

Appendix A Sustainability Projects Summary Matrix

Sustainability Projects Table

The Sustainability Projects table is intended to provide a snapshot in time of the projects that stakeholders within the WNY region have identified during the 8-month planning process that would help to achieve the sustainability goals identified in the Plan. This projects table is intended to be a fluid part of the Plan that will be updated over time to include new projects that are identified throughout the implementation phase of this Plan and to remove those projects that have been completed or become obsolete for any reason.

The Sustainability Projects table consists of projects that were submitted by the consortium, working group members as well as members of the public or private sector representatives. A project identification form was available to the public on the www.sustainable-ny.com website. The form was used by the Consortium to obtain information regarding the proposed projects including the project proponents, overall cost and financial need, project readiness and how it would help advance the sustainability goals established in the Plan.

The projects that were compiled through this process are in varying stages of design and planning. All the projects that were fully formed and that would work to meet at least one of the region's sustainability goals are summarized in the Sustainability Projects table of this appendix. The projects table provides key information including:

- ▶ A brief project description and impact location;
- ▶ The name of the entity that would be responsible for implementation;

- ▶ Project type (education, public/private infrastructure, Planning, funding program, etc.);
- ▶ Identification of which sustainability goals the project would work to meet;
- ▶ An estimate of the GHG impact (direct/indirect avoidance/reduction);
- ▶ A summary of the project's compatibility with key WNY REDC goals;
- ▶ A statement of the project's potential to create and/or retain jobs in the region; and
- ▶ Estimated project cost and funding requirements.

Some project submissions were received that were very conceptual in nature which either lack the above key information and/or need significant development before it could be considered for funding. These projects were included in a separate Conceptual Projects list located at the end of this appendix.

Project Categorization

Each project was evaluated to provide understanding of how a project would impact the region either region-wide (more than one county) or locally and based on the project potential GHG impacts. Within the projects table, each project has a number 1-4 next to the project name which indicates the level of impact in the region. The following categorization was applied to each project:

1. Project has region-wide impact and significant and measurable GHG impacts.
2. Project has local impact and significant, measurable GHG impacts.
3. Project has modest GHG reduction impacts or does not have measurable GHG impacts but meets one or more regional sustainability goals.
4. Project doesn't have any GHG impacts but meets one or more regional sustainability goals.

The categorization of these project is not meant as a prioritization as there may be some projects that would greatly move the region toward meeting the sustainability goals that wouldn't have a significant or measurable GHG impact. This categorization is meant to provide the reader with a better understanding of how a project could impact the region and what funding streams might be potential fits for implementation.



Energy Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
		 1	 3	 1-2	 2	 1-2	 3-4			
 Niagara County Green Building Niagara County	Public Infrastructure Niagara County Industrial Development Agency	1	3		1-3	1		Direct and Indirect Avoidance	Yes Direct and Indirect Job Creation (Temporary); Supports Indirect Job Creation	\$5,500,000/ \$3,000,000
Construction of a new 50,000 square foot LEED Certified multi-tenant industrial building to be located within Vantage International Industrial Park in the Town of Wheatfield, New York. This industrial building will serve as an incubator facility to attract start-up and young manufacturing companies that focus on green manufacturing, innovation, research and the development of environmentally friendly products.										
Additional Considerations/ Potential Funding Sources: Project eligible for potential funding through NYSERDA, NYPA and National Grid										
 WNY Regional Climate Smart Community Outreach, Education, and Implementation WNY	Planning Erie County Department of Environment and Planning	1	1	1-2	2	1-2 3-4	2-4	Through Education	Yes No Direct Jobs; Supports Indirect Job Creation and Retention	\$375,000/ \$300,000
The WNY Regional Climate Smart Community (CSC) Initiative will provide outreach to municipalities in the five county region regarding DEC Climate Smart Communities in order to encourage WNY municipalities to create individual climate action plans to reduce greenhouse gas (GHG) emissions. It will educate communities regarding mechanisms to achieve emission reductions, and will demonstrate methods to implement energy efficiency. The program will emphasize community involvement to achieve GHG reduction goals. In addition, funding will help offset the costs of ICLEI fees associated with monitoring emissions, provide workshops and training to local communities. CSC will include efforts to encourage sustainability and efficiency across all sectors of environmental concern including energy, water and waste management, transportation, land use and agriculture.										
Additional Considerations/ Potential Funding Sources: Erie County will provide in-kind services to house the Climate Smart Communities Regional Coordinator to advance and oversee the project across the five county WNY region.										
 County Green Teams Erie and Niagara Counties	Planning/Infrastructure Erie County Department of Environment and Planning; and Niagara County Department of Public Works	1		2	2	1		Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Job Creation; Supports Indirect Job Retention	\$1,200,000/ \$600,000
The County Green Team project will continue sustainability planning and greenhouse gas reduction activities for two counties. The project will set greenhouse gas reduction goals, implement energy conservation and waste reduction projects, and track greenhouse gas reductions and cost savings. The Green Teams will identify and implement projects that will reduce greenhouse gas emissions, as well as be responsible for tracking greenhouse gas reductions and cost savings.										
Additional Considerations/ Potential Funding Sources: The Counties would provide a 50% match (\$600,000) through in-kind services related to the time invested by the members of the green team.										
 Regional Energy Efficiency Revolving Loan and Retrofit Readiness Fund Erie County	Funding Program PUSH Buffalo	1	3-4		2		2	Through Funding of Projects	Yes Supports Indirect Job Creation and Retention	\$2,500,000/ \$625,000
The Revolving Loan Fund (RLF) would be used to provide wide access to affordable financing for residential energy efficiency as well as reduce retrofit barriers commonly identified by home performance contractors. The project would be implemented locally and mirror the administrative mechanism established in NYSERDA's current Home Performance with Energy Star program with Green Jobs/Green NY financing.										
Additional Considerations/ Potential Funding Sources: PUSH Buffalo is actively seeking public and private funding to be able to fully implement project by Spring 2013.										

