	-	-			
	Marine							
	Gasoline							
	Distillate	1	1	0	0			
	Residual Fuel Oil	-	-	-	-			
	Off-road Mobile							
	All Fuels (Diesel and Gasoline)	55,517	55,325	144	49			
Waste Management	**Solid Waste Management**							
	FOD from Waste Generation	11,892	-	11,892	-			
	MSW incineration (non grid connected)							
	Sewage Treatment							
	Central WWTPs and Septic Systems Total reflects roun	6,706		4,024	1,341			
Agriculture	**Livestock**							
	Enteric Fementation	60,782		60,782				
	Manure management	12,219		10,112	2,108			
	Crop Production and Soil Management							
	Use of Fertilizer	3,919			3,919			
	Crop Residue Incineration							
Grand Totals		#REF!	730,571	#REF!	9,853	-	14,772	1,091

REDC Emissions By Source and Sector
Year: 2010

REDC / County Name	Montgomery County

Color Code

	REQUIRED, though some data may be zero or considered to small to count
	OPTIONAL
	DO NOT Report Data in these cells

DRAFT Reporting Template CGC. Emissions in MTCDE							Related GHG Metrics / Activity Data		
		Scope 1	Scope 2	Scope 3	Biogenic	Rolled Up?	Metric	Unit	Value
Built Environment	**Residential Energy Consumption**								
MV Electricity Consumption	Electricity / Steam		31,017			Yes	Consumption	MMBTU	466,296
MV Direct Residential Fuel Consumption	Natural Gas	62,404				Yes	Consumption	MMBTU	1,175,829
MV Direct Residential Fuel Consumption	Propane / LPG	5,944				Yes	Consumption	MMBTU	94,000
MV Direct Residential Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	35,228				Yes	Consumption	MMBTU	474,709
MV Direct Residential Fuel Consumption	Wood	879			41778.0253	Yes	Consumption	MMBTU	445,395
	Commercial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		14,002			Yes	Consumption	MMBTU	210,496
MV Commercial Direct Fuel Consumption	Natural Gas	38,499				Yes	Consumption	MMBTU	725,404
MV Commercial Direct Fuel Consumption	Propane / LPG	1,777				Yes	Consumption	MMBTU	28,108
MV Commercial Direct Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	25,875				Yes	Consumption	MMBTU	348,680
MV Commercial Direct Fuel Consumption	Residual Fuel Oil (#4 and #6)	-				Yes	Consumption	MMBTU	-
MV Commercial Direct Fuel Consumption	Coal	67				Yes	Consumption	MMBTU	652
MV Commercial Direct Fuel Consumption	Wood	228			10853.9373	Yes	Consumption	MMBTU	115,714
	Industrial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		35,822			Yes	Consumption	MMBTU	538,530
MV Industrial Title V Consumption	Natural Gas	28,042				Yes	Consumption	MMBTU	528,384
MV Industrial Title V Consumption	Propane / LPG	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Residual Fuel Oil (#4 and #6)	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Coal	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Wood	-			0	Yes	Consumption	MMBTU	-
Energy Generation and Supply	**Energy Generation and Supply**								
MV Elec Generation GHG Analysis	Coal	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Natural Gas	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Distillate Fuel Oil (#1, #2 and #4)	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Residual Fuel Oil (#4 and #6)	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Wood / Biomass	-			0	No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	MSW	-			0	No	MSW Combusted	MMBTU	-
MV Elec Generation GHG Analysis	Other	-							-
MV Electricity Consumption	Electricity T/D Losses		4,705			Yes	Losses	MMBTU	27,138
MV Elec Generation GHG Analysis and MV Direct Fuel Consumption	Natural Gas T/D Losses	#REF!				Yes	Losses	MMBTU	
MV Electricity Consumption	Use of SF6 in the Utility Industry	1,082				Yes	Consumption	MMBTU	-
Industrial Processes	**Industrial Processes**								
Not Reported	Cement Production					Yes			
Not Reported	Iron and Steel Production					Yes			
Not Reported	Ferroalloy Production					Yes			
Not Reported	Aluminum Production					Yes			
Not Reported	Paper and Pulp					Yes			
Not Reported	Limestone Use					Yes			
Not Reported	Soda Ash Use					Yes			
Not Reported	Semi-Conductor Manufacturing					Yes			
MV Industrial Sources	Glass Production					Yes			
Not Reported	Chemical Manufacturing					Yes			
Product Use (Ozone Depleting Substances)	**Product Use (Ozone Depleting Substances)**								
MV Industrial Sources	All Refrigerants- except SF6	11,498				Yes			
Transportation Energy	**On-road**								
MV Emission Summary - Onroad	Motor Gasoline (E-10)	278,203			20,191	Yes	Consumption	MMBTU	4,242,655
MV Emission Summary - Onroad	Diesel	69,804				Yes	Consumption	MMBTU	940,638
Not Reported	Ethanol (E-85)					No	Consumption	MMBTU	
Not Reported	Biodiesel					No	Consumption	MMBTU	
Not Reported	Electricity Consumption					No	Consumption	MMBTU	
	Rail								
MV Emission Summary - Rail	Diesel	32,190				Yes	Consumption	MMBTU	433,773
MV Emission Summary - Rail	Coal Consumption		-			Yes	Consumption	MMBTU	-
	Marine								
MV Emission Summary -Com Marine	Gasoline					Yes	Consumption	MMBTU	
MV Emission Summary -Com Marine	Distillate Fuels	1				Yes	Consumption	MMBTU	9
MV Emission Summary -Com Marine	Residual Fuels	-				Yes	Consumption	MMBTU	-
	Air								
MV Emission Summary-Aircraft	All Fuels (Jet and Aviation Gasoline)	67				No	Consumption	MMBTU	932
	Off-road Mobile								
MV Emission Summary-Nonroad	All Fuels (Diesel and Gasoline)	51,249				Yes	Consumption	MMBTU	710,639
Waste Management	**Solid Waste Management**								
MV Waste	Landfill (Scope 1), allocated FOD (Scope 3) used in roll up	-		10,278	0	Yes - ONLY Scope 3	MSW+CD Generated	Tonnes	32,004
Not Reported	MSW incineration (non grid connected)					Yes	MSW+CD Processed	Tonnes	-
	Sewage Treatment						MSW Sent for Incineration	Tonnes	-
MV Waste water	Central WWTPs and Septic Systems	6,772				Yes	MSW incinerated in Bounda	Tonnes	-
Agriculture	**Livestock**								
GHF_MV_Agriculture	Enteric Fermentation	62,857				Yes			
GHF_MV_Agriculture	Manure management	11,904				Yes			
GHF_MV_Agriculture	**Crop Production and Soil Management**								
GHF_MV_Agriculture	Use of Fertilizer	4,335				Yes			
Not Reported	Crop Residue Incineration					No			
Land Use and Forestry									
GHG_MV_Forest	Urban Forest Annual Reserve	10,856				No			
GHG_MV_Forest	Forest Carbon Reserve (TOTAL)	12,382,900				No			

Grand Totals	Gross Totals	#REF!	85,546	10,278	72,823
	Total with Aircraft (as reported in WNY Sustainability Plan)	#REF!	85,546	10,278	72,823
	Net Totals				

#REF!
#REF!

REDC GHG Emissions Roll Up Report
Year: 2010
(all emissions in Column D, when summed will equal the total County or REDC protocol compliant GHG emissions estimate)

REDC / County Name	Montgomery County

Color Code

REQUIRED for the Roll Up Report, though some data may be zero, N/A, or considered to small to count

Report NO Data in cell

DRAFT Roll Up Report CGC. Emissions in MTCDE								
		CO2e	CO2	CH4	N2O	PFC	HFC	SF6
Built Environment	**Residential Energy Consumption**							
	Electricity / Steam	31,017	30,866	21	130			
	Natural Gas	62,404	62,342	25	36			
	Propane / LPG	5,944	5,920	6	17			
	Distillate Fuel Oil (#1, #2, Kerosene)	35,228	35,110	30	88			
	Wood	879	-	299	580			
	Commercial Energy Consumption							
	Electricity / Steam	14,002	13,934	9	59			
	Natural Gas	38,499	38,461	15	22			
	Propane / LPG	1,777	1,770	2	5			
	Distillate Fuel Oil (#1, #2, Kerosene)	25,875	25,788	22	65			
	Residual Fuel Oil (#4 and #6)	-						
	Coal	67	66	0	0			
	Wood	228	-	78	151			
	Industrial Energy Consumption							
	Electricity / Steam	35,822	35,648	24	150			
	Natural Gas	28,042	28,015	11	16			
	Propane / LPG	-	-	-	-			
	Distillate Fuel Oil (#1, #2, Kerosene)	-	-	-	-			
	Residual Fuel Oil (#4 and #6)	-	-	-	-			
	Coal	-	-	-	-			
	Wood	-		-	-			
	Energy Generation and Supply							
	Electricity T/D Losses	4,705	4,682	3	20			
	Natural Gas T/D Losses	#REF!		#REF!				
	Use of SF6 in the Utility Industry	1,082						1,082
	Industrial Processes							
	Cement Production							
	Iron and Steel Production							
	Ferroalloy Production							
	Aluminum Production							
	Paper and Pulp							
	Limestone Use							
	Soda Ash Use							
	Semi-Conductor Manufacturing							
	Chemical Manufacturing							
	Product Use (ODS Substitutes)							
	All Refrigerants- except utility SF6	11,498					11,498	
Transportation Energy	**On-road ALL (Total reflects subtraction of ethanol)**							
	Motor Gasoline (E-10)	278,203	277,220	734	249			
	Diesel	69,804	69,570	175	59			
	Ethanol							
	Biodiesel							
	Rail							
	Diesel	32,190	32,082	81	27			
	Coal	-	-	-	-			
	Marine							
	Gasoline							
	Distillate	1	1	0	0			
	Residual Fuel Oil	-	-	-	-			
	Off-road Mobile							
	All Fuels (Diesel and Gasoline)	51,249	51,072	132	45			
Waste Management	**Solid Waste Management**							
	FOD from Waste Generation	10,278	-	10,278	-			
	MSW incineration (non grid connected)							
	Sewage Treatment							
	Central WWTPs and Septic Systems Total reflects roun	6,772		4,063	1,354			
Agriculture	**Livestock**							
	Enteric Fementation	62,857		62,857				
	Manure management	11,904		9,869	2,035			
	Crop Production and Soil Management							
	Use of Fertilizer	4,335			4,335			
	Crop Residue Incineration							
Grand Totals		#REF!	712,548	#REF!	9,446	-	11,498	1,082

REDC Emissions By Source and Sector
Year: 2010

REDC / County Name	Oneida County

Color Code

	REQUIRED, though some data may be zero or considered to small to count
	OPTIONAL
	DO NOT Report Data in these cells

DRAFT Reporting Template CGC. Emissions in MTCDE							Related GHG Metrics / Activity Data		
		Scope 1	Scope 2	Scope 3	Biogenic	Rolled Up?	Metric	Unit	Value
Built Environment	**Residential Energy Consumption**								
MV Electricity Consumption	Electricity / Steam		48,760			Yes	Consumption	MMBTU	733,033
MV Direct Residential Fuel Consumption	Natural Gas	391,795				Yes	Consumption	MMBTU	7,382,321
MV Direct Residential Fuel Consumption	Propane / LPG	27,409				Yes	Consumption	MMBTU	433,485
MV Direct Residential Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	111,432				Yes	Consumption	MMBTU	1,501,602
MV Direct Residential Fuel Consumption	Wood	2,086			99135.3344	Yes	Consumption	MMBTU	1,056,880
	Commercial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		55,220			Yes	Consumption	MMBTU	830,142
MV Commercial Direct Fuel Consumption	Natural Gas	295,260				Yes	Consumption	MMBTU	5,563,382
MV Commercial Direct Fuel Consumption	Propane / LPG	10,012				Yes	Consumption	MMBTU	158,338
MV Commercial Direct Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	99,982				Yes	Consumption	MMBTU	1,347,297
MV Commercial Direct Fuel Consumption	Residual Fuel Oil (#4 and #6)	-				Yes	Consumption	MMBTU	-
MV Commercial Direct Fuel Consumption	Coal	103				Yes	Consumption	MMBTU	1,002
MV Commercial Direct Fuel Consumption	Wood	662			31461.369	Yes	Consumption	MMBTU	335,409
	Industrial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		5,037			Yes	Consumption	MMBTU	75,718
MV Industrial Title V Consumption	Natural Gas	345				Yes	Consumption	MMBTU	6,508
MV Industrial Title V Consumption	Propane / LPG	77				Yes	Consumption	MMBTU	1,221
MV Industrial Title V Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	882				Yes	Consumption	MMBTU	11,889
MV Industrial Title V Consumption	Residual Fuel Oil (#4 and #6)	1,465				Yes	Consumption	MMBTU	19,448
MV Industrial Title V Consumption	Coal	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Wood	262			0	Yes	Consumption	MMBTU	132,859
Energy Generation and Supply	**Energy Generation and Supply**								
MV Elec Generation GHG Analysis	Coal	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Natural Gas	5,741				No	Consumption	MMBTU	108,173
MV Elec Generation GHG Analysis	Distillate Fuel Oil (#1, #2 and #4)	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Residual Fuel Oil (#4 and #6)	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Wood / Biomass	-			0	No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	MSW	-			0	No	MSW Combusted	MMBTU	-
MV Elec Generation GHG Analysis	Other	-							2,454,648
MV Electricity Consumption	Electricity T/D Losses		6,345			Yes	Losses	MMBTU	42,663
MV Elec Generation GHG Analysis and MV Direct Fuel Consumption	Natural Gas T/D Losses	#REF!				Yes	Losses	MMBTU	
MV Electricity Consumption	Use of SF6 in the Utility Industry	1,459				Yes	Consumption	MMBTU	-
Industrial Processes	**Industrial Processes**								
Not Reported	Cement Production					Yes			
Not Reported	Iron and Steel Production					Yes			
Not Reported	Ferroalloy Production					Yes			
Not Reported	Aluminum Production					Yes			
Not Reported	Paper and Pulp					Yes			
Not Reported	Limestone Use					Yes			
Not Reported	Soda Ash Use					Yes			
Not Reported	Semi-Conductor Manufacturing					Yes			
MV Industrial Sources	Glass Production					Yes			
Not Reported	Chemical Manufacturing					Yes			
Product Use (Ozone Depleting Substances)	**Product Use (Ozone Depleting Substances)**								
MV Industrial Sources	All Refrigerants- except SF6	53,776				Yes			
Transportation Energy	**On-road**								
MV Emission Summary - Onroad	Motor Gasoline (E-10)	766,133			55,604	Yes	Consumption	MMBTU	11,683,691
MV Emission Summary - Onroad	Diesel	148,454				Yes	Consumption	MMBTU	2,001,279
Not Reported	Ethanol (E-85)					No	Consumption	MMBTU	
Not Reported	Biodiesel					No	Consumption	MMBTU	
Not Reported	Electricity Consumption					No	Consumption	MMBTU	
	Rail								
MV Emission Summary - Rail	Diesel	23,241				Yes	Consumption	MMBTU	313,181
MV Emission Summary - Rail	Coal Consumption		-			Yes	Consumption	MMBTU	-
	Marine								
MV Emission Summary -Com Marine	Gasoline					Yes	Consumption	MMBTU	
MV Emission Summary -Com Marine	Distillate Fuels	1				Yes	Consumption	MMBTU	7
MV Emission Summary -Com Marine	Residual Fuels	-				Yes	Consumption	MMBTU	-
	Air								
MV Emission Summary-Aircraft	All Fuels (Jet and Aviation Gasoline)	1,950				No	Consumption	MMBTU	27,327
	Off-road Mobile								
MV Emission Summary-Nonroad	All Fuels (Diesel and Gasoline)	115,635				Yes	Consumption	MMBTU	1,616,964
Waste Management	**Solid Waste Management**								
MV Waste	Landfill (Scope 1), allocated FOD (Scope 3) used in roll up	52,153		43,293	0	Yes - ONLY Scope 3	MSW+CD Generated	Tonnes	134,802
Not Reported	MSW incineration (non grid connected)					Yes	MSW+CD Processed	Tonnes	171,831
	Sewage Treatment						MSW Sent for Incineration	Tonnes	-
MV Waste water	Central WWTPs and Septic Systems	27,737				Yes	MSW incinerated in Bounda	Tonnes	-
Agriculture	**Livestock**								
GHF_MV_Agriculture	Enteric Fermentation	531				Yes			
GHF_MV_Agriculture	Manure management	14,852				Yes			
GHF_MV_Agriculture	**Crop Production and Soil Management**								
GHF_MV_Agriculture	Use of Fertilizer	5,324				Yes			
Not Reported	Crop Residue Incineration					No			
Land Use and Forestry									
GHG_MV_Forest	Urban Forest Annual Reserve	45,676				No			
GHG_MV_Forest	Forest Carbon Reserve (TOTAL)	81,365,961				No			

Grand Totals	Gross Totals	#REF!	115,361	43,293	186,201	#REF!
	Total with Aircraft (as reported in WNY Sustainability Plan)	#REF!	115,361	43,293	186,201	#REF!
	Net Totals					

REDC GHG Emissions Roll Up Report
Year: 2010
(all emissions in Column D, when summed will equal the total County or REDC protocol compliant GHG emissions estimate)

REDC / County Name	Oneida County

Color Code

REQUIRED for the Roll Up Report, though some data may be zero, N/A, or considered to small to count

Report NO Data in cell

DRAFT Roll Up Report CGC. Emissions in MTCDE								
		CO2e	CO2	CH4	N2O	PFC	HFC	SF6
Built Environment	**Residential Energy Consumption**							
	Electricity / Steam	48,760	48,523	33	205			
	Natural Gas	391,795	391,411	155	229			
	Propane / LPG	27,409	27,301	27	81			
	Distillate Fuel Oil (#1, #2, Kerosene)	111,432	111,058	95	279			
	Wood	2,086	-	710	1,376			
	Commercial Energy Consumption							
	Electricity / Steam	55,220	54,951	37	232			
	Natural Gas	295,260	294,971	117	172			
	Propane / LPG	10,012	9,972	10	29			
	Distillate Fuel Oil (#1, #2, Kerosene)	99,982	99,646	85	251			
	Residual Fuel Oil (#4 and #6)	-						
	Coal	103	102	0	0			
	Wood	662	-	225	437			
	Industrial Energy Consumption							
	Electricity / Steam	5,037	5,012	3	21			
	Natural Gas	345	345	0	0			
	Propane / LPG	77	77	0	0			
	Distillate Fuel Oil (#1, #2, Kerosene)	882	879	1	2			
	Residual Fuel Oil (#4 and #6)	1,465	1,461	1	4			
	Coal	-	-	-	-			
	Wood	262		89	173			
	Energy Generation and Supply							
	Electricity T/D Losses	6,345	6,314	4	27			
	Natural Gas T/D Losses	#REF!		#REF!				
	Use of SF6 in the Utility Industry	1,459						1,459
	Industrial Processes							
	Cement Production							
	Iron and Steel Production							
	Ferroalloy Production							
	Aluminum Production							
	Paper and Pulp							
	Limestone Use							
	Soda Ash Use							
	Semi-Conductor Manufacturing							
	Chemical Manufacturing							
	Product Use (ODS Substitutes)							
	All Refrigerants- except utility SF6	53,776					53,776	
Transportation Energy	**On-road ALL (Total reflects subtraction of ethanol)**							
	Motor Gasoline (E-10)	766,133	763,426	2,022	685			
	Diesel	148,454	148,015	314	126			
	Ethanol							
	Biodiesel							
	Rail							
	Diesel	23,241	23,163	58	20			
	Coal	-	-	-	-			
	Marine							
	Gasoline							
	Distillate	1	1	0	0			
	Residual Fuel Oil	-	-	-	-			
	Off-road Mobile							
	All Fuels (Diesel and Gasoline)	115,635	115,235	298	101			
Waste Management	**Solid Waste Management**							
	FOD from Waste Generation	43,293	-	43,293	-			
	MSW incineration (non grid connected)							
	Sewage Treatment							
	Central WWTPs and Septic Systems Total reflects roun	27,737		16,642	5,547			
Agriculture	**Livestock**							
	Enteric Fementation	531		531				
	Manure management	14,852		12,272	2,579			
	Crop Production and Soil Management							
	Use of Fertilizer	5,324			5,324			
	Crop Residue Incineration							
Grand Totals		#REF!	2,101,863	#REF!	17,900	-	53,776	1,459

REDC Emissions By Source and Sector
Year: 2010

REDC / County Name	Otsego County

Color Code

	REQUIRED, though some data may be zero or considered to small to count
	OPTIONAL
	DO NOT Report Data in these cells