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  Transportation
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 Town of Evans Municipal Greenhouse Gas Emission Inventory Evans, Erie County	Planning/ Infrastructure Town of Evans	1	1•3•5	1•2•3		1		Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Jobs Creation (Temporary); Supports Indirect Job Retention	\$60,000/ \$60,000
Provide technical assistance to the Evans Climate Smart Community Task Force to create and implement an action plan including comprehensive policies and programs for the Town of Evans to reduce greenhouse gas emissions, enhance operational and energy efficiencies, reduce energy costs, support local job growth, and adapt to a changing climate while improving quality of life, saving taxpayer dollars, and promoting social justice.										
Additional Considerations/ Potential Funding Sources: Will require \$60,000 for implementation of this project. The town of Evans will provide in-kind service and supplies to assist with implementation of the project.										
 Erie County Green Parks Erie County	Planning/ Public Infrastructure Erie County Department of Parks, Recreation and Forestry; and Erie County Department of Environment and Planning	1•2		2	1•2	1		Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Potential Direct County Jobs (due to energy cost reduction); Supports Job Retention	\$312,500/ \$250,000
The Erie County Department of Parks Recreation and Forestry (Parks Department) is seeking to implement environmental programs and improvements at all of its parks with an emphasis on one or two specific parks. Improvements that will take place at all parks will include: implementation of energy conservation measures at Parks buildings; implementation of a public recycling program; the use of green cleaning products; adoption of a purchasing policy regarding recycled products; implementation of water conservation measures; improvements to Parks Department fleet including anti-idling training; and an effort to reduce pesticide use at County golf courses. The Parks Department will also install solar panels at one or two parks with the preferred buildings currently being at the golf courses or Sprague Brook Park. The Parks Department will educate the public about these projects by posting signage throughout the parks.										
Additional Considerations/ Potential Funding Sources: Erie County will require an additional \$250,000 to implement this project. Erie County would match 25% of the project costs with in-kind staff time.										
 Loads Analysis Energy input/output analysis of the Allegany County Allegany County	Planning Allegany County Industrial Development Agency	1•4						Indirect Reduction	Yes No Direct Jobs	\$100,000/ \$100,000
A project to identify the top 5 electrical loads of the county and reduce 10% of greenhouse emissions from these loads. Students from Alfred University and Alfred State College would be trained as electrical energy auditors to conduct a total carbon footprint of the county from electrical energy sources, and suggestions for reducing energy and carbon output would be made. Students would be trained in energy auditing as per Association of Energy Engineering (AEE) and IEEE PS guidelines. This would involve students working with energy specialists from the county, determining electrical load flow analysis, separating industrial from office energy usage, determining peak and average power levels. Smart meters would be installed at critical applications for energy monitoring. Plans for strategic conversion to renewable energy sources would be prepared, including cost analysis and payback times.										
Additional Considerations/ Potential Funding Sources: Possibly funding through existing Department of Energy programs.										
 LED Lighting Replacements for Village of Alfred Alfred, Allegany County	Public Infrastructure Alfred State College/ Alfred University	1						Indirect Reduction	Yes No Direct Jobs; Supports Indirect Job Creation and Retention	\$150,000/ \$150,000
Pilot project to replace the light bulb fixtures on streets with LEDs. Students from Alfred University and Alfred State College will construct Computer aided design (CAD) model of the Village of Alfred, generate a lighting analysis using existing light fixtures, and determine an economic and esthetic method for replacing existing fixtures with energy efficient LED lighting. Care will be given to minimize light pollution in the model, making extra care to minimize effects of street lights on the academic astrological facilities. Prototyping of new functional and energy efficient lighting will be designed using expertise from the academic art, design and architecture programs. The pilot project will be used to help other communities determine economic and esthetic feasibility of converting to LED lighting.										
Additional Considerations/ Potential Funding Sources: Possible funding through existing Department of Energy programs.										