DRAFT Reporting Template CGC. Emissions in MTCDE							Related GHG Metrics / Activity Data		
		Scope 1	Scope 2	Scope 3	Biogenic	Rolled Up?	Metric	Unit	Value
Built Environment	**Residential Energy Consumption**								
MV Electricity Consumption	Electricity / Steam		146,168			Yes	Consumption	MMBTU	2,197,404
MV Direct Residential Fuel Consumption	Natural Gas	35,054				Yes	Consumption	MMBTU	660,505
MV Direct Residential Fuel Consumption	Propane / LPG	28,903				Yes	Consumption	MMBTU	457,122
MV Direct Residential Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	82,461				Yes	Consumption	MMBTU	1,111,199
MV Direct Residential Fuel Consumption	Wood	2,911			138325.689	Yes	Consumption	MMBTU	1,474,688
	Commercial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		69,020			Yes	Consumption	MMBTU	1,037,605
MV Commercial Direct Fuel Consumption	Natural Gas	18,384				Yes	Consumption	MMBTU	346,391
MV Commercial Direct Fuel Consumption	Propane / LPG	7,347				Yes	Consumption	MMBTU	116,195
MV Commercial Direct Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	51,487				Yes	Consumption	MMBTU	693,817
MV Commercial Direct Fuel Consumption	Residual Fuel Oil (#4 and #6)	-				Yes	Consumption	MMBTU	-
MV Commercial Direct Fuel Consumption	Coal	65				Yes	Consumption	MMBTU	631
MV Commercial Direct Fuel Consumption	Wood	643			30548.9356	Yes	Consumption	MMBTU	325,682
	Industrial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		138,909			Yes	Consumption	MMBTU	2,088,290
MV Industrial Title V Consumption	Natural Gas	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Propane / LPG	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Residual Fuel Oil (#4 and #6)	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Coal	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Wood	-			12462.1761	Yes	Consumption	MMBTU	-
Energy Generation and Supply	**Energy Generation and Supply**								
MV Elec Generation GHG Analysis	Coal	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Natural Gas	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Distillate Fuel Oil (#1, #2 and #4)	15				No	Consumption	MMBTU	204
MV Elec Generation GHG Analysis	Residual Fuel Oil (#4 and #6)	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Wood / Biomass	-			0	No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	MSW	-			0	No	MSW Combusted	MMBTU	-
MV Elec Generation GHG Analysis	Other	-							55,183
MV Electricity Consumption	Electricity T/D Losses		20,608			Yes	Losses	MMBTU	127,889
MV Elec Generation GHG Analysis and MV Direct Fuel Consumption	Natural Gas T/D Losses	#REF!				Yes	Losses	MMBTU	
MV Electricity Consumption	Use of SF6 in the Utility Industry	4,740				Yes	Consumption	MMBTU	-
Industrial Processes	**Industrial Processes**								
Not Reported	Cement Production					Yes			
Not Reported	Iron and Steel Production					Yes			
Not Reported	Ferroalloy Production					Yes			
Not Reported	Aluminum Production					Yes			
Not Reported	Paper and Pulp					Yes			
Not Reported	Limestone Use					Yes			
Not Reported	Soda Ash Use					Yes			
Not Reported	Semi-Conductor Manufacturing					Yes			
MV Industrial Sources	Glass Production					Yes			
Not Reported	Chemical Manufacturing					Yes			
Product Use (Ozone Depleting Substances)	**Product Use (Ozone Depleting Substances)**								
MV Industrial Sources	All Refrigerants- except SF6	14,254				Yes			
Transportation Energy	**On-road**								
MV Emission Summary - Onroad	Motor Gasoline (E-10)	248,427			18,030	Yes	Consumption	MMBTU	3,788,559
MV Emission Summary - Onroad	Diesel	49,513				Yes	Consumption	MMBTU	803,565
Not Reported	Ethanol (E-85)					No	Consumption	MMBTU	
Not Reported	Biodiesel					No	Consumption	MMBTU	
Not Reported	Electricity Consumption					No	Consumption	MMBTU	
	Rail								
MV Emission Summary - Rail	Diesel	8,865				Yes	Consumption	MMBTU	119,466
MV Emission Summary - Rail	Coal Consumption		-			Yes	Consumption	MMBTU	-
	Marine								
MV Emission Summary -Com Marine	Gasoline					Yes	Consumption	MMBTU	
MV Emission Summary -Com Marine	Distillate Fuels	-				Yes	Consumption	MMBTU	-
MV Emission Summary -Com Marine	Residual Fuels	-				Yes	Consumption	MMBTU	-
	Air								
MV Emission Summary-Aircraft	All Fuels (Jet and Aviation Gasoline)	707				No	Consumption	MMBTU	9,893
	Off-road Mobile								
MV Emission Summary-Nonroad	All Fuels (Diesel and Gasoline)	36,330				Yes	Consumption	MMBTU	503,854
Waste Management	**Solid Waste Management**								
MV Waste	Landfill (Scope 1), allocated FOD (Scope 3) used in roll up	28,905		9,635	0	Yes - ONLY Scope 3	MSW+CD Generated	Tonnes	30,000
Not Reported	MSW incineration (non grid connected)					Yes	MSW+CD Processed	Tonnes	-
	Sewage Treatment						MSW Sent for Incineration	Tonnes	-
MV Waste water	Central WWTPs and Septic Systems	2,113				Yes	MSW incinerated in Bounda	Tonnes	-
Agriculture	**Livestock**								
GHF_MV_Agriculture	Enteric Fermentation	52,359				Yes			
GHF_MV_Agriculture	Manure management	10,090				Yes			
GHF_MV_Agriculture	**Crop Production and Soil Management**								
GHF_MV_Agriculture	Use of Fertilizer	4,315				Yes			
Not Reported	Crop Residue Incineration					No			
Land Use and Forestry									
GHG_MV_Forest	Urban Forest Annual Reserve	5,959				No			
GHG_MV_Forest	Forest Carbon Reserve (TOTAL)	73,300,164				No			

Grand Totals	Gross Totals	#REF!	374,705	9,635	199,367	#REF!
	Total with Aircraft (as reported in WNY Sustainability Plan)	#REF!	374,705	9,635	199,367	#REF!
	Net Totals					

REDC GHG Emissions Roll Up Report
Year: 2010
(all emissions in Column D, when summed will equal the total County or REDC protocol compliant GHG emissions estimate)

REDC / County Name	Otsego County

Color Code

REQUIRED for the Roll Up Report, though some data may be zero, N/A, or considered to small to count

Report NO Data in cell

DRAFT Roll Up Report CGC. Emissions in MTCDE								
		CO2e	CO2	CH4	N2O	PFC	HFC	SF6
Built Environment	**Residential Energy Consumption**							
	Electricity / Steam	146,168	145,457	98	613			
	Natural Gas	35,054	35,020	14	20			
	Propane / LPG	28,903	28,790	29	85			
	Distillate Fuel Oil (#1, #2, Kerosene)	82,461	82,184	70	207			
	Wood	2,911	-	991	1,920			
	Commercial Energy Consumption							
	Electricity / Steam	69,020	68,684	46	289			
	Natural Gas	18,384	18,366	7	11			
	Propane / LPG	7,347	7,318	7	22			
	Distillate Fuel Oil (#1, #2, Kerosene)	51,487	51,315	44	129			
	Residual Fuel Oil (#4 and #6)	-						
	Coal	65	64	0	0			
	Wood	643	-	219	424			
	Industrial Energy Consumption							
	Electricity / Steam	138,909	138,234	93	583			
	Natural Gas	-	-	-	-			
	Propane / LPG	-	-	-	-			
	Distillate Fuel Oil (#1, #2, Kerosene)	-	-	-	-			
	Residual Fuel Oil (#4 and #6)	-	-	-	-			
	Coal	-	-	-	-			
	Wood	-		-	-			
	Energy Generation and Supply							
	Electricity T/D Losses	20,608	20,508	14	86			
	Natural Gas T/D Losses	#REF!		#REF!				
	Use of SF6 in the Utility Industry	4,740						4,740
	Industrial Processes							
	Cement Production							
	Iron and Steel Production							
	Ferroalloy Production							
	Aluminum Production							
	Paper and Pulp							
	Limestone Use							
	Soda Ash Use							
	Semi-Conductor Manufacturing							
	Chemical Manufacturing							
	Product Use (ODS Substitutes)							
	All Refrigerants- except utility SF6	14,254					14,254	
Transportation Energy	**On-road ALL (Total reflects subtraction of ethanol)**							
	Motor Gasoline (E-10)	248,427	247,549	656	222			
	Diesel	49,513	49,347	124	42			
	Ethanol							
	Biodiesel							
	Rail							
	Diesel	8,865	8,836	22	8			
	Coal	-	-	-	-			
	Marine							
	Gasoline							
	Distillate	-	-	-	-			
	Residual Fuel Oil	-	-	-	-			
	Off-road Mobile							
	All Fuels (Diesel and Gasoline)	36,330	36,205	93	32			
Waste Management	**Solid Waste Management**							
	FOD from Waste Generation	9,635	-	9,635	-			
	MSW incineration (non grid connected)							
	Sewage Treatment							
	Central WWTPs and Septic Systems Total reflects roun	2,113		1,268	423			
Agriculture	**Livestock**							
	Enteric Fementation	52,359		52,359				
	Manure management	10,090		8,367	1,724			
	Crop Production and Soil Management							
	Use of Fertilizer	4,315			4,315			
	Crop Residue Incineration							
Grand Totals		#REF!	937,876	#REF!	11,154	-	14,254	4,740

REDC Emissions By Source and Sector
Year: 2010

REDC / County Name	Schoharie County

Color Code

	REQUIRED, though some data may be zero or considered to small to count
	OPTIONAL
	DO NOT Report Data in these cells

DRAFT Reporting Template CGC. Emissions in MTCDE							Related GHG Metrics / Activity Data		
		Scope 1	Scope 2	Scope 3	Biogenic	Rolled Up?	Metric	Unit	Value
Built Environment	**Residential Energy Consumption**								
MV Electricity Consumption	Electricity / Steam		24,921			Yes	Consumption	MMBTU	374,648
MV Direct Residential Fuel Consumption	Natural Gas	3,153				Yes	Consumption	MMBTU	59,409
MV Direct Residential Fuel Consumption	Propane / LPG	9,721				Yes	Consumption	MMBTU	153,744
MV Direct Residential Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	45,389				Yes	Consumption	MMBTU	611,642
MV Direct Residential Fuel Consumption	Wood	1,461			69419.5541	Yes	Consumption	MMBTU	740,081
	Commercial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		7,796			Yes	Consumption	MMBTU	117,197
MV Commercial Direct Fuel Consumption	Natural Gas	3,675				Yes	Consumption	MMBTU	69,249
MV Commercial Direct Fuel Consumption	Propane / LPG	5,492				Yes	Consumption	MMBTU	86,861
MV Commercial Direct Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	62,991				Yes	Consumption	MMBTU	848,833
MV Commercial Direct Fuel Consumption	Residual Fuel Oil (#4 and #6)	-				Yes	Consumption	MMBTU	-
MV Commercial Direct Fuel Consumption	Coal	113				Yes	Consumption	MMBTU	1,099
MV Commercial Direct Fuel Consumption	Wood	717			34075.8545	Yes	Consumption	MMBTU	363,282
	Industrial Energy Consumption								
MV Electricity Consumption	Electricity / Steam		8,024			Yes	Consumption	MMBTU	120,628
MV Industrial Title V Consumption	Natural Gas	29,848				Yes	Consumption	MMBTU	562,400
MV Industrial Title V Consumption	Propane / LPG	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Residual Fuel Oil (#4 and #6)	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Coal	-				Yes	Consumption	MMBTU	-
MV Industrial Title V Consumption	Wood	-			0	Yes	Consumption	MMBTU	-
Energy Generation and Supply	**Energy Generation and Supply**								
MV Elec Generation GHG Analysis	Coal	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Natural Gas	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Distillate Fuel Oil (#1, #2 and #4)	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Residual Fuel Oil (#4 and #6)	-				No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	Wood / Biomass	-			0	No	Consumption	MMBTU	-
MV Elec Generation GHG Analysis	MSW	-			0	No	MSW Combusted	MMBTU	-
MV Elec Generation GHG Analysis	Other	-							-
MV Electricity Consumption	Electricity T/D Losses		2,371			Yes	Losses	MMBTU	21,805
MV Elec Generation GHG Analysis and MV Direct Fuel Consumption	Natural Gas T/D Losses	#REF!				Yes	Losses	MMBTU	
MV Electricity Consumption	Use of SF6 in the Utility Industry	545				Yes	Consumption	MMBTU	-
Industrial Processes	**Industrial Processes**								
Not Reported	Cement Production					Yes			
Not Reported	Iron and Steel Production					Yes			
Not Reported	Ferroalloy Production					Yes			
Not Reported	Aluminum Production					Yes			
Not Reported	Paper and Pulp					Yes			
Not Reported	Limestone Use					Yes			
Not Reported	Soda Ash Use					Yes			
Not Reported	Semi-Conductor Manufacturing					Yes			
MV Industrial Sources	Glass Production					Yes			
Not Reported	Chemical Manufacturing					Yes			
Product Use (Ozone Depleting Substances)	**Product Use (Ozone Depleting Substances)**								
MV Industrial Sources	All Refrigerants- except SF6	7,498				Yes			
Transportation Energy	**On-road**								
MV Emission Summary - Onroad	Motor Gasoline (E-10)	227,646			16,522	Yes	Consumption	MMBTU	3,471,646
MV Emission Summary - Onroad	Diesel	55,855				Yes	Consumption	MMBTU	752,674
Not Reported	Ethanol (E-85)					No	Consumption	MMBTU	
Not Reported	Biodiesel					No	Consumption	MMBTU	
Not Reported	Electricity Consumption					No	Consumption	MMBTU	
	Rail								
MV Emission Summary - Rail	Diesel	3,488				Yes	Consumption	MMBTU	46,999
MV Emission Summary - Rail	Coal Consumption		-			Yes	Consumption	MMBTU	-
	Marine								
MV Emission Summary -Com Marine	Gasoline					Yes	Consumption	MMBTU	
MV Emission Summary -Com Marine	Distillate Fuels	-				Yes	Consumption	MMBTU	-
MV Emission Summary -Com Marine	Residual Fuels	-				Yes	Consumption	MMBTU	-
	Air								
MV Emission Summary-Aircraft	All Fuels (Jet and Aviation Gasoline)	25				No	Consumption	MMBTU	350
	Off-road Mobile								
MV Emission Summary-Nonroad	All Fuels (Diesel and Gasoline)	28,237				Yes	Consumption	MMBTU	392,415
Waste Management	**Solid Waste Management**								
MV Waste	Landfill (Scope 1), allocated FOD (Scope 3) used in roll up	-		3,810	0	Yes - ONLY Scope 3	MSW+CD Generated	Tonnes	11,864
Not Reported	MSW incineration (non grid connected)					Yes	MSW+CD Processed	Tonnes	-
	Sewage Treatment						MSW Sent for Incineration	Tonnes	-
MV Waste water	Central WWTPs and Septic Systems	1,121				Yes	MSW incinerated in Boundar	Tonnes	-
Agriculture	**Livestock**								
GHF_MV_Agriculture	Enteric Fermentation	29,750				Yes			
GHF_MV_Agriculture	Manure management	5,429				Yes			
GHF_MV_Agriculture	**Crop Production and Soil Management**								
GHF_MV_Agriculture	Use of Fertilizer	2,746				Yes			
Not Reported	Crop Residue Incineration					No			
Land Use and Forestry									
GHG_MV_Forest	Urban Forest Annual Reserve	1,672				No			
GHG_MV_Forest	Forest Carbon Reserve (TOTAL)	46,181,989				No			

Grand Totals	Gross Totals	#REF!	43,112	3,810	120,017
	Total with Aircraft (as reported in WNY Sustainability Plan)	#REF!	43,112	3,810	120,017
	Net Totals				

#REF!
#REF!

REDC GHG Emissions Roll Up Report
Year: 2010
(all emissions in Column D, when summed will equal the total County or REDC protocol compliant GHG emissions estimate)

REDC / County Name	Schoharie County

Color Code

REQUIRED for the Roll Up Report, though some data may be zero, N/A, or considered to small to count

Report NO Data in cell

DRAFT Roll Up Report CGC. Emissions in MTCDE								
		CO2e	CO2	CH4	N2O	PFC	HFC	SF6
Built Environment	**Residential Energy Consumption**							
	Electricity / Steam	24,921	24,800	17	105			
	Natural Gas	3,153	3,150	1	2			
	Propane / LPG	9,721	9,683	10	29			
	Distillate Fuel Oil (#1, #2, Kerosene)	45,389	45,237	39	114			
	Wood	1,461	-	497	964			
	Commercial Energy Consumption							
	Electricity / Steam	7,796	7,758	5	33			
	Natural Gas	3,675	3,672	1	2			
	Propane / LPG	5,492	5,471	5	16			
	Distillate Fuel Oil (#1, #2, Kerosene)	62,991	62,780	53	158			
	Residual Fuel Oil (#4 and #6)	-						
	Coal	113	112	0	1			
	Wood	717	-	244	473			
	Industrial Energy Consumption							
	Electricity / Steam	8,024	7,985	5	34			
	Natural Gas	29,848	29,818	12	17			
	Propane / LPG	-	-	-	-			
	Distillate Fuel Oil (#1, #2, Kerosene)	-	-	-	-			
	Residual Fuel Oil (#4 and #6)	-	-	-	-			
	Coal	-	-	-	-			
	Wood	-		-	-			
	Energy Generation and Supply							
	Electricity T/D Losses	2,371	2,360	2	10			
	Natural Gas T/D Losses	#REF!		#REF!				
	Use of SF6 in the Utility Industry	545						545
	Industrial Processes							
	Cement Production							
	Iron and Steel Production							
	Ferroalloy Production							
	Aluminum Production							
	Paper and Pulp							
	Limestone Use							
	Soda Ash Use							
	Semi-Conductor Manufacturing							
	Chemical Manufacturing							
	Product Use (ODS Substitutes)							
	All Refrigerants- except utility SF6	7,498					7,498	
Transportation Energy	**On-road ALL (Total reflects subtraction of ethanol)**							
	Motor Gasoline (E-10)	227,646	226,841	601	204			
	Diesel	55,855	55,668	140	47			
	Ethanol							
	Biodiesel							
	Rail							
	Diesel	3,488	3,476	9	3			
	Coal	-	-	-	-			
	Marine							
	Gasoline							
	Distillate	-	-	-	-			
	Residual Fuel Oil	-	-	-	-			
	Off-road Mobile							
	All Fuels (Diesel and Gasoline)	28,237	28,140	73	25			
Waste Management	**Solid Waste Management**							
	FOD from Waste Generation	3,810	-	3,810	-			
	MSW incineration (non grid connected)							
	Sewage Treatment							
	Central WWTPs and Septic Systems Total reflects roun	1,121		673	224			
Agriculture	**Livestock**							
	Enteric Fementation	29,750		29,750				
	Manure management	5,429		4,512	917			
	Crop Production and Soil Management							
	Use of Fertilizer	2,746			2,746			
	Crop Residue Incineration							
Grand Totals		#REF!	516,949	#REF!	6,121	-	7,498	545

Electricity Consumption GHG Emissions

County	# Households[2]	Population[2]	MWh	MMBTU[3]	CO2e (Metric Tons)[1] CO2	CH4	N2O	Total
New York State[4]	**7,317,755**	**19,378,102**	**144,624,000**					
Mohawk Valley	**199,964**	**500,155**	**3,256,822**	**11,112,277**	**735,574**	**495**	**3,100**	**739,169**
Fulton	22,554	55,531	321,578	1,097,224	72,630	49	306	72,985
Herkimer	26,324	64,519	359,046	1,225,066	81,093	55	342	81,489
Montgomery	20,272	50,219	356,191	1,215,322	80,448	54	339	80,841
Oneida	24,620	62,259	480,332	1,638,893	108,486	73	457	109,016
Otsego	93,028	234,878	1,560,170	5,323,300	352,375	237	1,485	354,097
Schoharie	13,166	32,749	179,506	612,473	40,543	27	171	40,741

Sector	% of total	Population	MWh	MMBTU[3]	CO2e (Metric Tons)[1] CO2	CH4	N2O	Total
Mohawk Valley		**500,155**	**3,256,822**	**11,112,277**	**1,241,491**	**835**	**5,233**	**1,247,559**
Residential			**1,457,899**	**4,974,350**	**329,276**	**221**	**1,388**	**330,885**
Fulton		55,531	162,534	554,567	36,709	25	155	36,889
Herkimer		64,519	190,035	648,401	42,921	29	181	43,131
Montgomery		50,219	136,664	466,296	30,866	21	130	31,017
Oneida		62,259	214,840	733,033	48,523	33	205	48,760
Otsego		234,878	644,022	2,197,404	145,457	98	613	146,168
Schoharie		32,749	109,803	374,648	24,800	17	105	24,921
Commercial[5]			**782,093**	**2,668,502**	**176,641**	**119**	**745**	**177,504**
Fulton		55,531	61,084	208,420	13,796	9	58	13,864
Herkimer		64,519	77,562	264,641	17,518	12	74	17,603
Montgomery		50,219	61,693	210,496	13,934	9	59	14,002
Oneida		62,259	243,301	830,142	54,951	37	232	55,220
Otsego		234,878	304,105	1,037,605	68,684	46	289	69,020
Schoharie		32,749	34,349	117,197	7,758	5	33	7,796
Industrial			**1,016,830**	**3,469,426**	**229,658**	**154**	**968**	**230,780**
Fulton		55,531	97,959	334,236	22,125	15	93	22,233
Herkimer		64,519	91,449	312,024	20,654	14	87	20,755
Montgomery		50,219	157,834	538,530	35,648	24	150	35,822
Oneida		62,259	22,192	75,718	5,012	3	21	5,037
Otsego		234,878	612,043	2,088,290	138,234	93	583	138,909
Schoharie		32,749	35,354	120,628	7,985	5	34	8,024