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		 1•2	 5	 1•2	 1•3	 1•2	 3				
 WNY Green Schools Initiative WNY	Education/Public Infrastructure U.S. Green Building Council	1•2	5	1•2	1•3	1•2	3	Direct and Indirect Reductions	Yes Supports Direct and Indirect Job Creation and Retention	\$650,000/ \$500,000	
<p>The U.S. Green Building Council will select up to four school districts, totaling approximately 50 schools, and work with the districts engage in energy efficiency efforts, waste reduction and recovery, clean air initiatives, water conservation, transportation efficiencies, and other “green” efforts such as gardening and natural habitat rehabilitation, leading toward LEED for Existing Buildings certification at each school. The program will result in direct GHG reductions, as well as also introduce sustainability and conservation issues to the students and faculty participating in the program. The education of our youth and their teachers has potential to be a longer-term solution to global climate change than simply the creation of efficient buildings.</p> <p>Additional Considerations/ Potential Funding Sources: Project will require in-kind funding from the participating schools. Further support would be sought from local foundations, trade groups, labor organizations, and many of our local business.</p>											
 Fillmore Avenue Energy Demonstration Project Buffalo, Erie County	Public Infrastructure Broadway-Fillmore Neighborhood Housing Services, Inc.	1•2	1•3 4•5	1	1•3			1	Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct (Temporary) and Indirect Jobs Creation and Retention	\$825,000/ \$825,000
<p>Engage the City of Buffalo to support neighborhood revitalization on the city’s distressed east side through a highly-visible, targeted, comprehensive application of green and energy-efficiency demonstration Project for neighborhood revitalization in distressed urban environments that have been impacted by population loss. The Project will re-value a single street that is facing vacant or marginalized housing, institutional, and commercial properties in a limited target area. All technologies that will reduce reliance on heating and cooling energy consumption, add energy-efficiency and increase insulation to all existing structures that are occupied, or reasonably can be occupied by businesses or institutions including non-profit and secular structures, will be applied. Stormwater diversion will be made part of the Project where vacant lots exist along Fillmore Avenue to allow size-appropriate bio-retention cells to allow rainwater to percolate back to below ground water tables as well as storage for use at the adjacent Wilson Street Farm. The use of size-appropriate geothermal installations for heating and cooling adjoining houses/businesses for heating and cooling will be applied where appropriate.</p> <p>Additional Considerations/ Potential Funding Sources: Matching funds for the target area of Fillmore Avenue could be in the range of \$350,000.</p>											
 Jamestown LED Street Lighting Jamestown, Chautauqua County	Public Infrastructure Jamestown BPU	1							Indirect Reduction	No No Direct Jobs; Supports Indirect Job Creation and Retention	\$2,300,000/ \$1,150,000
<p>The Jamestown Board of Public Utilities (BPU) is responsible for operating and maintaining 5115 street lights. The BPU will replace all of the street lights within their service territory with LED street lighting. This project is expected to reduce electric consumption by 4,100,000 kWh and demand by 900 kW annually. This project could serve as a model and case studies to other communities. Currently there is no municipality in New York State that has made a full conversion to LED street lighting.</p> <p>Additional Considerations/ Potential Funding Sources: The BPU is currently working with a representative from GE to assess street level lighting and selection of the appropriate fixtures to replace them with. This assessment is expected to be completed in the first half of 2013.</p>											
 Sustainable First Response Erie County	Education/Planning/ Public Infrastructure Erie County Department of Environment and Planning	1			1	1			Through Education	No No Direct Jobs	\$376,000/ \$376,000

Project is intended to provide support and assistance to paid and volunteer emergency response personnel to increase firefighter safety and reduce the environmental impact of public safety. This Project will provide training and site evaluations to: reduce exposures and hazards through proper storage and disposal of hazardous materials. Reduce waste generation through increased recycling opportunities. Protect local watersheds with information and opportunities for proper disposal of medications. Reduce greenhouse gases through energy audits at fire facilities.