Notes

1. CO2e calculated based on regional electricity consumption provided by WNY Electricity providers and eGRID 2012 NYUP emission factors.Some energy use data is estimated based on regional averages.
2. 2010 US Census
3. 1 MWh = 3.412 MMBtu
4. New York State Totals from EIA New York http://www.eia.gov/electricity/state/newyork/
5. Commercial totals include commerical and government sectors

Grid Losses (Energy and Emissions) from Electricity Consumption

County	MWh	MMBTU[3]	CO2e (Metric Tons)			
			CO2	CH4	N2O	Total
Finger Lakes	**84,850**	**289,507**	**42,810**	**29**	**180**	**43,020**
Fulton	9,459	32,276	4,227	3	18	4,248
Herkimer	11,060	37,737	4,720	3	20	4,743
Montgomery	7,954	27,138	4,682	3	20	4,705
Oneida	12,504	42,663	6,314	4	27	6,345
Otsego	37,482	127,889	20,508	14	86	20,608
Schoharie	6,391	21,805	2,360	2	10	2,371

2. New York State Totals from EIA New York http://www.eia.gov/electricity/state/newyork/

Electrical Transmission and Distribution--SF6 Emissions

County	MWh[2]	CO2e (Metric Tons)[1]
		SF6[3]
United States[1,2]	**3,884,000,000**	**11,800,000**
Mohawk Valley	**3,256,822**	**9,895**
Fulton	321,578	977
Herkimer	359,046	1,091
Montgomery	356,191	1,082
Oneida	480,332	1,459
Otsego	1,560,170	4,740
Schoharie	179,506	545

1. CO2e calculated based on ratio of regional and national electricity consumption and reported national SF6 emissions.
2. U.S.Electricity end use consumption from EIA Annual Review, 2010 http://www.eia.gov/totalenergy/data/annual/showtext.cfm?t=ptb0801
3. U.S. SF6 emissions from U.S. Greenhouse Gas Inventory Report for 2010:http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.htm

Supporting data and calculations are provided in the following E&E Excel Workbook:
File Name:
MV Electricity Consumption1_15.xlsx
Date:
1/15/2013

Electricity Generation GHG Emissions

	Total Fuel Consumption[1]	Units	Total Fuel Consumption (MMBTU)	MWh Generated	CO2e (Metric Tons)[1] Non-biogenic CO2	CH4	N2O	Non biogenic Total	Biogenic Total[3]	
New York State[2]				**136,961,654**	**41,583,758**					
Coal				13,582,766						
Natural Gas				48,915,545						
Fuel Oil, Kerosene, etc.				2,004,975						
Petroleum Coke										
Landfill										
Nuclear				41,869,535						
Hydro				25,471,697						
Other renewables				4,814,548						
Mohawk Valley: Total				**502,023**	**11,501**	**16**	**41**	**16,177**	**9,236**	**0.367%** Generation in NYS
Mohawk Valley: Renewable Energy				**469,983**	**-**	**6**	**17**	**23**	**4,618**	
Distillate Fuel Oil (#1, 2, or 4)	***35***	***barrels***	***204***	***3***	***15***	***0***	***0***	***15***	**-**	
Otsego County	35	barrels	204	3	15	0	0	15		
Oneida County	0	barrels	0	-	-	-	-	-		
Landfill Gas[3]	***194,914***	***mcf***	***88,685***	***7,968***	**-**	***6***	***17***	***23***	***4,618***	
Fulton County	194,914	mcf	88,685	7,968	-	6	17	23	4,618	
Natural Gas	***99,448***	***mcf***	***108,173***	***12,033***	***5,735***	***2***	***3***	***5,741***	**-**	
Oneida County	*99,448*	*mcf*	*108,173*	*12,033*	*5,735*	*2*	*3*	*5,741*		
Hydro[4]	***0***	***0***	***4,507,423***	***462,015***	***0***	***0***	***0***	***0***	***0***	
Fulton County	*0*	*0*	*115,598*	*11,849*	-	-	-	-		
Herkimer County	*0*	*0*	*1,881,994*	*192,906*	-	-	-	-		
Oneida County	*0*	*0*	*2,454,648*	*251,604*	-	-	-	-		
Otsego County	*0*	*0*	*55,183*	*5,656*	-	-	-	-		

Notes

1. CO2e calculated based on regional electricity generation data from 2010 EIA Form 923 reported energy use by facility, using fuel type emission factors from EPA's Manditory Reporting Rule(MRR)*

*Federal Register / Vol. 74, No. 209 / Friday, October 30, 2009 / Rules and Regulations, Table C-1 and Table C-2, http://epa.gov/climatechange/emissions/downloads09/GHG-MRR-FinalRule.pdf

2. New York State Totals from EIA New York http://www.eia.gov/electricity/state/newyork/

3. CO2 from landfill gas are considered a source of biogenic emissions, not to be included in GHG emission totals

**Table B2, "Methodology for Allocating Municipal Solid Waste to Biogenic/Non-Biogenic Energy" http://www.eia.gov/cneaf/solar.renewables/page/mswaste/msw_report.html

4. Renewable sources highlighted in green

GHG Emissions from Natural Gas Electricity Generation Transmission and Distribution Losses[1]

	% T&D Loss	Total Natural Gas (mcf)	CH4 Losses in mcf	CH4 Losses in lbs	Total CO2e
Mohawk Valley	**1.8%**	**99,448**	**1,790**	**80,195**	**764**
Fulton County	1.8%	-	-	-	-
Herkimer County	1.8%	-	-	-	-
Montgomery County	1.8%	-	-	-	-
Oneida County	1.8%	99,448	**1,790**	**80,195**	**764**
Otsego County	1.8%	-	-	-	-
Schoharie County	1.8%	-	-	-	-

Notes

1. CO2e from T&D losses calculated based on ratio of estimated % fuel loss and total CO2e estimated from natural gas use for electricity generation within the region.

Supporting data and calculations are provided in the following E&E Excel Workbook:
File Name:
MV Elec Generation GHG Analysis1_14.xlsx
Date:
1/14/2013

Residential Building Emissions from Stationary Combustion

			CO2e (Metric Tons)[1]				
	# Households[2]	mmBTU[2]	CO_2	CH_4	N_2O	Total	Biogenic Total[3]
New York State	**7,317,755**	**595,650,000**	**31,788,580**	**50,832**	**103,983**	**31,943,395**	**4,633,720**
Natural Gas	3,972,785	399,700,000	21,192,094	8,394	12,391	21,212,878	
Bottled, Tank, or LP gas	225,680	22,200,000	1,398,156	1,399	4,129	1,403,684	
Fuel Oil, Kerosene, etc.	2,207,233	124,300,000	9,193,228	7,831	23,120	9,224,179	
Wood	138,599	49,400,000	-	33,197	64,319	97,516	4,633,720
Coal	19,542	50,000	5,102	12	25	5,138	
Mohawk Valley	**199,964**	**23,993,619**	**1,106,550**	**4,267**	**8,562**	**1,119,379**	**503,171**
Natural Gas	90,564	12,177,874	645,671	256	378	646,304	
Bottled, Tank, or LP gas	13,769	1,486,885	93,644	94	277	94,014	
Fuel Oil, Kerosene, etc.	65,570	4,962,574	367,032	313	923	368,268	
Wood	15,980	5,364,299	-	3,605	6,984	10,589	503,171
Coal	794	1,989	203	0	1	204	
Fulton County	**22,554**	**2,729,621**	**121,595**	**550**	**1,102**	**123,247**	**66,285**
Natural Gas	9,153	1,251,899	66,376	26	39	66,441	
Bottled, Tank, or LP gas	1,472	164,914	10,386	10	31	10,427	
Fuel Oil, Kerosene, etc.	7,473	606,034	44,822	38	113	44,973	
Wood	1,975	706,665	-	475	920	1,395	66,285
Coal	39	109	11	0	0	11	
Herkimer County	**26,324**	**3,429,908**	**147,598**	**720**	**1,432**	**149,750**	**88,227**
Natural Gas	11,141	1,647,911	87,372	35	51	87,458	
Bottled, Tank, or LP gas	1,515	183,618	11,564	12	34	11,610	
Fuel Oil, Kerosene, etc.	7,495	657,387	48,620	41	122	48,784	
Wood	2,431	940,591	-	632	1,225	1,857	88,227
Coal	134	400	41	0	0	41	
Montgomery County	**20,272**	**2,190,278**	**103,407**	**360**	**722**	**104,489**	**41,778**
Natural Gas	9,310	1,175,829	62,342	25	36	62,404	
Bottled, Tank, or LP gas	908	94,000	5,920	6	17	5,944	
Fuel Oil, Kerosene, etc.	6,339	474,709	35,110	30	88	35,228	
Wood	1,348	445,395	-	299	580	879	41,778
Coal	136	345	35	0	0	35	
Oneida County	**93,028**	**10,374,722**	**529,814**	**987**	**1,965**	**532,767**	**99,135**
Natural Gas	56,209	7,382,321	391,411	155	229	391,795	
Bottled, Tank, or LP gas	4,028	433,485	27,301	27	81	27,409	
Fuel Oil, Kerosene, etc.	19,282	1,501,602	111,058	95	279	111,432	
Wood	3,076	1,056,880	-	710	1,376	2,086	99,135
Coal	164	434	44	0	0	45	
Otsego County	**24,620**	**3,703,907**	**146,034**	**1,104**	**2,232**	**149,370**	**138,326**
Natural Gas	3,960	660,505	35,020	14	20	35,054	
Bottled, Tank, or LP gas	3,345	457,122	28,790	29	85	28,903	
Fuel Oil, Kerosene, etc.	11,236	1,111,199	82,184	70	207	82,461	
Wood	3,380	1,474,688	-	991	1,920	2,911	138,326
Coal	117	393	40	0	0	40	
Schoharie County	**13,166**	**1,565,184**	**58,101**	**547**	**1,108**	**59,756**	**69,420**
Natural Gas	792	59,409	3,150	1	2	3,153	
Bottled, Tank, or LP gas	2,501	153,744	9,683	10	29	9,721	
Fuel Oil, Kerosene, etc.	13,746	611,642	45,237	39	114	45,389	
Wood	3,770	740,081	-	497	964	1,461	69,420
Coal	204	308	31	0	0	32	

Notes:

1. CO2e calculated based on allocation of EIA 2010 Residential Energy use in New York*, using fuel type emission factors from EPA's Manditory Reporting Rule(MRR)**

*http://www.eia.gov/state/seds/sep_sum/html/pdf/sum_btu_com.pdf

**Federal Register / Vol. 74, No. 209 / Friday, October 30, 2009 / Rules and Regulations, Table C-1 and Table C-2, http://epa.gov/climatechange/emissions/downloads09/GHG-MRR-FinalRule.pdf

2. New York State, regional and county residential energy totals allocated based on 2007 - 2010 ACS data for type of residence and heating fuel type, 2010 US Census data used for total occupied units, and HDD determined based on NOAA New York State climate divisions. fuel use by structure size determined though EPA study provided to GHG Inventory Protocol group.

3. CO2 from Wood products are considered a source of biogenic emissions, not to be included in GHG emission totals

4. Renewable sources highlighted in green

GHG Emissions from Natural Gas Use Transmission and Distribution Losses[1]

	% T&D Loss	Total Natural Gas (mcf)	CH4 Losses in mcf	CH4 Losses in lbs	Total CO2e
Mohawk Valley	**1.8%**	**11,846,180.52**	**213,231**	**9,552,759.97**	**90,994**
Fulton	1.8%	1,217,800.38	21,920	982,034.23	9,354
Herkimer	1.8%	1,603,026.41	28,854	1,292,680.50	12,313
Montgomery	1.8%	1,143,802.21	20,588	922,362.10	8,786
Oneida	1.8%	7,181,246.39	129,262	5,790,957.09	55,161
Otsego	1.8%	642,514.71	11,565	518,123.86	4,935
Schoharie	1.8%	57,790.41	1,040	46,602.19	444

Notes

1. CO2e from T&D losses calculated based on ratio of estimated % fuel loss and total residential natural gas use within the region.

Supporting data and calculations are provided in the following E&E Excel Workbook:

File Name:

MV Residential Direct Energy Sources 1_14_13.xlsx

Date:

1/14/2012

Commercial Energy Use Emissions

				CO2e (Metric Tons)[1]				
	Workers[2]	Sq Footage[2]	mmBTU[1]	CO_2	CH_4	N_2O	Total	Biogenic Total[3]
New York State	**6,618,037**	**6,018,827,593**	**431,800,000**	**24,923,838**	**21,323**	**46,590**	**24,991,751**	
Natural Gas	4,005,538	3,519,948,423	294,100,000	15,593,182	6,176	9,117	15,608,475	
Bottled, Tank, or LP gas	227,624	183,398,128	6,600,000	415,668	416	1,228	417,311	
Fuel Oil, Kerosene, etc.	2,225,226	2,200,987,287	120,400,000	8,904,784	7,585	22,394	8,934,764	
Wood[3]	139,846	97,326,344	10,600,000	-	7,123	13,801	20,924	994,280
Coal	19,802	17,167,411	100,000	10,204	23	50	10,277	
Mohawk Valley	**142,029**	**155,691,914**	**13,988,509**	**751,552**	**1,438**	**2,991**	**755,980**	
Natural Gas	79,462	77,110,718	8,083,786	428,602	170	251	429,023	
Bottled, Tank, or LP gas	9,479	11,378,175	470,455	29,629	30	88	29,746	
Fuel Oil, Kerosene, etc.	42,979	53,813,475	3,960,278	292,902	249	737	293,888	
Wood[3]	9,646	12,756,743	1,469,894	-	988	1,914	2,902	137,876
Coal	462	632,803	4,095	418	1	2	421	
Fulton County	**13,374**	**13,918,098**	**1,232,099**	**65,401**	**145**	**302**	**65,848**	
Natural Gas	6,087	6,334,278	656,007	34,781	14	20	34,816	
Bottled, Tank, or LP gas	979	1,018,447	41,886	2,638	3	8	2,648	
Fuel Oil, Kerosene, etc.	4,969	5,171,313	378,093	27,964	24	70	28,058	
Wood[3]	1,313	1,366,792	155,939	-	105	203	308	14,627
Coal	26	27,268	174	18	0	0	18	
Herkimer County	**11,487**	**12,189,173**	**1,280,385**	**66,277**	**156**	**320**	**66,754**	
Natural Gas	5,634	5,978,024	723,354	38,352	15	22	38,390	
Bottled, Tank, or LP gas	766	813,003	39,066	2,460	2	7	2,470	
Fuel Oil, Kerosene, etc.	3,790	4,021,803	343,559	25,410	22	64	25,495	
Wood[3]	1,229	1,304,325	173,869	-	117	226	343	16,309
Coal	68	72,018	538	55	0	0	55	
Montgomery County	**12,893**	**13,572,997**	**1,218,557**	**66,086**	**117**	**244**	**66,446**	
Natural Gas	6,654	7,004,370	725,404	38,461	15	22	38,499	
Bottled, Tank, or LP gas	649	683,445	28,108	1,770	2	5	1,777	
Fuel Oil, Kerosene, etc.	4,530	4,769,013	348,680	25,788	22	65	25,875	
Wood[3]	963	1,014,218	115,714	-	78	151	228	10,854
Coal	97	101,950	652	66	0	0	67	
Oneida County	**84,787**	**79,092,976**	**7,405,428**	**404,691**	**437**	**890**	**406,018**	
Natural Gas	57,586	53,718,976	5,563,382	294,971	117	172	295,260	
Bottled, Tank, or LP gas	4,127	3,850,003	158,338	9,972	10	29	10,012	
Fuel Oil, Kerosene, etc.	19,754	18,427,447	1,347,297	99,646	85	251	99,982	
Wood[3]	3,151	2,939,825	335,409	-	225	437	662	31,461
Coal	168	156,726	1,002	102	0	0	103	
Otsego County	**19,487**	**18,899,111**	**1,482,715**	**77,063**	**277**	**586**	**77,926**	
Natural Gas	3,502	3,396,133	346,391	18,366	7	11	18,384	
Bottled, Tank, or LP gas	2,958	2,868,751	116,195	7,318	7	22	7,347	
Fuel Oil, Kerosene, etc.	9,935	9,635,540	693,817	51,315	44	129	51,487	
Wood[3]	2,989	2,898,475	325,682	-	219	424	643	30,549
Coal	103	100,211	631	64	0	0	65	
Schoharie County	**5,953**	**18,019,560**	**1,369,324**	**72,034**	**305**	**650**	**72,988**	
Natural Gas	224	678,936	69,249	3,672	1	2	3,675	
Bottled, Tank, or LP gas	708	2,144,525	86,861	5,471	5	16	5,492	
Fuel Oil, Kerosene, etc.	3,894	11,788,360	848,833	62,780	53	158	62,991	
Wood[3]	1,068	3,233,108	363,282	-	244	473	717	34,076
Coal	58	174,630	1,099	112	0	1	113	

Notes:

1. CO2e calculated based on allocation of EIA 2010 Commercial Energy use in New York*, using fuel type emission factors from EPA's Manditory Reporting Rule(MRR)**

*http://www.eia.gov/state/seds/sep_sum/html/pdf/sum_btu_com.pdf

*Federal Register / Vol. 74, No. 209 / Friday, October 30, 2009 / Rules and Regulations, Table C-1 and Table C-2,
http://epa.gov/climatechange/emissions/downloads09/GHG-MRR-FinalRule.pdf

2. New York State, regional and county commercial energy totals allocated based on NYS 2010 Department of Labor statistics for each county, the CBECS average floor space per worker, and 2010 HDD based on NOAA climate divisionsconsumption and generation

3. CO2 from Wood products are considered a source of biogenic emissions, not to be included in GHG emission totals

4. Renewable sources highlighted in green

GHG Emissions from Natural Gas Use Transmission and Distribution Losses[1]

	% T&D Loss	Total Natural Gas (mcf)	CH4 Losses in mcf	CH4 Losses in lbs	Total CO2e
Mohawk Valley	**1.8%**	**7,863,605.16**	**141,545**	**6,341,211.20**	**60,403**
Fulton	1.8%	638,138.85	11,486	514,595.17	4,902
Herkimer	1.8%	703,651.46	12,666	567,424.53	5,405
Montgomery	1.8%	705,646.39	12,702	569,033.25	5,420
Oneida	1.8%	5,411,850.13	97,413	4,364,115.95	41,570
Otsego	1.8%	336,955.93	6,065	271,721.27	2,588
Schoharie	1.8%	67,362.40	1,213	54,321.04	517

Notes

1. CO2e from T&D losses calculated based on ratio of estimated % fuel loss and total commercial natural gas use within the region.

Supporting data and calculations are provided in the following E&E Excel Workbook:
File Name:
MV Commercial Energy Emissions 1_14_13.xlsx
Date:
1/14/2013

Industrial Energy Use Emissions

		CO2e (Metric Tons)[1]				
	mmBTU[2]	CO_2	CH_4	N_2O	Total	Biogenic Total[3]
New York State[2]	**172,806,620**	**7,834,093**	**6,160**	**12,718**	**7,852,971**	**219,731**
Natural Gas	100,184,192	5,311,766	2,104	3,106	5,316,975	
LPG	381,677	24,038	24	71	24,133	
Distillate Fuel Oil (#1, #2, Kerosene)	2,866,662	211,235	181	533	211,949	
Heating Oil #1	*1,103,236*	*80,812*	*70*	*205*	*81,087*	
Heating Oil #2	*1,763,426*	*130,423*	*111*	*328*	*130,862*	
Residual Fuel Oil (#4 and #6)	14,565,792	1,093,813	918	2,709	1,097,440	
Heating Oil #4	*1,300,971*	*97,625*	*82*	*242*	*97,949*	
Heating Oil #6	*13,264,821*	*996,188*	*836*	*2,467*	*999,491*	
Coal	12,699,950	1,193,241	2,934	6,299	1,202,474	
Bituminous Coal	*11,911,597*	*1,112,543*	*2,752*	*5,908*	*1,121,203*	
Anthracite Coal	*169,701*	*17,571*	*39*	*84*	*17,694*	
Coke	*618,652*	*63,127*	*143*	*307*	*63,577*	
Wood[3]	2,342,544	-	1,574	3,050	4,624	219,731
MSW[5]	9,633,400	873,749	6,474	12,543	892,766	
Solid Other						
Liquid Other						
Mohawk Valley	**1,977,477**	**98,492**	**129**	**235**	**98,857**	**12,462**
Natural Gas	1,812,060	96,075	38	56	96,170	
LPG	1,221	77	0	0	77	
Distillate Fuel Oil (#1, #2, Kerosene)	11,889	879	1	2	882	
Heating Oil #1	-	-	-	-	-	
Heating Oil #2	*11,889*	*879*	*1*	*2*	*882*	
Residual Fuel Oil (#4 and #6)	19,448	1,461	1	4	1,465	
Heating Oil #4	-	-	-	-	-	
Heating Oil #6	*19,448*	*1,461*	*1*	*4*	*1,465*	
Coal	-	-	-	-	-	
Bituminous Coal	-	-	-	-	-	
Anthracite Coal	-	-	-	-	-	
Coke	-	-	-	-	-	
Wood[3]	132,859	-	89	173	262	12,462
MSW	-	-	-	-	-	
Solid Other						
Liquid Other						
Fulton County	**16,093**	**853**	**0**	**0**	**854**	
Natural Gas	16,093	853	0	0	854	
LPG	-	-	-	-	-	
Distillate Fuel Oil (#1, #2, Kerosene)	-	-	-	-	-	
Heating Oil #1	-	-	-	-	-	
Heating Oil #2	-	-	-	-	-	
Residual Fuel Oil (#4 and #6)	-	-	-	-	-	
Heating Oil #4	-	-	-	-	-	
Heating Oil #6	-	-	-	-	-	
Coal	-	-	-	-	-	
Bituminous Coal	-	-	-	-	-	
Anthracite Coal	-	-	-	-	-	
Coke	-	-	-	-	-	
Wood[3]	-	-	-	-	-	
MSW	-	-	-	-	-	
Solid Other						
Liquid Other						
Herkimer County	**698,676**	**37,044**	**15**	**22**	**37,080**	
Natural Gas	698,676	37,044	15	22	37,080	
LPG	-	-	-	-	-	
Distillate Fuel Oil (#1, #2, Kerosene)	-	-	-	-	-	
Heating Oil #1	-	-	-	-	-	
Heating Oil #2	-	-	-	-	-	
Residual Fuel Oil (#4 and #6)	-	-	-	-	-	
Heating Oil #4	-	-	-	-	-	
Heating Oil #6	-	-	-	-	-	
Coal	-	-	-	-	-	
Bituminous Coal	-	-	-	-	-	
Anthracite Coal	-	-	-	-	-	
Coke	-	-	-	-	-	
Wood[3]	-	-	-	-	-	
MSW	-	-	-	-	-	
Solid Other						
Liquid Other						

Industrial Energy Use Emissions

		CO2e (Metric Tons)[1]				
	mmBTU[2]	CO_2	CH_4	N_2O	Total	Biogenic Total[3]
Montgomery County	**528,384**	**28,015**	**11**	**16**	**28,042**	
Natural Gas	528,384	28,015	11	16	28,042	
LPG	-	-	-	-	-	
Distillate Fuel Oil (#1, #2, Kerosene)	-	-	-	-	-	
Heating Oil #1	-	-	-	-	-	
Heating Oil #2	-	-	-	-	-	
Residual Fuel Oil (#4 and #6)	-	-	-	-	-	
Heating Oil #4	-	-	-	-	-	
Heating Oil #6	-	-	-	-	-	
Coal	-	-	-	-	-	
Bituminous Coal	-	-	-	-	-	
Anthracite Coal	-	-	-	-	-	
Coke	-	-	-	-	-	
Wood[3]	-	-	-	-	-	
MSW	-	-	-	-	-	
Solid Other						
Liquid Other						
Oneida County	**171,925**	**2,762**	**91**	**179**	**3,033**	
Natural Gas	6,508	345	0	0	345	
LPG	1,221	77	0	0	77	
Distillate Fuel Oil (#1, #2, Kerosene)	11,889	879	1	2	882	
Heating Oil #1	-	-	-	-	-	
Heating Oil #2	*11,889*	*879*	*1*	*2*	*882*	
Residual Fuel Oil (#4 and #6)	19,448	1,461	1	4	1,465	
Heating Oil #4	-	-	-	-	-	
Heating Oil #6	*19,448*	*1,461*	*1*	*4*	*1,465*	
Coal	-	-	-	-	-	
Bituminous Coal	-	-	-	-	-	
Anthracite Coal	-	-	-	-	-	
Coke	-	-	-	-	-	
Wood[3]	132,859	-	89	173	262	12,462
MSW	-	-	-	-	-	
Solid Other						
Liquid Other						
Otsego County	**-**	**-**	**-**	**-**	**-**	
Natural Gas	-	-	-	-	-	
LPG	-	-	-	-	-	
Distillate Fuel Oil (#1, #2, Kerosene)	-	-	-	-	-	
Heating Oil #1	-	-	-	-	-	
Heating Oil #2	-	-	-	-	-	
Residual Fuel Oil (#4 and #6)	-	-	-	-	-	
Heating Oil #4	-	-	-	-	-	
Heating Oil #6	-	-	-	-	-	
Coal	-	-	-	-	-	
Bituminous Coal	-	-	-	-	-	
Anthracite Coal	-	-	-	-	-	
Coke	-	-	-	-	-	
Wood[3]	-	-	-	-	-	-
MSW	-	-	-	-	-	
Solid Other						
Liquid Other						
Schoharie County	**562,400**	**29,818**	**12**	**17**	**29,848**	
Natural Gas	562,400	29,818	12	17	29,848	
LPG	-	-	-	-	-	
Distillate Fuel Oil (#1, #2, Kerosene)	-	-	-	-	-	
Heating Oil #1	-	-	-	-	-	
Heating Oil #2	-	-	-	-	-	
Residual Fuel Oil (#4 and #6)	-	-	-	-	-	
Heating Oil #4	-	-	-	-	-	
Heating Oil #6	-	-	-	-	-	
Coal	-	-	-	-	-	
Bituminous Coal	-	-	-	-	-	
Anthracite Coal	-	-	-	-	-	
Coke	-	-	-	-	-	
Wood[3]	-	-	-	-	-	-
MSW	-	-	-	-	-	
Solid Other						
Liquid Other						

Notes

1. CO2e calculated based on regional Title V Air Quality Permitting energy data provided to the CGC GHG Protocol Working Group from the NYSDEC (August 2012), using fuel type emission factors from EPA's Manditory Reporting Rule(MRR)*

*Federal Register / Vol. 74, No. 209 / Friday, October 30, 2009 / Rules and Regulations, Table C-1 and Table C-2, http://epa.gov/climatechange/emissions/downloads09/GHG-MRR-FinalRule.pdf

2. New York State, regional and county actual energy totals reported for all Title V sources within the area. Electricity generation and landfill emissions were excluded as they are calculated and counted separately in waste and electric consumption and generation

3. CO2 from Wood products are considered a source of biogenic emissions, not to be included in GHG emission totals

4. Renewable sources highlighted in green

5. MSW(Municipal Solid Waste) emissions are included in waste calculations

GHG Emissions from Natural Gas Use Transmission and Distribution Losses[1]

	% T&D Loss	Total Natural Gas (mcf)	CH4 Losses in mcf	CH4 Losses in lbs	Total CO2e
Mohawk Valley	**1.8%**	**1,762,704.23**	**31,729**	**1,421,444.69**	**13,540**
Fulton	1.8%	15,654.47	282	12,623.77	120
Herkimer	1.8%	679,645.43	12,234	548,066.07	5,221
Montgomery	1.8%	513,992.12	9,252	414,483.24	3,948
Oneida	1.8%	6,330.50	114	5,104.91	49
Otsego	1.8%	-	-	-	-
Schoharie	1.8%	547,081.71	9,847	441,166.69	4,202

Notes

1. CO2e from T&D losses calculated based on ratio of estimated % fuel loss and total industrial natural gas use within the region.

Supporting data and calculations are provided in the following E&E Excel Workbook:

File Name:

WNY Industrial Emissions 1-14-13.xlsx

Date:

1/14/2013

Industrial GHG Emissions

2010 Emissions reported as part of EPA MRR Program

Region	Source	Process	CO2e (Metric Tons) Emissions by Type[1] CO2	CH_4	N_2O	CF4	C2F6	CHF3	Total CO2e
New York State									
Mohawk Valley									-
Fulton County	None								
Herkimer County	None								
Montgomery County	None								
Oneida County	None								
Otsego County	None								
Schoharie County	None								

Notes:

1. There are no major GHG emission sources (except landfill and energy generation, which are included elsewhere) reporting to EPA for MRR in the Mohawk Valley.

Ozone Depleting Substance Substitution Emissions

Region	Population	HFC Emissions Total CO2e (Metric Tons)
New York State	**19,378,102**	**4,436,697**
Mohawk Valley	**500,155**	**114,512.57**
Fulton County	55,531	12,714.05
Herkimer County	64,519	14,771.89
Montgomery County	50,219	11,497.85
Oneida County	234,878	53,776.29
Otsego County	62,259	14,254.46
Schoharie County	32,749	7,498.02

Notes:

1. Emissions from HFC use estimated based on 2010 population ratio and 2007 Reported Statewide HFC emissions (New York State Greenhouse Gas Emissions Inventory and Forecasts for the 2009 State Energy Plan, NYSERDA, August 6, 2009)

Supporting data and calculations are provided in the following E&E Excel Workbook:

File Name:

MV Industrial Sources 11-27-12.xlsx

Date:

11/27/2012

Table 1
Greenhouse Gas Emission Inventory Summary
Transportation: On-Road Vehicles
Mohawk Valley New York Region

County	Annual Vehicle Miles Travelled[1] (VMT)	Annual GHG Emissions[2] (metric tons CO_2e/yr)			
		CO_2	N_2O	CH_4	Total
Fulton	420,525,583	190,035	476	163	190,674
Herkimer	734,459,120	338,698	848	291	339,837
Montgomery	767,887,947	366,964	919	315	368,198
Oneida	2,134,447,503	966,998	2,363	830	970,192
Otsego	685,087,994	314,911	788	271	315,970
Schoharie	620,466,537	299,017	749	257	300,023
Mohawk Valley NY Total	**5,362,874,684**	**2,476,625**	**6,144**	**2,125**	**2,484,894**

Notes:

1. VMT data for each county provided by NYSDOT.

2. NYSDOT regional-specific data on fleet profile and national fleet fuel economy data to estimate county-level GHG emissions.

Emission Type	Fuel Type	Mohawk Valley NY Annual GHG Emissions (metric tons CO_2e/yr)
Non-Biogenic	Gasoline[1]	1,936,345
	Diesel	408,014
	Total	***2,344,359***
Biogenic	Ethanol[1]	140,535
TOTAL		**2,484,894**

Notes:

1. Portion of Gasoline E-10.

2. NYSDOT regional-specific data on fleet profile and national fleet fuel economy data to estimate GHG emissions. The distribution of GHG emissions for the components of gasoline E-10 (i.e., gasoline and ethanol) is based on a fraction of 90% gasoline and 10% ethanol.

Fuel Type	Mohawk Valley NY Annual Energy Consumption[1] (MMBtu/yr)
Gasoline (E-10)	29,529,656
Diesel	5,635,324
Total	**35,164,980**

Notes:

1. Annual energy consumption is based on projected fuel consumption calculated from NYSDOT VMT data and national fleet fuel economy data.

County	Annual Fuel Consumption (MMBtu/yr)		
	Gasoline (E-10)	Diesel	Total
Fulton	2,305,976	383,921	2,689,897
Herkimer	4,037,129	753,247	4,790,376
Montgomery	4,242,655	940,638	5,183,293
Oneida	11,683,691	2,001,279	13,684,970
Otsego	3,788,559	803,565	4,592,124
Schoharie	3,471,646	752,674	4,224,320
Mohawk Valley NY Total	**29,529,656**	**5,635,324**	**35,164,980**

Notes:

fleet fuel economy data.

Table 1
Greenhouse Gas Emission Inventory Summary
Transportation: On-Road Vehicles
Mohawk Valley New York Region

Fuel Type	Mohawk Valley NY GHG Emissions (metric tons CO_2e/yr)			
	CO_2	N_2O	CH_4	Total
Finger Lakes	**2,476,625**	**6,144**	**2,125**	**2,484,894**
Gasoline	1,929,503	5,111	1,731	1,936,345
Ethanol	140,418	70	47	140,535
Diesel	406,704	963	347	408,014
Fulton	**190,035**	**476**	**163**	**190,674**
Gasoline	150,675	399	135	151,209
Ethanol	10,965	5	4	10,974
Diesel	28,395	71	24	28,490
Herkimer	**338,698**	**848**	**291**	**339,837**
Gasoline	263,791	699	237	264,726
Ethanol	19,197	10	6	19,213
Diesel	55,710	140	47	55,898
Montgomery	**366,964**	**919**	**315**	**368,198**
Gasoline	277,220	734	249	278,203
Ethanol	20,174	10	7	20,191
Diesel	69,570	175	59	69,804
Oneida	**966,998**	**2,363**	**830**	**970,192**
Gasoline	763,426	2,022	685	766,133
Ethanol	55,558	28	19	55,604
Diesel	148,015	314	126	148,454
Otsego	**314,911**	**788**	**271**	**315,970**
Gasoline	247,549	656	222	248,427
Ethanol	18,015	9	6	18,030
Diesel	49,347	124	42	49,513
Schoharie	**299,017**	**749**	**257**	**300,023**
Gasoline	226,841	601	204	227,646
Ethanol	16,508	8	6	16,522
Diesel	55,668	140	47	55,855

1. Portion of Gasoline E-10.
distribution of GHG emissions for the components of gasoline E-10 (i.e., gasoline and ethanol) is based on a fraction of 90%

Supporting data and calculations are provided in the following E&E Excel Workbook:
File Name:
MV Transportation - Onroad - 2013_1_15.xlsx
Date:
1/15/2013

Table 1
GHG Emission Summary
Transportation: Railroads
Mohawk Valley New York Region

County	Annual Diesel Consumption[1] (gal/yr)	Annual diesel Consuption (MMBtu/yr)	Direct GHG Emissions from Diesel Train Engine Systems[2] (metric tons CO_2e/yr)			
			CO_2	N_2O	CH_4	Total
Fulton	0	0	0	0	0	0
Herkimer	1,866,838	257,624	19,054	48	16	19,118
Montgomery	3,143,283	433,773	32,082	81	27	32,190
Oneida	2,269,425	313,181	23,163	58	20	23,241
Otsego	865,697	119,466	8,836	22	8	8,865
Schoharie	340,570	46,999	3,476	9	3	3,488
Mohawk Valley NY Total	**8,485,813**	**1,171,042**	**86,610**	**218**	**74**	**86,902**

Notes:
1. Diesel consumption based on NYSERDA Study of diesel consumption by rail systems in New York State in 2002. Fuel consumption data allocated spatially to counties by location of rail lines.
2. GHG emissions calculated by applying EPA emission factors to diesel consumption.

County	Annual Electrical Consumption[1] (kW-hr/yr)	Indirect GHG Emissions from Electric Train Systems[2] (metric tons CO_2e/yr)			
		CO_2	N_2O	CH_4	Total
Mohawk Valley NY Total	**0**	-	-	-	-

County	GHG Emissions from All Train Systems (metric tons CO_2e/yr)			
	CO_2	N_2O	CH_4	Total
Fulton	0	0	0	0
Herkimer	19,054	48	16	19,118
Montgomery	32,082	81	27	32,190
Oneida	23,163	58	20	23,241
Otsego	8,836	22	8	8,865
Schoharie	3,476	9	3	3,488
Mohawk Valley NY Total	**86,610**	**218**	**74**	**86,902**

Power/Fuel Type	Mohawk Valley NY Annual Energy Consumption (MMBtu/yr)
Diesel	1,171,042
Electric	0
Total	**1,171,042**

Notes:
1. Energy consumption for diesel systems calculated from diesel consumption based on NYSERDA Study of rail systems in New York State in 2002.
2. Energy consumption for electrical systems calculated by unit conversion.

Supporting data and calculations are provided in the following E&E Excel Workbook:
File Name:
MV Transportation - Rail - 2013_1_14.xlsx
Date:
1/14/2013

Table 1
GHG Emission Summary
Transportation: Commercial Marine Vessels
Mohawk Valley New York Region

Fuel Type	County	Annual Fuel Consumption[1] (gal/yr)	Annual Fuel Consumption[1] (MMBtu/yr)	GHG Emissions[2,3] (metric tons CO_2e/yr)			
				CO_2	N_2O	CH_4	Total
Diesel	Fulton	0	0	0	0	0	0
	Herkimer	37	5	0.8	0.001	0.0003	0.8
	Montgomery	62	9	1	0.002	0.0005	1
	Oneida	50	7	1	0.001	0.0004	1
	Otsego	0	0	0	0	0	0
	Schoharie	0	0	0	0	0	0
	Mohawk Valley NY Total	**150**	**21**	**3**	**0.004**	**0.001**	**3**
Residual Fuel Oil	Fulton	0	0	0	0	0	0
	Herkimer	0	0	0	0	0	0
	Montgomery	0	0	0	0	0	0
	Oneida	0	0	0	0	0	0
	Otsego	0	0	0	0	0	0
	Schoharie	0	0	0	0	0	0
	Mohawk Valley NY Total	**0**	**0**	**0**	**0**	**0**	**0**
All Fuel Types	**Fulton**	**0**	**0**	**0**	**0**	**0**	**0**
	Herkimer	**37**	**5**	**0.8**	**0.001**	**0.0003**	**1**
	Montgomery	**62**	**9**	**1**	**0.002**	**0.0005**	**1**
	Oneida	**50**	**7**	**1**	**0.001**	**0.0004**	**1**
	Otsego	**0**	**0**	**0**	**0.000**	**0.0000**	**0**
	Schoharie	**0**	**0**	**0**	**0.000**	**0.0000**	**0**
	Mohawk Valley NY Total	**150**	**21**	**3**	**0.004**	**0.001**	**3**

Notes:

1. Fuel consumption estimated by dividing annual CO_2 emissions by corresponding fuel heat value and emission-factor-energy.

2. CO_2 emissions calculated by multiplying EPA estimated annual SO_2 emission rate by ratio of CO_2 to SO_2 emissions for applicable fuel.
3. N_2O and CH_4 emissions estimated using using EPA emission factors and fuel consumption estimates.

Fuel Type	Mohawk Valley NY Annual Energy Consumption[1] (MMBtu/yr)
Diesel	21
Residual Fuel Oil	0
Total	**21**

Notes:

1. Annual energy consumption is based on projected fuel consumption.

Supporting data and calculations are provided in the following E&E Excel Workbook:
File Name:
MV Transportation - Com Marine - 2013_1_14.xlsx
Date:
1/14/2013

Table 1
Greenhouse Gas Emission Inventory Summary
Transportation: Aircraft
Mohawk Valley New York Region

County	Annual Jet Fuel Consumption[1] (gal/yr)	Annual Energy Consumption[2] (MMBtu/yr)	GHG Emissions[3,4] (metric tons CO_2e/yr)			
			CO_2	N_2O	CH_4	Total
Fulton	17,416	2,351	167	0.4	0.1	168
Herkimer	19,716	2,662	188	0.5	0.2	189
Montgomery	6,901	932	67	0.2	0.06	67
Oneida	202,422	27,327	1,943	5	1.7	1,950
Otsego	73,280	9,893	705	2	0.6	707
Schoharie	2,596	350	25	0.07	0.02	25
Mohawk Valley NY Total	**322,332**	**43,515**	**3,095**	**8**	**3**	**3,106**

Notes:

1. Jet fuel consumption estimated using the FAA's EDMS model with data input of total landing and take off cycles of specific aircraft types at each airport in each county.
2. Annual energy consumption is based on projected fuel consumption as estimated using FAA's EDMS model.
3. CO_2 emissions estimated using the FAA's EDMS model with data input of total landing and take off cycles of specific aircraft types at each airport in each county.
4. N_2O and CH_4 emissions estimated using using EPA emission factors and jet fuel consumption estimates.

Supporting data and calculations are provided in the following E&E Excel Workbook:
File Name:
MV Transportation - Aircraft - 2012_11_29.xlsx
Date:
11/29/2012

Table 1
GHG Emissions Summary
Transportation: Non-Road Equipment
Mohawk Valley New York Region

County	Energy Consumption (MMBtu/yr)	GHG Emissions[1,2] (metric tons CO_2e/yr)			
		CO_2	N_2O	CH_4	Total
Fulton	466,767	32,953	86	29	33,069
Herkimer	776,114	55,325	144	49	55,517
Montgomery	710,639	51,072	132	45	51,249
Oneida	1,616,964	115,235	298	101	115,635
Otsego	503,854	36,205	93	32	36,330
Schoharie	392,415	28,140	73	25	28,237
Mohawk Valley NY Total	**4,466,754**	**318,931**	**826**	**280**	**320,037**

Notes:

1. CO_2 emissions based on NYSDEC runs of the NONROAD emission model for the state emission inventory for Year 2007.
2. N_2O and CH_4 emissions based the use of EPA emission factors for N2O and CH4 based on fuel combustion. Fuel consumption estimated with reserve application of CO_2 emission factors (for fuel) to CO_2 emissions.

Fuel Type	Mohawk Valley NY Annual Fuel Consumption[1]		Mohawk Valley NY GHG Emissions[2,3] (metric tons CO_2e/yr)			
	(scf/yr)	(gal/yr)	CO_2	N_2O	CH_4	Total
CNG	29,567,988	-	1,612	1	1	**1,613**
Diesel	-	16,363,320	167,012	420	142	**167,574**
Gasoline	-	14,500,341	127,277	337	114	**127,728**
LPG	-	3,974,749	23,030	68	23	**23,121**
TOTAL	-	-	**318,931**	**826**	**280**	**320,037**

Notes:

1. Fuel consumption estimated with reserve application of CO_2 emission factors (for fuel) to CO_2 emissions.
2. CO_2 emissions based on NYSDEC runs of the NONROAD emission model for the state emission inventory for Year 2007.
3. N_2O and CH_4 emissions based the use of EPA emission factors for N_2O and CH_4 based on fuel combustion.

Fuel Type	Mohawk Valley NY Annual Energy Consumption (MMBtu/yr)
CNG	30,396
Diesel	2,258,138
Gasoline	1,812,543
LPG	365,677
Total	**4,466,754**

Notes:

1. Annual energy consumption is based on projected fuel consumption calculated from NYSDEC CO_2 emission estimates.

Supporting data and calculations are provided in the following E&E Excel Workbook:
File Name:
MV Transportation - Nonroad - 2013_1_14.xlsx
Date:
1/14/2013

Waste Disposal Emissions

	Regional average Municipal Solid Waste (MSW) generated per capita (short tons)	Total MSW (Short tons)[3]	Population	CO2e (Metric Tons), 2010[1,2]				
				Nonbiogenic CO2	CH_4	N_2O	Total non biogenic	CO2 biogenic[4]
Mohawk Valley: Direct Emissions[1]		**213,573**	**500,155**	**190**	**151,814**	**1**	**152,006**	**0**
Fulton		41,742	55,531	80	70,867	0	70,948	0
Herkimer		-	64,519	0	0	0	0	0
Montgomery		-	50,219	0	0	0	0	0
Onieda		171,831	234,878	110	52,042	0	52,153	0
Otsego		-	62,259	0	28,905	0	28,905	0
Scholarie		-	32,749	0	0	0	0	0
Mohawk Valley: Indirect Emissions[2]	**0.53**	**267,043**	**500,155**	**0**	**85,764**	**0**	**85,764**	**-**
Fulton	0.38	21,344	55,531	0	6,855	0	6,855	0
Herkimer	0.57	37,029	64,519	0	11,892	0	11,892	0
Montgomery	0.64	32,004	50,219	0	10,278	0	10,278	0
Onieda	0.57	134,802	234,878	0	43,293	0	43,293	0
Otsego	0.48	30,000	62,259	0	9,635	0	9,635	0
Scholarie	0.36	11,864	32,749	0	3,810	0	3,810	0

Notes

1. Total emissions as reported for all waste facilities in Mohawk Valley (includind closed facilities Fulton and Herkimer)in 2010 EPA MRR GHG Reporting Data
2. Indirect emissions calcuated based on tons of waste generated by each county using CARB FOD Model
3. Waste data from MV DEC Waste Summary_WORKING_Dec 17 2012.xlsx, provided by J Dumpert (E&E), compiled data from DEC 2010 Annual Planning Unit Recycling Reports
4. Biogenic emissions were not reported

Supporting data and calculations are provided in the following E&E Excel Workbook:
File Name:
MV Waste 1_14 BOD method.xlsx
Date: 1/15/2013

Wastewater Treatment Facility Emissions: Direct

				CO2e (Metric Tons)[2]			
	Wastewater volume flow (MGD)[1]	Number of Plants[1]	Population[2]	CO2	CH4	N2O	Total CO2e[3]
New York State[2]	**3,693.65**	**610**	**19,378,102**	**-**	**1,310,000**	**580,000**	**1,900,000**
Mohawk Valley[2]	**121.15**	**38**	**500,155**	**-**	**30,000**	**10,000**	**50,000**
Fulton	13.45	4	55,531		3,330	1,110	5,551
Herkimer	16.25	5	64,519		4,024	1,341	6,706
Montgomery	16.41	5	50,219		4,063	1,354	6,772
Oneida	67.21	15	234,878		16,642	5,547	27,737
Otsego	5.120	3	62,259		1,268	423	2,113
Scholarie	2.716	6	32,749		673	224	1,121

[1]Descriptive Data of Municipal Wastewater Treatment Plants in New York State, NYSDEC, January 2004

[2]State and Regional Totals calculated using the EPA State Inventory Tool, Wastewater module, for Municiple waterwater only, using NYS defaults, 2010 population from 2010 US Census.

[3]State and Regional totals reported as calculated by using the EPA State Inventory Tool--may not be exact sum of other rows due to rounding.

[4]County totals calculated based on ratio of 2004 County wastewater volumes and EPA State Inventory Tool results for the region. Significant figures of SIT (million MT, to 100ths) do not provide totals for the smaller population numbers.

Supporting data and calculations are provided in the following E&E Excel Workbook:
File Name:
MV Waste_water11_27.xlsx
Date: 11/27/2012

Manure Management Emissions

			CO_2e (Metric Tons) [2]			
	Population (# of animals)[1]	Number of Animal Farms [1]	CO_2	CH_4	N_2O	Total CO_2e
New York State						
Mohawk Valley	**181,370**	**4,607**		**46,590**	**9,659**	**56,250**
Fulton	6,012	245		1,459	296	1,756
Herkimer	39,688	836		10,112	2,108	12,219
Montgomery	42,130	711		9,869	2,035	11,904
Oneida	40,099	1,060		12,272	2,579	14,852
Otsego	34,331	1,113		8,367	1,724	10,090
Schoharie	19,110	642		4,512	917	5,429

Note

1. The animal and farm number data is from 2007 USDA Agricultural Census.

2.CO_2e calculation is based on the animal number and the factors from 2010 USEPA Draft Regional Greenhouse Gas Inventory Guidance and 2006 IPCC Guidelines for National Greenouse Gas Inventories .

Enteric Fermentation Emissions

			CO_2e (Metric Tons) [2]			
	Population (# of animals)[1]	Number of Animal Farms [1]	CO_2	CH_4	N_2O	Total CO_2e
New York State						
Mohawk Valley	**181,370**	**4,607**		**215,881**		**215,881**
Fulton	6,012	245		9,601		9,601
Herkimer	39,688	836		60,782		60,782
Montgomery	42,130	711		62,857		62,857
Oneida	40,099	1,060		531		531
Otsego	34,331	1,113		52,359		52,359
Schoharie	19,110	642		29,750		29,750

Notes

1. The animal and farm number data is from 2007 USDA Agricultural Census.

2.CO_2e calculation is based on the animal number and the factors from 2010 USEPA Draft Regional Greenhouse Gas Inventory Guidance.

Agricultural Soils Emissions

		CO_2e (Metric Tons) [2]			
	Cropland Harvested (acres)[1]	CO_2	CH_4	N_2O	Total CO_2e
New York State					
Mohawk Valley	**353,530**			**21,599**	**21,599**
Fulton	15,722			960	960
Herkimer	64,172			3,919	3,919
Montgomery	70,982			4,335	4,335
Oneida	87,040			5,324	5,324
Otsego	70,653			4,315	4,315
Schoharie	44,961			2,746	2,746

Notes

1. The cropland harvested data for synthetic fertilizer calculation is from 2007 US Agricultural Census. Assumed most of fertilizer are used on harvested cropland.

2.CO_2e calculation is from organic fertilizer N_2O emission with data sources from NYSDEC7/23/2012 and synthetic fertilizer N_2O emission with data sources from 2007 US Agricultural Census and EPA Commerical Fertilizer Purchased

Supporting data and calculations are provided in the following E&E Excel Workbook:
File Name:
MV_Agriculture102512.xlsx
Date:
10/25/12

Carbon Sequestration in Forests

	Forest Land (Acres)[1]	Forest Land (km^2)	Total Carbon Sequestration (metric tons C)[2]	Total Carbon Sequestration (metric tons CO2)
New York State				
Mohawk Valley	**2,196,666**	**8,890**	**112,125,020**	**411,498,822**
Fulton	288,843	1,169	15,179,560	55,708,984
Herkimer	735,009	2,974	38,844,366	142,558,823
Montgomery	71,530	289	3,374,087	12,382,900
Oneida	447,465	1,811	22,170,562	81,365,961
Otsego	404,866	1,638	19,972,797	73,300,164
Schohaire	248,953	1,007	12,583,648	46,181,989

Notes

1.The forest land data is from Forest Inventory Data Online (FIDO) FIA Standard Reports, New York Current Area, 2010.

2.The total carbon sequestration is calculated based on the carbon stock factor from COLE 1605 (b) Report for New York, July 24, 2012 and the forest land.

Carbon Sequestration in Urban Forests

	Urban Land Area (km^2) [1]	Tree Canopy Cover (%)[2]	Total Carbon Sequestration (metric tons C)[3]	Total Carbon Sequestration (metric tons CO2)
New York State				
Mohawk Valley	**332**		**24,116**	**88,507**
Fulton	37	44%	3,559	13,062
Herkimer	41	34%	3,074	11,283
Montgomery	38	35%	2,958	10,856
Oneida	190	29%	12,446	45,676
Otsego	18	40%	1,624	5,959
Schohaire	8	26%	456	1,672

Notes

1. The urban land area data is from 2000 US Census.

2. The tree canopy cover percentage data is from provided by Eric J. Greenfield, US Department of Agriculture Forest Service, Syracuse, NY on August 1, 2012.

3. The total carbon sequestration is calculated based on the urban land area, tree canopy coverage and the national average net sequestration rate.

Supporting data and calculations are provided in the following E&E Excel Workbook:
File Name:
MR_Forest_102512.xlsx
Date:
10/25/12

Appendix E
Governance and Funding Opportunities

Federal and State Sustainability Policies, Programs and Funding Initiatives

Agency	Policy/Program	Focus	Funding Details	Link
ECONOMIC DEVELOPMENT				
USDOC	Economic Development Administration (Public Works and Economic Development Program)	The purpose of the program is to promote long-term economic development and assist in the construction of public works and development facilities needed to support the creation or retention of permanent jobs in the private sector in areas experiencing substantial economic distress.	EDA assistance generally may average and not exceed 50% of the cost of the program. Projects may receive additional funding, not to exceed 30%, based on the relative needs of the region in which the project will be located (determined by EDA).	https://www.cfda.gov/index?s=program&mode=form&tab=step1&id=5f149ff4e539aca8dc81b7f7fe57b118
NYS: various agencies	NYS Consolidated Funding Application	The CFA has been designed to give economic development project applicants expedited and streamlined access to a combined pool of grant funds and tax credits from dozens of existing programs.	State agencies and authorities making resources available in the 2012 CFA include: Empire State Development; NYS Canal Corporation; NYS Energy Research and Development Authority; NY Power Authority; Environmental Facilities Corporation; Homes and Community Renewal; Department of Labor; Parks, Recreation and Historic Preservation; Department of State; New York Power Authority; Agriculture and Markets; Department of Environment Conservation; and the Council on the Arts.	https://apps.cio.ny.gov/apps/cfa/index.cfm
NYSREDC	Regional Economic Development Council Awards	These awards provide economic development resources from 22 programs across 12 state agencies. The state agency programs provide resources for projects focused on community development and job creation, direct assistance to business, waterfront revitalization, energy and environmental improvements, sustainability and low-cost financing	Funding is provided via the Consolidated Funding Application.	http://regionalcouncils.ny.gov/assets/documents/2012REDCbooklet.pdf
NYSDOS	Citizen Empowerment Tax Credit	Incentive payment for the reorganization of local governments provided to cities, towns and villages.	This annual aid to local governments is equal to 15% of the combined amount of real property taxes levied by all of the cities, towns and villages involved in the consolidation or dissolution, not to exceed one million dollars.	http://www.dos.ny.gov/funding/rfa-11-creg/citizens_reorganization_rfa.pdf
	Local Government Efficiency (LGE) Grant Program	Aims to help local governments find innovative ways to reduce local government costs and save taxpayer dollars through consolidation and reorganization. The competitive program is part of the Governor's agenda to reduce property taxes and shrink the size of government.	Municipalities can receive a maximum of $200,000 per project. Applications must demonstrate financial savings to the local government and its taxpayers, a positive return on public investment, and progressive and measureable management improvements resulting from project implementation.	http://www.governor.ny.gov/press/12312012Local-Government-Efficiency
NYSHCR	New York State Community Development Block Grant Program *	Provides financial assistance to eligible cities, towns, and villages with populations under 50,000 and counties with an area population under 200,000, in order to develop viable communities by providing decent, affordable housing, and suitable living environments, as well as expanding economic opportunities, principally for persons of low and moderate income.	Grants range from $400 to $900,000 per projects.	http://www.nyshcr.org/Programs/NYS-CDBG/
	Neighborhood Preservation Companies Program	Financial support for not-for-profit community-based housing corporations to perform housing and community renewal activities statewide.	Housing corporations provide assistance to housing rehabilitation, home buyer counseling, tenant counseling, landlord/tenant mediation, community rehabilitation and renewal, crime watch programs, employment programs, legal assistance, and Main Street development.	http://www.nyshcr.org/Programs/NPP/
	New York Main Street Program *	Provides financial resources and technical assistance to communities to strengthen the economic vitality of the State's traditional Main Streets and neighborhoods.	Provides between $50,000 and $250,000 for two eligible activities: Building Renovation and Streetscape Enhancement.	http://www.nyshcr.org/Programs/NYMainStreet/
	HOME Program	Funds a variety of activities through partnerships with counties, towns, cities, villages, private developers, and community-based non-profit housing organizations. The program provides funds to acquire, rehabilitate, or construct housing, or to provide assistance to low-income home-buyers and renters.	Program funds may only be used to assist households with incomes at or below 80 percent of area median income. Rental projects must primarily serve households with incomes at or below 60 percent of area median income.	http://www.nyshcr.org/Programs/NYSHome/

Agency	Policy/Program	Focus	Funding Details	Link
NYSESD	Empire State Development Grant Funds *	ESD has several grant programs that together make available For funding for the State's Regional Economic Development Council Initiative, which helps drive regional and local economic development across New York State in cooperation with ten Regional Economic Development Councils ("Regional Councils"). The programs that are included under this category are: • Regional Council Capital Fund • Empire State Economic Development Fund; and • Urban and Community Development Program	Capital grant funding will be allocated among the ten regions, each represented by a Regional Council, based on the implementation of the Strategic Plan and will be allocated to priority projects identified by the Regional Councils as significant, regionally supported and capable of stimulating economic investment.	http://regionalcouncils.ny.gov/assets/documents/2012REDCbooklet.pdf
	Excelsior Jobs Program *	Tax credits are available for strategic businesses such as high tech, bio-tech, clean-tech and manufacturing that create jobs or make significant capital investments.	Firms may qualify for four new, fully refundable tax credits. Businesses claim the credits over a 10 year period. To earn credits, firms must first meet and maintain the established job and investment thresholds outlined in Program Eligibility guidance.	http://esd.ny.gov/BusinessPrograms/Excelsior.html
	Community Development Financial Institution Assistance Program *	Provides lending and technical assistance services to small businesses and MWBEs to help these businesses grow.	Provides micro-loans to businesses who often do not qualify for bank loans, as well as one-on-one counseling and business development assistance to facilitate credit readiness.	http://esd.ny.gov/BusinessPrograms/CDFI.html
	Economic Development Fund	Provides financial assistance for projects that promote the economic health of New York State by facilitating the creation and or retention of jobs or the increase of business activity in the State.	Offers a range of assistance to businesses, municipalities, IDAs and other economic development organizations to ensure that the diversity of business needs are being met by the State.	http://esd.ny.gov/BusinessPrograms/EDF.html
	Economic Development Purposes Grant	Funding is for economic development initiatives and projects that create or retain jobs, generate increased economic activity and improve the economic and social viability and vitality of local communities.	Eligible applicants include for-profit businesses; not-for-profit corporations; business improvement districts; local development corporations; public benefit corporations (including industrial development agencies); economic development organizations; research and academic institutions; incubators; technology parks; municipalities; counties; regional planning councils; tourist attractions; and community facilities. Assistance may be in the form of a loan or a grant. Aggregate ESD assistance should not exceed twenty percent (20%) of the project budget.	http://esd.ny.gov/BusinessPrograms/EconDevPurposesGrants.html
	Environmental Investment Program *	Financial assistance program to help businesses capture the economic benefits associated with pollution prevention, waste reduction, re-use and recycling.	Capital applications may request up to 50% of eligible project costs not to exceed $500,000. RD&D applications may request up to 80% of eligible costs not to exceed $200,000. Technical Assistance Projects may request up to 50% of eligible project costs, not to exceed $100,000 per year.	http://esd.ny.gov/BusinessPrograms/EIP.html
	Global Export Market Services	Provides a matching grant that helps businesses expand through increased export activity. The grant is designed to help small and medium-sized businesses get technical and marketing assistance to succeed in international markets.	Provides up to $25,000 which can be used in a variety of export related activities.	http://esd.ny.gov/BusinessPrograms/GEMS.html
	Job Development Authority Direct Loan Program	Provides direct loans for the growth of manufacturing and other eligible businesses within New York State by assisting in financing a portion of the cost of acquiring and renovating existing buildings or constructing new buildings ("Real Estate" projects) or for purchasing machinery and equipment ("M&E" projects).	Loans can be for up to 40% of the total project cost of Real Estate projects or M&E projects. Loans may be up to 60% for projects located in Empire Zones or economically distressed area. The combination of a bank loan and a JDA Loan allows up to 90% financing of a project.	http://esd.ny.gov/BusinessPrograms/JDADirectLoanProgram.html
	Jobs Now Program	Provides financial assistance for major business expansion and attraction efforts that will create or attract significant numbers of permanent, full time private sector jobs in New York State.	Loans and grants of up to $10,000 per job for projects that promote the economic health of New York State by creating private sector jobs and increasing business activity through expansion of existing companies and the attraction of new companies to New York State.	http://esd.ny.gov/BusinessPrograms/JOBSNow.html
	Manufacturing Assistance Program	Assists New York State manufacturers invest in capital projects that significantly improve production, productivity and competitiveness.	MAP funds must be used for capital investments in machinery and equipment. Projects may also include Industrial Effectiveness consulting and or worker skills training. Assistance is capped at $1 million. Award amounts are based on the magnitude of the improvements and their overall benefit to the company; the amount of private investment leveraged; and the economic impact of the manufacturer within its regional economy.	http://esd.ny.gov/BusinessPrograms/MAP.html

Agency	Policy/Program	Focus	Funding Details	Link
NYSESD	Micro Enterprise Loan Fund	Small loans to NYS-certified Minority and Women-Owned Business Enterprises (MWBEs) through authorized, locally based administering micro-lending corporations.	Loans up to a maximum of $7,000. May be used for acquisition or improvement of real property and purchase of machinery and equipment.	http://esd.ny.gov/BusinessPrograms/Data/MICROLENDING/MicroLendingProgramFACTSHEET.pdf
	Regional Council Capital Fund	Funding is for capital-based economic development initiatives intended to create or retain jobs; prevent, reduce or eliminate unemployment and underemployment; and/or increase business activity in a community or region.	Eligible applicants include for-profit businesses; not-for--profit corporations; business improvement districts; local development corporations; public benefit corporations (including industrial development agencies); economic development organizations; research and academic institutions; incubators; technology parks; municipalities; counties; regional planning councils; tourist attractions; and community facilities.	http://esd.ny.gov/BusinessPrograms/RegionalCouncilCapFund.html
	Federal Industrial Development Bond Cap *	Up to $350 million from the Federal IDB Cap allocation will be available for State and local government issuers to sell tax exempt bonds for private projects that demonstrate a public purpose.	Qualifying projects must be eligible under the Internal Revenue Code (IRC) sections 142-144,and 1394 which include: * Multi-family and/or elderly rental housing for low income residents; * Residential Rental Facilities; * Small manufacturing Projects; * Local furnishing of electric energy or gas; * Local district heating or cooling facilities; * Sewage facilities and solid waste disposal facilities; * First-time farmer's property, equipment, and other capital improvements; * Utility projects, including water, sewer, electric and gas; * Bonds issued to provide loans for first time homebuyers (homeownership)	http://www.empire.state.ny.us/BusinessPrograms.html
	Regional Revolving Loan Trust Fund	Six Regional Revolving Loan Trust Fund (RRLTF) programs operated by regional not-for-profit organizations in New York State for the purpose of making working capital loans and loan guarantees to small businesses employing fewer than 100 employees.	The RRLTF offers working capital loans of up to $75,000 or 50% of the total project cost, whichever is less, and working capital loan guarantees of up to 80% of the loan amount, not to exceed $80,000.	http://esd.ny.gov/BusinessPrograms/RRLTF.html
	Small Business Revolving Loan Fund	Provides greater access to capital for main street everyday small businesses that have had difficulty accessing regular credit markets.	Program funds used to finance an applicant loan will not be more than 50% of the principal amount and no greater than $125,000.	http://esd.ny.gov/BusinessPrograms/SBRLF.html
	Urban and Community Development Program	Encourages economic and employment opportunities for New York State's citizens and stimulates development of communities and urban areas.	Preference given to projects located in highly distressed communities and for projects where other public or private funding sources are not available. Loan and grant amounts are determined based on both project location and project costs.	http://esd.ny.gov/BusinessPrograms/UCDP.html
	Regional Tourism Marketing Grant Initiative (I LOVE NEW YORK Fund) *	ESD will be accepting applications for business attraction marketing campaigns or regionally themed marketing projects which promote tourism destinations, attractions, events and other tourism-related activities that will attract visitors to New York State.	For the 2012-2013 Fiscal Year, $3 million has been appropriated by the Legislature for Regional Tourism Marketing Grant projects which promote regionally themed marketing projects and promote tourism destinations, attractions, events and other tourism-related activities that work to support the Regional Council long term strategic plans for economic growth in their regions, as well as to attract visitors to New York State.	Contact the New York State Division of Tourism staff at RegionalTourism@esd.ny.gov and/or 518.292.5360
NYSCA	New York State Council on the Arts – Grant Program *	Funds are available for the study of and presentation of the performing and fine arts; surveys to encourage participation in the arts; to encourage public interest in the cultural heritage of the state, and to promote tourism by supporting arts and cultural projects.	The Council on the Arts awards grants to nonprofit organizations incorporated in New York State, Indian tribes, and units of local government. The mission of the applicant or the lead applicant in a partnership must be primarily related to arts and culture.	http://www.nysca.org/public/grants/index.htm
NYSDOL	Workforce Investment Act *	Provides grants on a competitive basis for occupational skills upgrading and training of employed and unemployed workers to enhance hiring and workforce skills, commensurate with regional economic development strategic plans.	The maximum grant that an applicant may receive if it applies for one, two or all three types of training is $100,000. The maximum cost per trainee is $5,000.	http://labor.ny.gov/cfa/index.shtm
NYSERDA	Green Jobs - Green New York	Aims to promote energy efficiency and the installation of clean technologies to reduce energy costs and reduce greenhouse gas emissions. The program will support sustainable community development and create opportunities for green jobs.	Variety of funding, technical and training support, including energy assessments, installation services, low-cost financing (currently for residential customers only), and pathways to training for various green-collar careers.	http://www.nyserda.ny.gov/Energy-Efficiency-and-Renewable-Programs/Green-Jobs-Green-New-York.aspx

Agency	Policy/Program	Focus	Funding Details	Link
	Entrepreneurs-in-Residence Program	Executive level mentoring and management advice for start-up, seed, and early-stage clean energy companies in New York State.	Not a grant program but free technical assistance.	http://www.nyserda.ny.gov/Energy-Innovation-and-Business-Development/Entrepreneurs-in-Residence-Program.aspx
	Clean Energy Business Partners	Clean Energy Business Partners range from emerging to established companies who use innovative research and cutting edge technology to develop energy efficient and clean energy technologies. These companies have received support from NYSERDA to nurture and grow their ideas into a commercial viable product or process.	No specific funding. Companies in six primary program areas; buildings, energy resources, environmental, industrial, power systems, transportation, that have established relationships with NYSERDA.	http://www.nyserda.ny.gov/Energy-Innovation-and-Business-Development/Product-Development-Partners.aspx
	PON 2397 - Incentive Pool to Support Energy Efficiency Training Program Accreditation	Reimbursement on a first-come, first-served basis to qualified training organizations in New York State that are eligible for and submit complete applications to the Interstate Renewable Energy Council (IREC) Institute for Sustainable Power Quality (ISPQ) Program for accreditation of energy efficiency training programs offered in New York State.	Funding for up to eighty percent of the total, up to a maximum of $5,000 per applicant.	http://www.nyserda.ny.gov/Funding-Opportunities/Current-Funding-Opportunities/PON-2397-Incentive-Pool-to-Support-Energy-Efficiency-Training-Program-Accreditation.aspx
TRANSPORTATION				
NYSDOT on behalf of FTA	Federal Section 5311 Program (Public Transportation in Non-urbanized Areas	Provides funds for the purpose of supporting public transportation in areas with populations of less than 50,000 people.	Any county, city, Indian tribe or regional transportation authority, wholly or partially within a non-urbanized area, may apply for Section 5311 funds. The maximum Federal share is 50% of the net operating costs. State operating funds (STOA) may be used as federal match. Maximum Federal share is 80% of the eligible capital project cost. New York State provides 50% of the non-federal share (up to 10% of project cost). Local funds must be used for the remaining 10% share.	https://www.dot.ny.gov/divisions/policy-and-strategy/public-transportation/rural-programs/5311
NYSDOT	Rural Transportation Assistance Program	Provides funds for training, technical assistance, and related support for transit systems in non-urbanized areas.	Delivers training and technical assistance to operators by providing statewide or regional training events, an annual conference, and scholarships for operators to use to meet individual training needs.	https://www.dot.ny.gov/divisions/policy-and-strategy/public-transportation/rural-programs/rtap
FTA/NYSDOT	Clean Fuels Formula Grant Program	Provide assistance for non-attainment and maintenance areas in achieving or maintaining the National Ambient Air Quality Standards for ozone and carbon monoxide (CO). Support emerging clean fuel and advanced propulsion technologies for transit buses and markets for those technologies.	Eligible applicants under this program are designated recipients, which are entities designated to receive Federal urbanized formula funds under 49 U.S.C. 5307. Applicants must be in areas that are maintenance or non-attainment for ozone or CO.	https://www.dot.ny.gov/divisions/policy-and-strategy/public-transportation/reports-publications/clean-fuels-program
LAND USE AND LIVABLE COMMUNITIES				
NYSDOS	Local Waterfront Revitalization Program *	The Local Waterfront Revitalization Program provides matching grants on a competitive basis to revitalize communities and waterfronts.	Projects that revitalize communities and waterfronts and also advance the strategies of Regional Economic Development Councils.	http://www.dos.ny.gov/funding/
NYSOPRHP	Environmental Protection Fund (EPF) Municipal Grant *	The program offers matching grants for the acquisition, planning, development, and improvement of parks, historic properties listed on the National or State Registers of Historic Places and heritage areas identified in approved plans for statutorily designated Heritage Areas.	Funds are available to municipalities or not-for-profits with an ownership interest. The maximum award is $500,000.	http://www.nysparks.com/grants/
	Community Grant Opportunities *	Grant programs for a variety of projects that promote recreation, preserve our historic and natural resources and generally improve the quality of life in communities throughout the state.	Provides a variety of grants through the Consolidated Funding Application process.	http://nysparks.com/grants/
NYSHCR	Neighborhood Preservation Companies Program	Financial support for not-for-profit community-based housing corporations to perform housing and community renewal activities statewide.	Housing corporations provide assistance to housing rehabilitation, home buyer counseling, tenant counseling, landlord/tenant mediation, community rehabilitation and renewal, crime watch programs, employment programs, legal assistance, and Main Street development.	http://www.nyshcr.org/Programs/NPP/
	New York Main Street Program *	Provides financial resources and technical assistance to communities to strengthen the economic vitality of the State's traditional Main Streets and neighborhoods.	Provides between $50,000 and $250,000 for two eligible activities: Building Renovation and Streetscape Enhancement.	http://www.nyshcr.org/Programs/NYMainStreet/

Agency	Policy/Program	Focus	Funding Details	Link
	Rural Area Revitalization Program *	Provides financial/technical resources to New York communities for the restoration and improvement of housing, commercial areas and public/community facilities in rural areas of the state.	Provides between $50,000 and $200,000 to undertake housing preservation and community renewal activities in distressed rural areas by preserving existing housing units, generating new housing units, upgrading commercial and retail areas and by creating innovative approaches to neighborhood and community revitalization which improve cultural and community facilities.	http://www.nyshcr.org/Programs/RARP/
	New York State Community Development Block Grant Program *	Provides financial assistance to eligible cities, towns, and villages with populations fewer than 50,000 and counties with an area population under 200,000, in order to develop viable communities by providing decent, affordable housing, and suitable living environments, as well as expanding economic opportunities, principally for persons of low and moderate income.	Grants range from $400 to $900,000 per projects.	http://www.nyshcr.org/Programs/NYS-CDBG/
	Urban Initiatives Program *	Provides financial/technical resources to New York communities for the restoration and improvement of housing, commercial areas and public/community facilities in urban neighborhoods. This program will provide grants to not-for-profit community based organizations and charitable organizations that have a direct interest in improving the health, safety and economic viability of a distressed urban neighborhood or other aspects of the area environment that are related to community preservation or renewal activities.	Provides between $50,000 and $200,000 to undertake housing preservation and community renewal activities in distressed neighborhoods by preserving existing housing units, generating new housing units, upgrading commercial and retail areas and by creating innovative approaches to neighborhood and community revitalization which improve cultural and community facilities.	http://www.nyshcr.org/Programs/UrbanInitiatives/
	HOME Program	Funds a variety of activities through partnerships with counties, towns, cities, villages, private developers, and community-based non-profit housing organizations. The program provides funds to acquire, rehabilitate, or construct housing, or to provide assistance to low-income home-buyers and renters.	Program funds may only be used to assist households with incomes at or below 80 percent of area median income. Rental projects must primarily serve households with incomes at or below 60 percent of area median income.	http://www.nyshcr.org/Programs/NYSHome/
	Residential Emergency Services to Offer (Home) Repairs to the Elderly (RESTORE)	Funds may be used to pay for the cost of emergency repairs to eliminate hazardous conditions in homes owned by the elderly when the homeowners cannot afford to make the repairs in a timely fashion. Eligible program administrator applicants are not-for-profit corporations and municipalities.	Homeowners must be 60 years of age or older and have a household income that does not exceed 80 percent of the area median income. Funds must be used for one- to four-unit dwellings that are owned and occupied by eligible households, and work undertaken cannot exceed $5,000 per building.	http://www.nyshcr.org/Programs/RESTORE/
NYSCC	Canalway Grants Program *	Projects are intended to meet the objectives of the Regional Economic Development Councils Strategic Plans and the NYS Canal Recreation way Plan. Projects should preserve and rehabilitate canal infrastructure, enhance recreational opportunities for water-based and landside users, promote tourism, economic development, and revitalization of the canal corridor.	The “Canalway Grants Program” includes up to $1.0 million in competitive grants available to eligible municipalities, and 501(c)(3) non-profit organizations along the New York State Canal System. The minimum grant request amount is $50,000. The maximum grant request is $150,000. Grant administration and pre-development costs shall not exceed 10% of the grant award amount.	http://www.canals.ny.gov/corporation/grant-muni.html
NYSESD	New York Healthy Food & Healthy Communities Fund	Provides grants and loans for food markets in underserved to increase the availability of nutritious food choices.	Open to food markets in New York State that are located in: a low- or moderate-income census tract; a census tract with below average food market density; or a food market site with a customer base of 50% or more living in a low-income census tract.	http://esd.ny.gov/BusinessPrograms/HealthyFoodHealthyCommunities.html
WATER MANAGEMENT				
USACE	Civil Work Program	Navigation, flood damage reduction and aquatic ecosystem restoration.	USACE projects financed up front by the federal government and repaid 100% with interest by nonfederal sponsors (typically 30-50 year) repayment contracts.	http://www.usace.army.mil/CEMP/iis/Pages/Home.aspx
	Infrastructure Improvements	Design and construction of drinking water and wastewater infrastructure and surface water protection and development projects.	Most projects are financed 75% federally and 25% locally. The federal portion is typically provided by Congress to the Corps; specifics of how the Corps manages the nonfederal portion varies by project.	http://www.usace.army.mil/CEMP/iis/Pages/Home.aspx

Agency	Policy/Program	Focus	Funding Details	Link
USEPA See NYSEFC	Clean Water State Revolving Fund Loan Program	The State Revolving Funds (SRF) are co-funded by the federal government (80%) and the state government (20%) and provide loan assistance in furtherance of Clean Water Act compliance. The SRF program provides assistance in constructing publicly owned municipal wastewater treatment plants, implementing nonpoint pollution management programs, and developing and implementing management plans under the National Estuary Program.	Clean Water SRFs may provide seven different types of assistance: making loans; buying or refinancing existing local debt obligations; guaranteeing or purchasing insurance for local debt obligations; guaranteeing SRF debt obligations; providing loan guarantees for sub-state revolving funds; earning interest on fund accounts; and supporting reasonable costs of administering the SRF. States cannot use SRFs as a source of grants. Loans are provided at or below market interest rates, including possible zero interest loans (exact rates are negotiated by the applicant and state SRF).	https://www.cfda.gov/index?s=program&mode=form&tab=step1&id=312e4abeea3cc908bc55deb5e07ec37f
USEPA See NYSEFC	Drinking Water State Revolving Fund Loan Program	The Safe Water Drinking Act (SDWA) sets mandatory standards for public water systems of to control levels of approximately 90 contaminants in drinking water. In order to aid municipalities in meeting these requirements, Congress established a drinking water state revolving fund (DWSRF) loan program patterned closely on the clean water SRF.	State funds are required to give funding priority to projects that (1) address the most serious health risks; (2) are needed to ensure compliance with SDWA regulations; and (3) assist systems most in need on a per household basis. States must make available at least 15% of their annual allotment to public water systems that serve 10,000 or fewer persons. States may use DWSRF to make low or zero interest loans to public water systems; loan recipients generally must repay the entire loan plus any interest.	https://www.cfda.gov/index?s=program&mode=form&tab=step1&id=1fa58ab3aad3cbec5929ec0f5e88362b
USDA	Rural Utilities Service (Water and Waste Disposal Programs)	Provide basic human amenities, alleviate health hazards and promote growth of nation's rural areas by meeting needs for new and improved rural water and/or waste disposal facilities.	USDA prefers to make loans; grants are only offered when necessary to reduce average annual user charges to a reasonable level. Loans are either directly offered by USDA or are guaranteed by USDA up to 90% of value when offered by private lenders and are repayable in not more than 40 years or the usable life of the funded facility, whichever is less.	http://www.rurdev.usda.gov/ny/index.htm
	Natural Resources Conservation Service (Small Watershed Program)	Provide technical and financial assistance to state and local organizations to plan and install measure to prevent erosion, sedimentation, and flood damage and to conserve develop and utilize land and water resources.	Costs for non-agricultural water supply must be repaid by local organizations but up to 50% of costs for land, easements and rights-of-way allocated to public fish and wildlife and recreational developments may be paid with program funds. Sponsors may apply for USDA RUS Water and Waste Program loans to finance the local share of project costs.	http://www.nrcs.usda.gov/programs/watershed/
	Agricultural Water Enhancement Program	A voluntary conservation initiative that provides financial and technical assistance to agricultural producers to implement agricultural water enhancement activities on agricultural land to conserve surface and ground water and improve water quality.	AWEP is not a grant program. Eligible partners enter into multi-year agreements with NRCS to promote ground and surface water conservation, or improve water quality on eligible agricultural lands. AWEP is intended to leverage investment in natural resources conservation along with services and non-Federal resources of other eligible partners.	http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/awep/
	Agricultural Management Assistance	Provides financial and technical assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation into their farming operations.	The program pays financial assistance of up to 75 percent of the cost of installing conservation practices. Total AMA payments shall not exceed $50,000 per participant for any fiscal year.	http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/ama/?cid=stelprdb1042016
	Agricultural Water Enhancement Program	A voluntary conservation initiative that provides financial and technical assistance to agricultural producers to implement agricultural water enhancement activities on agricultural land to conserve surface and ground water and improve water quality.	AWEP is not a grant program. Eligible partners enter into multi-year agreements with NRCS to promote ground and surface water conservation, or improve water quality on eligible agricultural lands. AWEP is intended to leverage investment in natural resources conservation along with services and non-Federal resources of other eligible partners.	http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/awep/
NYSEFC	Green Innovation Grant Program *	Financial assistance, technical support and administrative guidance for innovative projects that will help to protect and improve water quality.	Up to 90% of construction costs (including eligible planning and design costs). Minimum local match of 10% from local or State (non-federal) funds. Range of recipients, including small or large municipalities, private or public institutions, small businesses and non-profits.	http://www.nysefc.org/Default.aspx?tabid=461
NYSEFC	Clean Water State Revolving Fund *	Provides low-interest rate financing to municipalities to construct water quality protection projects such as sewers and wastewater treatment facilities. Eligible projects include point source projects such as wastewater treatment facilities and nonpoint source projects such as stormwater management projects and landfill closures, as well as certain habitat restoration and protection projects in national estuary program areas.	A variety of publicly-owned water quality improvement projects are eligible for financing. For communities with demonstrated financial hardship, interest rates can be reduced to as low as zero percent.	http://www.nysefc.org/Default.aspx?tabid=82
NYSEFC/ NYSDEC	CWSRF Engineering Planning Grant	The New York State Environmental Facilities Corporation, in conjunction with the New York State Department of Environmental Conservation, will offer grants to municipalities to help pay for the initial planning of eligible Clean Water State Revolving Fund (CWSRF) water quality projects.	The CWSRF Engineering Planning Grant will assist municipalities facing economic hardship with the engineering and planning costs of CWSRF-eligible water quality projects. Grants of up to $30,000 (with a 20% required local match) will be provided to finance activities including engineering and/or consultant fees for engineering and planning services for the production of an engineering report.	http://www.efc.ny.gov

Agency	Policy/Program	Focus	Funding Details	Link
MATERIALS AND SOLID WASTE MANAGEMENT				
NYSDEC	Municipal Waste Reduction and Recycling Program (MWR&R)	State assistance for projects that enhance municipal recycling infrastructure through purchasing of equipment or construction of facilities. Some communities used funding to construct materials recycling facilities or state-of-the-art composting facilities. Other communities have been able to purchase recycling containers and new recycling vehicles with their MWR&R funding.	Funding is provided on a 50% reimbursement rate for eligible costs.	http://www.dec.ny.gov/pubs/4776.html
	Household Hazardous Waste State Assistance Program	DEC is authorized to provide State assistance for HHW collection days, and construction of permanent HHW collection facilities in order to provide a safe alternative for recycling or disposal of household hazardous materials.	Funding is provided on a 50% reimbursement rate for eligible costs.	http://www.dec.ny.gov/pubs/4776.html
	State Assistance Guidelines for SW Municipal Landfill Closure Projects	Municipalities that have inactive solid waste landfills or landfills that will be inactive within 18 months of application that have eligible closure costs incurred after April 1, 1993. Projects can also include a municipal solid waste landfill gas management system required to meet the new source performance standards or emission guidelines of the USEPA Landfill Gas Rule.	State assistance payments will be used for reimbursement of 50 percent of total eligible project costs (90 percent for municipalities with populations less than 3,500) or $2 million, whichever is less.	http://www.dec.ny.gov/chemical/23702.html
	Municipal Landfill Gas Management Program	Provides financial assistance for Municipal Landfill Gas Management projects that promote improved air quality at solid waste landfills and encourage energy recovery from landfill gas.	State assistance grants will provide a maximum of 50% of total eligible project costs, or $2 million, whichever is less.	http://www.dec.ny.gov/chemical/49845.html
	Environmental Restoration Program	Aimed at spurring cleanup and redevelopment of brownfields.	State provides grants to municipalities to reimburse up to 90 percent of on-site eligible costs and 100% of off-site eligible costs for site investigation and remediation activities. Once remediated, the property may then be reused for commercial, industrial, residential or public use.	http://www.dec.ny.gov/chemical/8444.html
	Technical Assistance Grant	AGs are a citizen participation tool available to eligible community groups to increase public awareness and understanding of remedial activities taking place in their community.	Eligible community groups may apply (see information and application in the right column) to receive grants for up to $50,000 per eligible site. There is no matching contribution required on the part of the grant recipient.	http://www.dec.ny.gov/regulations/2590.html
	Brownfield Cleanup Program	Enhance private-sector cleanups of brownfields and to reduce development pressure on undeveloped/greenfields land.	Taxpayer can enter into a Brownfield Cleanup Agreement (BCA) with DEC and be eligible for tax credits relating to the cleanup and redevelopment of a brownfield site.	http://www.dec.ny.gov/chemical/8450.html
NYSDOS	Brownfield Opportunity Area	Grants and technical support to help municipalities and community organizations complete and implement revitalization strategies for their communities.	BOA-funded projects may be reimbursed for up to 90 percent of the total eligible project costs.	http://www.dos.ny.gov/communitieswaterfronts/grantOpportunities/boagrants.html
NYSESD	Environmental Investment Program *	Financial assistance program to help businesses capture the economic benefits associated with pollution prevention, waste reduction, re-use and recycling.	Capital applications may request up to 50% of eligible project costs not to exceed $500,000. RD&D applications may request up to 80% of eligible costs not to exceed $200,000. Technical Assistance Projects may request up to 50% of eligible project costs, not to exceed $100,000 per year.	http://esd.ny.gov/BusinessPrograms/EIP.html
ENERGY				
USDOE	Solar Tax Incentives	Tax incentives for residential solar installation.	A 25 percent tax credit ($5,000 maximum) for grid connected and net metered residential (including multi-family) solar electric and solar thermal systems. Exemption from state sales tax for passive solar space heat, solar water heat, solar space heat and photovoltaics installed in residential and multi-family residential buildings. Subject to local option, a 15-year real property tax exemption for the cost of solar and certain other renewable energy systems constructed in New York State, to ensure that property taxes do not rise because owners install solar energy equipment.	http://www.dsireusa.org/incentives/index.cfm?getRE=1?re=undefined&ee=1&spv=0&st=0&srp=1&state=NY

Agency	Policy/Program	Focus	Funding Details	Link
NYPA	ReCharge New York (RNY) *	ReCharge New York (RNY) is a new statewide economic development power program designed to retain or create jobs through allocations of lower cost electricity to businesses and Not-for-Profit Corporations. The majority of the power remaining to be allocated will be for businesses that plan to expand operations in the state or are looking to relocate to New York State.	Allocations of ReCharge New York power will be awarded based on a competitive application process based on legislated criteria. Recommended allocation awards must be approved by the New York State Power Allocation Board and the New York Power Authority Board of Trustees. Allocations of RNY power (in kW) will be delivered after the execution of a contract. The contract will be for a term of up to seven years and will specify employment commitments and other terms and conditions for retaining the lower cost RNY power allocation.	For more information, eligible applicants should call the ReCharge New York Hotline at 888-JOBSNYS (888-562-7697) or email Recharge.NewYork@nypa.gov
NYSDEC	Municipal Landfill Gas Management Program	Provides financial assistance for Municipal Landfill Gas Management projects that promote improved air quality at solid waste landfills and encourage energy recovery from landfill gas.	State assistance grants will provide a maximum of 50% of total eligible project costs, or $2 million, whichever is less.	http://www.dec.ny.gov/chemical/49845.html
NYSERDA	On-Bill Recovery Financing Program	Enables resident to finance energy efficiency improvements through a charge on their utility bill.	Payments appear as a separate line item on the utility bill and are financed at a special low interest rate. Payments are transferable if the property is sold.	http://www.nyserda.ny.gov/Statewide-Initiatives/On-Bill-Recovery-Financing-Program.aspx
	Home Performance with ENERGY STAR	Subsidy program to partly fund energy efficiency residential projects. Includes free or reduced-cost comprehensive home energy assessment and low-cost financing. Can be used to fund a geothermal system.	Provides income-eligible New Yorkers with the Assisted Subsidy, which represents up to 50% of the total cost of an approved energy efficiency project, up to $5,000 for a single family home and up to $10,000 for a 2- to 4- family home. Low-interest financing is also available to cover the balance of the energy efficiency project. Also available for existing 1- to 4- family homes with a total household income at or below 80% of the State or Area Median Income (whichever is greater).	http://www.nyserda.ny.gov/Funding-Opportunities/Closed-Funding-Opportunities/Assisted-Home-Performance-Program-with-ENERGY-STAR.aspx
	Multifamily Performance Program	Provides incentives to help residential building owners, developers and condo/co-op boards improve the energy efficiency of their buildings.	Incentives come in the form of per unit payments. Existing buildings that project at least 20% energy reduction in the Energy Reduction Plan may also be eligible for an additional Performance payment.	http://www.nyserda.ny.gov/Multifamily-Performance-Program/Multifamily-Performance-Program.aspx
	EmPower New York	Free energy efficiency improvements for available for low-income homeowners and renters.	Free for residents in buildings with 100 units or less who either participate in a utility payment assistance program or have a household income of less than 60 percent of the state median.	http://www.nyserda.ny.gov/Residential/Programs/Low-Income-Assistance/EmPower-for-Residents.aspx
	Existing Facilities Program *	Offers a portfolio of incentive opportunities to offset the cost of energy improvements in existing commercial facilities across New York State.	Two paths: Small, Simple Equipment Changeouts - Up to $30,000 Large, Custom Improvements - Up to $2 Million	http://www.nyserda.ny.gov/Commercial-and-Industrial/CI-Programs/Existing-Facilities-Program.aspx
	FlexTech Program *	Provides commercial, industrial, institutional, government, and not-for-profit sectors with objective and customized information. Goal is to increase productivity and economic competitiveness of participating facilities by identifying and encouraging the implementation of cost-effective energy efficiency, technical evaluations, process improvement analysis, energy master plans, retro-commissioning, and development of peak load curtailment plans (PLCPs) as well as combined heat & power (CHP) projects.	Cost-sharing incentives are available to eligible participants for the following types of studies: • General Energy Feasibility Studies • Peak-Load Reduction and Load Management • Industrial and Process Efficiency Analysis • Data Center Efficiency Analysis • Energy Efficiency Retro-Commissioning • Long-Term Energy and Carbon Management • Combined Heat and Power (CHP) Studies • Peak-Load Curtailment Plan (PLCP)	http://www.nyserda.ny.gov/Commercial-and-Industrial/CI-Programs/FlexTech-Program.aspx
	Industrial and Process Efficiency (IPE) Program *	Provides performance-based incentives to manufacturers and data centers implementing energy efficiency and process improvements.	Incentives are calculated based on a reduction in energy usage per unit of production or workload.	http://www.nyserda.ny.gov/Commercial-and-Industrial/CI-Programs/Industrial-and-Process-Efficiency.aspx
	Energy $mart Communities Program	Community-based access to the New York State Energy Research and Development Authority (NYSERDA) energy-efficiency and research and development (R&D) programs.	Communities Coordinators in 10 regions strategically located throughout the State to help extend NYSERDA program outreach to residential, commercial, institutional, municipal, and industrial customers.	http://www.nyserda.ny.gov/Energy-Efficiency-and-Renewable-Programs/Community-Outreach.aspx

Agency	Policy/Program	Focus	Funding Details	Link
	New Construction Program *	Aimed at commercial/industrial businesses, provides assistance when incorporating energy-efficiency measures into the design, construction, and operation of new and substantially renovated buildings.	Technical Assistance is available to help evaluate energy-efficiency measures and provide guidance to design team. Funding is available to offset the additional costs associated with the purchase and installation of approved equipment. Assistance also may be available for commissioning services and green building opportunities.	http://www.nyserda.ny.gov/Commercial-and-Industrial/CI-Programs/New-Construction-Program.aspx
	Green Jobs - Green New York	Aims to promote energy efficiency and the installation of clean technologies to reduce energy costs and reduce greenhouse gas emissions. The program will support sustainable community development and create opportunities for green jobs.	Variety of funding, technical and training support, including energy assessments, installation services, low-cost financing (currently for residential customers only), and pathways to training for various green-collar careers.	http://www.nyserda.ny.gov/Energy-Efficiency-and-Renewable-Programs/Green-Jobs-Green-New-York.aspx
NYSERDA	Consumer Education Program for Residential Energy Efficiency	Energy efficiency consumer education program.	No specific funding mechanism, aims to increase consumer awareness on the importance of energy efficiency , promote specific programs that encourage the purchase and installation of energy efficient products and the incorporation of comprehensive building practices, spur consumer demand through education and incentive programs; and develop and support the midstream market infrastructure that brings these products and practices to customers.	http://www.nyserda.ny.gov/Community-Outreach/Consumer-Education.aspx
	PON 2589 NY-Sun Competitive PV Program	Invites proposals for the installation of customer-sited PV projects.	All systems must be greater than 50 kW. Complete proposals that demonstrate project viability and capability will be competitively selected based on their incentive bid in dollars per kilowatt hour ($/kWh). All Projects must be installed within eight (8) months of the award date.	http://www.nyserda.ny.gov/Renewables/Solar-Technologies.aspx
	PON 2112 Solar PV Program Incentives (for systems 50 kW and smaller)	Offers homeowner incentives to help reduce the installation costs associated with photovoltaic (PV) or solar-electric systems 7 kilowatt (kW) and smaller. Incentives are also available for not-for-profit and commercial customers.	Enables savings of 40-70% off solar electric system, when combining with other New York Energy $martSM programs. Also provides a credit for excess electricity production.	http://www.nyserda.ny.gov/Renewables/Solar-Technologies.aspx
	Solar Thermal Program Incentives	Incentives are available to residential (single and multifamily), commercial, and not-for-profit customers for new end-use Solar Thermal water heating system.	Incentives to help fund the installation cost of Solar Thermal for the production of hot water to displace electrically heated hot water. Systems are capped at $4,000 per site/meter for residential systems and $25,000 per site/meter for non-residential applications.	http://www.nyserda.ny.gov/Renewables/Solar-Technologies.aspx
	On-Site Wind Program	Provides incentives to individuals or organizations for installation of wind turbines by eligible installers.	Incentive is based on the expected annual energy output (AEO) of the proposed wind energy system.	http://www.nyserda.ny.gov/Renewables/Small-Wind.aspx
	Biomass Heating R&D and Biomass Resources Programs	Programs designed to support the state's biomass energy initiatives.	Biomass Heating R&D program supports development of high efficiency, low emission biomass heating technologies. Biomass Resources Program Funds research on transportation biofuels and other bioproducts, as well as biomass feedstock supply issues.	http://www.nyserda.ny.gov/Research-and-Development/Biomass-Research.aspx
NYSHCR	Weatherization Assistance Program	Assists income-eligible families and individuals by reducing their heating/cooling costs and improving the safety of their homes through energy efficiency measures. Both single family and multifamily buildings are eligible.	Households with incomes at or below 60% of state median income are eligible for assistance. Both single-family and multi-family buildings are assisted. Household energy use reductions and resultant energy cost savings are significant, with an average savings in excess of 20%. Individual households apply by contacting the provider that serves their area.	http://www.nyshcr.org/Programs/WeatherizationAssistance/
NYSOTDA	Home Energy Assistance Program	A federally funded program that issues heating benefits to supplement a household's annual energy cost. Program also offers an emergency benefit for households in a heat or heat related energy emergency and offers a heating equipment repair and/or replacement benefit for homeowners with inoperable heating equipment.	Aimed at low-income qualifying New York households.	http://otda.ny.gov/programs/heap/

Agency	Policy/Program	Focus	Funding Details	Link
AGRICULTURE AND FORESTRY				
USFS	Forest Legacy Program	Federal grant program that protects forest lands from conversion to non-forest uses.	Primary method of protection is with conservation easements in which landowners sell a portion of the property rights and retain ownership of the land. Landowner can also sell entire property. Program may fund up to 75% of program costs.	http://na.fs.fed.us/legacy/index.shtm
	Forest Stewardship Program	Voluntary, long-range conservation planning assistance tailored to landowner's.	No grant, plan may be low-cost or free to landowner.	http://www.na.fs.fed.us/stewardship/index.shtm
	U.S. Forest Service Competitive Allocation Request for Proposals (CARP)	Provides federal funding for projects that address significant issues or landscapes as identified in the state's Forest Action Plan.	Competitive allocation process is a significant way that the Northeastern Area (NA) is helping State Forestry agencies achieve priorities as documented in their respective state forest action plans while at the same time meeting regional and national priorities of the US Forest Service. Currently funding closed but expected to reopen.	http://www.na.fs.fed.us/rfp/index.shtm
USDA	Farm and Ranchlands Protection Program	A voluntary program of the Natural Resources Conservation Service (NRCS) to protect working agricultural lands by limiting non-agricultural uses. NRCS works with approved state, local and non-profit entities who arrange for the purchase of development rights through conservation easements on private lands.	FRPP funds will be used to reimburse an entity for up to 50 percent of the appraised fair market value of the conservation easement on approved applications.	http://www.ny.nrcs.usda.gov/programs/frpp/index.html
	Agricultural Management Assistance	Provides financial and technical assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation into their farming operations.	The program pays financial assistance of up to 75 percent of the cost of installing conservation practices. Total AMA payments shall not exceed $50,000 per participant for any fiscal year.	http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/ama/?cid=stelprdb1042016
	Agricultural Water Enhancement Program	A voluntary conservation initiative that provides financial and technical assistance to agricultural producers to implement agricultural water enhancement activities on agricultural land to conserve surface and ground water and improve water quality.	AWEP is not a grant program. Eligible partners enter into multi-year agreements with NRCS to promote ground and surface water conservation, or improve water quality on eligible agricultural lands. AWEP is intended to leverage investment in natural resources conservation along with services and non-Federal resources of other eligible partners.	http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/awep/
	Cooperative Conservation Partnership Initiative	Voluntary conservation initiative that enables the use of certain conservation programs (Environmental Quality Incentives Program (EQIP), Conservation Stewardship Program (CSP), and Wildlife Habitat Incentive Program (WHIP) along with resource of eligible partners to provide financial and technical assistance to owners and operators of agricultural and nonindustrial private forest lands.	A program whereby partners with approved projects will enter into multi-year agreements with NRCS to help enhance conservation outcomes on agricultural lands and private nonindustrial private forest lands. One purpose of CCPI is to leverage resources of certain Federal government programs along with services and resources of non-Federal partners to implement natural resource conservation practices.	http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/ccpi/
NYSDAM	Agriculture Development Program *	The Agriculture Development Program provides grants on a competitive basis to eligible applicants to assist in reducing the cost of financing the construction, expansion or renovation of agriculture project(s) that have a direct benefit to New York producers and significance to the region served by the eligible applicant.	The minimum amount of program funds that may be applied for is $30,000. The maximum amount of program funds that may be applied for is $500,000. The program will generally provide up to 50% of the total cost of an eligible project. The program may provide additional funding to a project if a compelling financial need is identified. Direct grant administration costs shall not exceed 10% of the grant request.	www.agriculture.ny.gov
	New York State Agri-Business Child Development Program	Provides services to children of migrant farmworkers and other income eligible, agricultural workers across the state since 1946.	Farmworker daycare program.	http://www.agriculture.ny.gov/programs/childdev.html
	Agricultural Districts Program	Aim is to encourage the continued use of farmland for agricultural production.	The Program is based on a combination of landowner incentives and protections, all of which are designed to forestall the conversion of farmland to non-agricultural uses. Included in these benefits are preferential real property tax treatment (agricultural assessment and special benefit assessment), and protections against overly restrictive local laws, government funded acquisition or construction projects, and private nuisance suits involving agricultural practices.	http://www.agriculture.ny.gov/AP/agservices/agdistricts.html
	Community Gardens Program	Purpose is to strengthen existing community gardens and support local garden coalitions through this one-time grant offering.	Grants for up to $5,000 can be used for capacity building efforts such as leadership development and organizational planning, membership recruitment activities, and strengthening a community gardens role within its neighborhood. No match required.	http://www.agriculture.ny.gov/cg/CGFunding.html

Agency	Policy/Program	Focus	Funding Details	Link
	Cattle Health Assurance Program	Is an integrated disease prevention program that utilizes a team of advisors to develop a farm-specific herd health plan to increase the herd's health, productivity and profitability, assure food safety, public health and consumer confidence in dairy products, and promote environmental stewardship.	Not a grant program but free technical assistance.	http://www.agriculture.ny.gov/programs/apsf.html
	Farm to School	The New York State Department of Agriculture & Markets and the New York State Education Department, Child Nutrition Center, assist schools, communities and farmers that want to participate in Farm to School programs and connect to each other.	Promotes the purchase of New York State farm products by schools, universities and other educational institutions.	http://www.agriculture.ny.gov/f2s/index.html
	Farmers' Market Nutrition Program	The New York State Farmers' Market Nutrition Program (FMNP) provides checks to low-income, nutritionally at-risk families enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and Senior Nutrition Programs. The checks are redeemable for fresh fruits and vegetables at participating farmers' markets.	Farmers must sign up annually with a manager of the market(s) in which they plan to participate. Farmers will receive participation materials from the Department after we are notified by the market manager. There is no fee to participate.	http://www.agriculture.ny.gov/AP/agservices/marketing.html
	Organic Certification Reimbursement	Organic farmers and processors are eligible for a reimbursement of 75% of their annual certification fee costs not to exceed $750. The certification must be conducted by an organization accredited by the U.S. Department of Agriculture. For a list of organizations certifying farms and processors in New York State, see Organizations Providing Organic Certification Services for Producers and Processors in New York State.	Organic farmers and processors are eligible for a reimbursement of 75% of their annual certification fee costs not to exceed $750.	http://www.agriculture.ny.gov/AP/organic/reimbursement.html
	Farmland Protection Program	Two matching grant programs focused on farmland protection. One assists county governments in developing agricultural and farmland protection plans to maintain the economic viability of the State's agricultural industry and its supporting land base; the other assists local governments in implementing their farmland protection plans and has focused on preserving the land base by purchasing the development rights on farms using a legal document called a conservation easement (see section below). The purchase of development rights (PDR) can help where the benefits and protections available through agricultural districting and other planning tools may not be sufficient to overcome local development pressure and other issues affecting farmland.	*County Farmland Protection Planning Grants* State assistance payments are available for counties to cover up to 50 percent of the costs to develop agricultural and farmland protection plans. Several grants of up to $50,000 each are awarded on a rolling basis each year to counties that formally apply pursuant to 1NYCRR Part 390. *Purchase of Development Rights Grants* State assistance payments are available to counties or municipalities to cover up to 75% of the total costs for implementation activities to protect viable farmland.	http://www.agriculture.ny.gov/AP/agservices/farmprotect.html
NYSSWCC	AEM program	AEM is designed to help farmers further protect soil and water and other important natural resources. By participating in AEM, farmers can document their environmental stewardship and contribute to a positive image of agriculture in their communities.	Base Funding Program carried out within the context of a holistic watershed planning effort whenever possible to provide non-competitive funding to all interested Districts to develop five-year county level strategic plans.	http://www.agriculture.ny.gov/SoilWater/aem/basefunding.html#1
	NYS Agricultural Nonpoint Source Abatement & Control Grant Program	AEM is a voluntary, incentive-based program that helps farmers make common-sense, cost-effective and science-based decisions to help meet business objectives while protecting and conserving the State's natural resources. Farmers work with local AEM resource professionals to develop comprehensive farm plans using a tiered process.	Grants can cost-share up to 75% of project costs or more.	http://www.agriculture.ny.gov/SoilWater/aem/nonpoint.html
NYSHCR	Farmworker Housing Program (FWH)	No-interest loans can be made to farmers to assist in the rehabilitation, improvement or new construction of housing for farmworkers. The Farmworker Housing Program is administered by DHCR and participating local loan administrators with the cooperation of the New York State Department of Health and county health departments.	Loans up to $100,000 per annum can be made with equal annual repayments of principal. The term of the loans may not exceed ten years.	http://www.nyshcr.org/Programs/FarmworkerHousing/
NYSHCR	Rural Rental Assistance Program	provides up to 25 years of rental subsidies for projects financed with mortgages from the United States Department of Agriculture (USDA) Rural Housing Services (RHS) (formerly Federal Farmers Home Administration) 515 Program	Eligible applicants include for-profit sponsors (limited dividend), non-profit corporations, Housing Development Fund Companies, Rural Preservation Companies, Public Housing Authorities, and individuals and corporations that receive RHS 515 (one percent, 30-year) permanent mortgages calculated on a fifty-year amortization schedule.	http://www.nyshcr.org/Programs/RRAP/

Agency	Policy/Program	Focus	Funding Details	Link
Greenhouse Gases				
NYSEFC	Small Business Environmental Assistant Program	Provides technical assistance to New York's small-business owners to assist their compliance of air emission requirements.	Not a grant program but free technical assistance.	http://www.nysefc.org/Default.aspx?tabid=132

Key
CFA-New York State NYS Consolidated Funding Application
FTA: Federal Transit Administration
NYPA: New York State Power Authority
NYSCA: New York State Council on the Arts
NYSCC: New York State Canal Corporation
NYSDAM: New York State Department of Agriculture and Markets
NYSDEC: New York State Department of Conservation
NYSDOL: New York State Department of Labor
NYSDOT: New York State Department of Transportation
NYSEFC: New York State Environmental Facilities Corporation
NYSESD: Empire State Development
NYSHCR: New York State Homes and Community Renewal
NYSOPRHP: New York State Office of Parks, Recreation and Historic Preservation
NYSSWCC: New York State Soil and Water Conservation Committee
NYSREDC: Regional Economic Development Council
NYSOTDA: New York State Office of Temporary and Disability Assistance
USACE: United States Army Corps of Engineers
USDA: United States Department of Agriculture
USDOC: United States Department of Commerce
USEPA: United States Environmental Protection Agency
USHUD: United States Department of Housing and Urban Development
USFS: United States Forest Service
Note: * Indicates NYS funding programs that are subject to the CFA process. See: https://apps.cio.ny.gov/apps/cfa/index.cfm

Appendix F
Working Group Membership

First Name	Last Name	County	Affiliation/Organization
Energy Working Group (WG) members			
Travis	Sauerwald	WG - Coordinator	Otsego County Conservation Association (OCCA)
Janine	Whitken	WG Tech Lead	Ecology & Environment, Inc. (E & E)
Michael	Cheplowitz	WG Support	Ecology & Environment, Inc. (E & E)
Tracy	Allen	Otsego	State University at Oneonta – Chair of Geography Department
Uni	Blake	Otsego	Hometown Energy Group
Martha	Clarvoe	Otsego	Hartwick Conservation Advisory Committee
Antoinette (Dr.)	Kuzminski	Otsego	Sustainable Otsego
Adrian	Kuzminski	Otsego	Sustainable Otsego
Joe	Middleton	Otsego	Vice President - Leatherstocking Corporation and Clark Foundation
Paul	Palumbo	Otsego	Canadarago Lake Improvement Association
Dr. Karl	Seeley	Otsego	Hartwick College - Economics
Larry	Simpson	Otsego	Blue Springs Energy
Alex	Shields	Otsego	Former Board Member- OCCA, OCSWCD, MOSA
Norm	Farwell	Otsego	Equity Energy LLC
Hannah	Morgan	Otsego	Sustainability Coordinator - SUNY College at Oneonta
Chris	Darling	Montgomery	Beech-Nut/Hero - Beech-Nut Nutrition staff
Tom	Lacko	Schoharie	District Conservationist- Schoharie County, Natural Resources Conservation Service
Kelly	Pit	Schoharie	Assistant Weatherization Director, Schoharie County Community Action Program (CAP), Inc.
Charles	Niebling	Herkimer	GM, New England Wood Pellets
Jason	Safford	Herkimer	Principal, Safflyn Green Industries
Richard	Johnson	Fulton	Retired and part-time consultant in “LOC Enterprise”
John	Fume	MVR - from Syracuse	National Grid
Chris	Wentlet	Mohawk Valley Region (MVR)	Constellation New Energy, VP Energy Policy
Keith	Schue	Otsego	Sustainable Otsego

First Name	Last Name	County	Affiliation/Organization
Econ Development WG members			
Greg	Eisenhut	WG Coordinator	Mohawk Valley Economic Development District (MVEDD)
Steve	Smith	WG Coordinator	Mohawk Valley Economic Development District (MVEDD)
Rebecca	Flora	WG Tech Lead	Ecology & Environment, Inc. (E & E)
Nischint	Sundar	WG Support	Ecology & Environment, Inc. (E & E)
Sean	Geraghty	Fulton	Fulton County Planning Department (Chief Planner)
Gina	DaBiere-Gibbs	Fulton	Fulton County Chamber of Commerce -Directs Fulton County Tourism
Nick	Zabawsky	Fulton-Montgomery	Orion Management
William	Hisert	Montgomery	MORECO President - Mont Co IDA
Preston	Gilbert	Mohawk Valley Region	SUNY-ESF
Angelica	Palmer	Otsego	Green Circle Accounting
Dr. Karl	Seeley	Otsego	Hartwick College - Economics
Albert	Sosa	Otsego	SUNY Oneonta - retired
James	Dean	Otsego	Village of Cooperstown- Trustee, Conservation Committee
Patricia	Szarpa	Otsego	Cooperstown Chamber of Commerce
Deb	Taylor	Otsego	Director, Otsego County Tourism Department
Barbara	Ann Heegan	Otsego	Executive Director - Otsego County Chamber of Commerce
John	Scarano	Herkimer	Executive Director, Herkimer County Chamber of Commerce
Mark	Feane	Herkimer	Executive Director, Herkimer County IDA
Fred	Arcuri	Herkimer/Oneida	VP of Economic Development, Mohawk Valley EDGE
Dan	McCoy	Oneida	Vice President for Sales & Marketing, Darman Manufacturing Company
Jim	Grinchis	Schoharie	Owner, 204 Main Bar and Bistro
James	Batsford	Schoharie	Former Executive Director, Schoharie County Chamber of Commerce
Gerry	Ritter	Oneida	NYS Tug Hill Comm.; NOCCOG

First Name	Last Name	County	Affiliation/Organization
Land Use/Livable Communities WG members			
Travis	Sauerwald	WG Coordinator	Otsego County Conservation Association (OCCA)
Dan	Castle	WG Tech Lead	Ecology & Environment, Inc. (E & E)
Robin	Scholetzky	WG Support	Ecology & Environment, Inc. (E & E)
Carl	Sadowski	WG Support	Ecology & Environment, Inc. (E & E)
Richard	DeRosa	Otsego	Hawthorn Hill Farm
Benjamin	Dixon	Otsego	State University at Oneonta
Kenneth	Johnson	Otsego	State University at Oneonta
Ellen	Pope	Otsego	Executive Director, Otsego 2000
Donna	Wells	Otsego	Supervisor, Town of Pittsfield
Brian	E. Hagenbuch	Otsego	Director, Pine Lake Institute for Environmental and Sustainability Studies, Hartwick College, Oneonta, NY
Psalm	Wyckoff	Otsego	Otsego County Planning
Alex	Shields	Otsego	Former Board Member- OCCA, OCSWCD, MOSA
Bob	Nied	Otsego	Center for Sustainable Rural Communities
Francine	Stayter	Otsego	Town of Milford Comprehensive Plan
Micki	Lieber	Montgomery	Friends of Fort Plain/ Planning Board
Douglas	Greene	Montgomery	Chief Planner, Montgomery County Business Development Center
Lori	Salamack	Fulton	City of Johnstown, AICP Planner
Scott	Henze	Fulton	Planner/GIS Administrator, Fulton County Planning
Chris	Lawrence	Oneida	Urban & Economic Development for City of Utica
Christian	Mercurio	Oneida	City of Rome - Department of Community & Economic Development
Kristin	Campbell	Herkimer-Oneida	Associate Planner, AICP, Herkimer-Oneida Counties Comprehensive Planning Program
Nate	Cisne	Schoharie	Schoharie Area Long Term Recovery – AmeriCorps VISTA - Agricultural Based Business & Community Development
J. Caroline	Williams	Oneida	Cornell Cooperative Extension, Oneida County
Douglas	Joslin	Oneida	For the Good – Nonprofit Organization

First Name	Last Name	County	Affiliation/Organization
Materials Management WG members			
Ray	Durso	WG Coordinator	The Genesis Group
James	Dumpert	WG Tech Lead	Ecology & Environment, Inc. (E & E)
John	Gale	Mohawk Valley Region	Casella Waste
Martha	Clarvoe	Otsego	OCCA/Hartwick Conservation Advisory Committee
Bob	Sutherland	Otsego	Mohican Farm property manager
Edward	Wesnofske	Otsego	MOSA
Jordan	Clements	Otsego	Conservation Technician, Otsego County Soil and Water Conservation District
Hans	Arnold	Oneida/Herkimer	Gerhardt LLC
James	Biamonte	Oneida/Herkimer	Herkimer Solid Waste Authority, OH Planning Unit
Bill	Schrader	Oneida/Herkimer	Herkimer Solid Waste Authority, OH Planning Unit
David	Lupinski	Oneida/Herkimer	Recycling Coordinator, Oneida-Herkimer Solid Waste Authority
Bill	Rabbia	Oneida/Herkimer	Exec. Director, Oneida-Herkimer Solid Waste Authority
Mark	Bremmer	Oneida	SUNYIT
Xinchao (Steven)	Wei	Oneida	SUNY IT - Assistant Professor, Dept. of Engineering, Science and Math
Cindy	Livingston	Fulton	Fulton County Department of Solid Waste, Fulton Planning Unit
Jeffrey	Bouchard	Fulton	Fulton County Department of Solid Waste, Fulton Planning Unit
Albert	Turo	Montgomery	St. Mary's Healthcare
Don	Halleck	Montgomery	Waste Connections/Capital Region Landfills
Eric	Morales	Montgomery	Waste Connections/Capital Region Landfills
Dennis	Heaton	Schoharie	MOSA
Jason	Cooper	Montgomery/Otsego/Schoharie	Montgomery-Otsego-Schoharie Solid Waste Management Authority (MOSA), MOS Planning Unit
Diane	Shoemaker	Oneida	Keep Mohawk Valley Beautiful Org. Formerly City of Rome rep

First Name	Last Name	County	Affiliation/Organization
Water Management WG members			
Travis	Sauerwald	WG Coordinator	Otsego County Conservation Association (OCCA)
Robert	Singer	WG Tech Lead	Ecology & Environment, Inc. (E & E)
Nicole	Parganos	WG Support	Ecology & Environment, Inc. (E & E)
Tom	Evans	Otsego	Southern Tier East Regional Planning Development Board (STERPDB)
Scott	Fickbohm	Otsego	Otsego SWCD and MRBC
David	Hutchison	Otsego	Chairman, City of Oneonta Environmental Board
Matt	Albright	Otsego	Assistant to the Director, Biological Field Station. SUNY Oneonta
Uni	Blake	Otsego	Hometown Energy Group
Vince	Stayter	Otsego	Goodyear Lake Association
Mark	Cornwell	Otsego/ Schoharie	Cherry Valley Town Board; SUNY Cobleskill fisheries and wildlife department
David	Mosher	Otsego/ Schoharie	Coalition Chairman, Mohawk River Watershed Coalition of Conservation Districts
Steve	Hoerze	Schoharie	District Manager, Schoharie County Soil & Water Conservation District
Dr. John	Kowal	Schoharie	SUNY Cobleskill, Director- Center for Environmental Science & Technology
Ted	Teletnick	Herkimer	Herkimer County S & W Conservation District - Town Board member
Gerry	Smithson	Herkimer	Herkimer Co. SWCD
John	Persch	Fulton	Fulton county RC & D
George	Bevington	Fulton	Consultant, former COO, Gloversville-Johnstown Joint Wastewater Treatment Facility
Corey	Nellis	Montgomery	District Manager, Montgomery County Soil and Water
Robert	DiScenza	Montgomery	Chief Plant Operation, City of Amsterdam Water Department
Holly	Waterfield	Otsego	Research Support Specialist, Biological Field Station, College at Oneonta
Kevin	Castro	Mohawk Valley Region	Service Group Manager - Water, GHD Consulting
Mike	Hlozansky	Fulton	Johnstown Water Department
Katherine	Czajkowski	Fulton & Montgomery	Mohawk River Basin Program, NYS Water Resources Institute at Cornell University
Paul	Romano	Oneida	Shumaker Consulting Engineering & Land Surveying, P.C.

First Name	Last Name	County	Affiliation/Organization
Agriculture & Forestry WG members			
Greg	Eisenhut	WG Coordinator	Mohawk Valley Economic Development District (MVEDD)
Steve	Smith	WG Coordinator	Mohawk Valley Economic Development District (MVEDD)
David	Weeks	WG Tech Lead	Ecology & Environment, Inc. (E & E)
Amy	Mahl	WG Support	Ecology & Environment, Inc. (E & E)
Stuart	Anderson	Otsego	Otsego County - Agriculture
Richard	DeRosa	Otsego	Hawthorn Hill Farm
Rebecca	Morgan	Otsego	CADE - Center for Agricultural Development & Entrepreneurship
Susan	O'Handley	Otsego	Co-president, Delaware-Otsego Audubon Society
Bob	Sutherland	Otsego	Mohican Farm property manager
Amy	Chamberlain	Otsego	Cornell Cooperative Extension- Otsego County; Resource Educator - Farm Business & Market Development
Bob	Nied	Otsego	Center for Sustainable Rural Communities
Jennifer	Huntington	Otsego	Cooperstown Holstein Corporation
Jordon	Clements	Otsego	Otsego County - SWCD
David	Cox	Schoharie	Cornell University Cooperative Extension Schoharie County, Agriculture Program Leader
Sarah	Blood	Schoharie	Schoharie County Farm Bureau - Chair, SCFB Young Farmers & Ranchers
Tom	Lacko	Schoharie	District Conservationist- Schoharie County, Natural Resources Conservation Service
Harry	Robbins	Herkimer	Farmer
Fred	Shaw	Herkimer	County Legislator - Longtime farmer/Active in agriculture pursuits
Bernie	Armata	Herkimer	Cornell Cooperative Extension-Herkimer - CCE director
Ken	Krutz	Montgomery	Dairy Marketing Service
Martin	Kelly	Montgomery	President, Mont Co Farm Bureau
Preston	Gilbert	Mohawk Valley Region	SUNY-ESF
Marty	Broccoli	Oneida	Cornell Cooperative Extension (CCE), Oneida
Mark	Bourgeois	Oneida	CEO, 3B Timber
Michael	Mulligan	Fulton & Montgomery	NYS Department of Environmental Conservation
Robert	Johnson	Fulton	Forest County Board Rep. - Fulton County Supervisor
Jim	Manning	Oneida	Cornell Cooperative Extension, Farm Business Manager, Oneida

First Name	Last Name	County	Affiliation/Organization
Transportation WG members			
Ray	Durso	WG Coordinator (All Counties)	The Genesis Group
Bob	Gibson	WG Tech Lead	Ecology & Environment, Inc. (E & E)
Rachel	Smith	WG Support	Ecology & Environment, Inc. (E & E)
Carl	Sadowski	WG Support	Ecology & Environment, Inc. (E & E)
Martha	Clarvoe	Otsego	Hartwick Conservation Advisory Committee
Joel	Habercorn	Otsego	ARC Otsego
Terry	Inkawich	Oneida	Birnie Bus, Inc.
Joseph	Judd	Otsego	ARC Otsego
Elizabeth	MacNaught	Otsego	Otsego County DSS
Paul	Patterson	Otsego	Director, Oneonta Public Transportation
Mark	Davies	Otsego	Hartwick College, Oneonta, NY
Bill	Walrath	Fulton	Mobility Manager, City of Gloversville Transit
Mark	Yost	Fulton	Fulton County Highway Department and Facilities
Stephanie	Seeley	Herkimer	Herkimer County Highway Department
Mark	Nagele	Herkimer	Asst. Co. Hwy. Superintendent, Herkimer County Highway Dept.
Dana	Crisino	Herkimer-Oneida	Herkimer-Oneida Counties Transportation Study
Matt	VanSlyke	Herkimer-Oneida	Herkimer-Oneida Counties Transportation Study
Kelly	Blazosky	Oneida	President, Oneida County Tourism
Kenneth	Mazlen	Oneida	SUNYIT
Diane	Shoemaker	Oneida	Keep Mohawk Valley Beautiful Org. Formerly City of Rome rep
Karl	Gustafson	Montgomery	NYS Thruway Authority/ New York State Canal Corp., Marketing Director
Ronald	Limoncelli	Montgomery	Brown Coach Company
Charles	Walz IV	Montgomery	NYSDOT Asst. Resident Engineer
Brian	Mandryck	Oneida	Locher Engineering
Sharon	Heyboer	Fulton & Montgomery	NYSDOT - region 2
Andrew	Wolfe	Oneida	SUNYIT

Appendix G
Acronym List

- **ACE** USDA Agriculture in the Classroom Excellence Grant Program
- **AgEMP** Agricultural Energy Management Plan
- **BOA** Brownfield Opportunity Area
- **CCE** Cornell Cooperative Extension
- **CDFI** Community Development Financial Institutions
- **CED** Community Economic Development
- **CDP** Census Designated Place
- **C & D** Construction and Demolition
- **CGC** Cleaner Greener Communities
- **CNYRTA** Central New York Regional Transportation Authority
- **CNT** Center for Neighborhood Technology
- **CNG** Compressed Natural Gas
- **COG** Council of Governments
- **Consortium** The Mohawk Valley Planning Consortium
- **CORE** Community Opportunities in Rural Education
- **CEPREE** Consumer Education Program for Residential Energy Efficiency
- **CSA** Community Sponsored Agriculture
- **E & E** Ecology and Environment, Inc.
- **EIA** Energy Information Agency
- **EIP** Environmental Investment Program
- **EFP** Existing Facilities Program
- **EPF** Environmental Protection Fund
- **EQIP** Environmental Quality Incentives Program
- **ERS** Economic Research Service
- **ESCO** Energy Performance Contracting and Energy Service Providers
- **FC-DSW** Fulton County Department of Solid Waste
- **FERC** Federal Energy Regulating Commission
- **FHA** Federal Highway Administration
- **FMPP** Farmers Market Promotion Program
- **FSMIP** Federal-State Marketing Improvement Program
- **GHG** Greenhouse Gas
- **GIS** Geographic Information Systems
- **GJJWTF** Gloversville Johnstown Joint Wastewater Treatment Facility
- **GPR** Ground Penetrating Radar
- **GPS** Global Positioning System
- **HCR** Home and Community Renewal
- **HEAP** Home Energy Assistance Program
- **HCHD** Herkimer County Highway Department
- **H + T** Housing and Transportation
- **HVFS** Hudson Valley Farm to School
- **HUD** U.S. Department of Housing and Urban Development
- **IPE** Industrial and Process Efficiency
- **IT** Information Technology
- **I-88** Interstate 88
- **I-90** Interstate 90
- **LED** Light Emitting Diode
- **LGE** Local Government Efficiency
- **LGTE** Landfill Gas to Energy
- **LSWMP** Local Solid Waste Management Plan
- **LWRP** Local Waterfront Revitalization Program
- **Million MT CO2e** Million Metric Tons of Carbon Dioxide Equivalents
- **MMBtu** Million British Thermal Units
- **MOSA** Montgomery-Otsego –Schoharie Solid Waste Management Authority
- **MGD** Million Gallons per Day
- **MRF** Materials Recovery Facility
- **MSW** Municipal Solid Waste
- **MT** Metric Tons
- **MUTCD** Federal Highway Administration Manual on Uniform Traffic Control Devices
- **MV** Mohawk Valley
- **MVEDD** Mohawk Valley Economic Development District

- **MVEDGE** Mohawk Valley Economic Development Growth Enterprise Corporation
- **MWh** Megawatt Hour
- **MWR & R** Municipal Waste Reduction and Recycling Programs
- **NCP** New Construction Program
- **NEED** National Energy Education Development Project
- **NOCCOG** Northern Oneida County Council of Governments
- **NRDC** Natural Resources Defense Council
- **NSP** Neighborhood Stabilization Program
- **NYAITC** New York Agriculture in the Classroom
- **NYISO** New York Independent Systems Operator
- **NYS** New York State
- **NYSDEC** New York State Department of Environmental Conservation
- **NYSDAM** New York State Department of Agriculture & Markets
- **NYSHCR** New York State Homes and Community Renewal
- **NYSEG** New York State Electric and Gas
- **NYSERDA** New York State Energy Research Development Authority
- **NYSOPRHP** New York State Office of Parks, Recreation, & Historic Preservation
- **OCCA** Otsego County Conservation Association
- **OHSWA** Oneida-Herkimer Solid Waste Authority
- **OTDA** Office of Temporary and Disability Assistance
- **Plan** The Mohawk Valley Regional Sustainability Plan
- **PLT** Project Learning Tree
- **PON** Program Opportunity Notice
- **REAP** Rural Energy for America Program
- **REDC** Regional Economic Development Council
- **REDGHG** Regional Economic Development and Greenhouse Gas Reduction
- **REDP** Regional Economic Development Plan
- **RESTORE** Residential Emergency Services to Offer (Home) Repairs to the Elderly
- **RFP** Request For Proposal
- **RGGI** Regional Greenhouse Gas Initiative
- **RHRF** Recyclables Handling and Recovery Facilities
- **RPS** Renewable Portfolio Standard
- **SARE** Sustainable Agriculture Research and Education
- **SCADA** Supervisory Control and Data Acquisition
- **SCSD** Syracuse City School District
- **SEDS** State Energy Data System
- **SOV** Single Occupancy Vehicle
- **SPDES** State Pollutant Discharge Elimination System
- **SWCD** Soil and Water Conservation District
- **SUNY** State University of New York
- **SUNY ESF** State University of New York College of Environmental Science and Forestry
- **SWMPU** Solid Waste Management Planning Units
- **TMDL** Total Maximum Daily Load
- **USDA** United States Department of Agriculture
- **USEPA** United Stated Environmental Protection Agency
- **USGS** United States Geological Survey
- **USFS** United States Forest Service
- **VFD** Variable Frequency Drives
- **VMT** Vehicle Miles Traveled
- **WAP** Weatherization Assistance Program
- **WARM** Waste Reduction Model
- **WI / PWL** Waterbody Inventory / Priority Waterbodies List
- **WWTP** Wastewater Treatment Plants
- **WTE** Waste to Energy
- **WQCC** Water Quality Coordinating Committees