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1 Buffalo Syngas Erie County	Private Infrastructure Buffalo Hydrogen	2						Direct Reduction and Avoidance	Yes Direct and Indirect Jobs Creation	\$52,000,000/TBD
Buffalo Syngas is a demonstration project that takes existing technologies and uses them in a unique process to convert organic waste to energy with near zero emissions. The process uses methanization to create and cleanup a syngas that can either be injected into the natural gas pipeline or preferably used in a hydrogen fuel cell.										
Additional Considerations/ Potential Funding Sources: Project is still in the early planning and siting phase.										
1 Buffalo Niagara International Airport (BNIA) Solar Panel Project Cheektowaga, Erie County	Public Infrastructure Niagara Frontier Transportation Authority (NFTA)	2						Indirect Reduction	Yes Direct Jobs (Temporary); Support Indirect Jobs Creation and Retention	\$1,000,000/ \$250,000
This project would install a solar photovoltaic array in the parking lots of the BNIA. Solar panels would be installed either on the roof of the BNIA Short-Term Parking Garage or uncovered ground level parking lots. The solar panel array would act as a partial cover for currently uncovered parking and add a renewable energy resource to airport property. This project would generate “clean” electricity through renewable energy generation. The project would also serve as a demonstration of solar technology at a highly visible location.										
Additional Considerations/ Potential Funding Sources: The New York Power Authority has allocated \$250,000 in cash. Potential additional funding through the Federal Aviation Administration (FAA) Section 512 program.										
3 Buffalo Clean Energy Co-op WNY	Funding Program/Education Sierra Club Niagara Group, Buffalo Clean Energy and the Wind Action Group	1•2	5				2	Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation	\$180,000/ \$140,000
Organize a member-owned co-operative corporation to develop renewable energy and energy conservation projects, educate the public on renewable energy, provide community renewable energy investment opportunities, and strengthen the local green business sector, and provide a focus for building interest in clean energy and energy conservation in WNY.										
Additional Considerations/ Potential Funding Sources: Matching dollars will be provided by co-op memberships and contributions from local clean energy companies.										
3 WNY Feed-in-Tariff Demonstration Project NYISO Zone A (All of Niagara, Erie, Chautauqua, and Cattaraugus counties; portions of Allegany County; all or portions of six NY counties outside of WNY)	Policy/Planning Sierra Club Niagara Group	2•3•4	5	2	1		1•2	Through Policy Change	Yes Indirect Job Creation.	\$300,000/ \$300,000
The Sierra Club is seeking funding to prepare a formal proposal to the Governor for implementation of a WNY Feed-in Tariff (FIT) Program in NYISO Zone A. FIT requires the Governor to direct NYPA to offer standard 20-year contracts to large and small producers of renewable energy (wind, solar, biomass, biogas, geothermal and small hydro). NYPA would enter into these standard contracts to purchase all of the electricity generated by the owners of approved renewable energy generation facilities and projects located within the NYISO Zone A. This initiative will be similar to LIPA's FIT program but would be more robust because it includes more types of energy and is not capped.										
Additional Considerations/ Potential Funding Sources: Project proponent is the Sierra Club, however implementation will require direction from the Governor and for NYPA to establish the FIT program.										

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1 WNY Solar Projects WNY	Private Infrastructure/Education Casella Waste Systems	2				1		Indirect Reduction	Yes Direct Jobs (temporary); Supports Direct and Indirect Job Creation and Retention	TBD
<p>Casella Waste Systems proposing to install possible rooftop and ground-mount solar power projects at each of our WNY waste/resource management facilities. The solar projects would be integrated into broader environmental education efforts at our waste/resource management facilities which would include a public-facing kiosk that would display the electrical output of the panels alongside educational material about recycling, renewable energy, energy efficiency, etc.</p> <p>Additional Considerations/ Potential Funding Sources: Casella is actively working with contractors to fully explore the cost and magnitude of this project.</p>										
2 Tiftt Sustainability Center Buffalo, Erie County	Private Infrastructure/Education Buffalo Museum of Science	1-2	6			1-2-3		Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Job Creation and Retention	\$1,200,000/ \$250,000
<p>The proposed project will allow for the expansion of 30 years of quality environmental education by the Buffalo Museum of Science at Tiftt Nature Preserve and build upon the 150 year history of research and science education at the Buffalo Museum of Science. Upgrade and expand existing building to incorporate green building techniques and materials to improve energy efficiency and reduce natural gas and electricity use. Alternative energy options, such as solar and geothermal, are incorporated into the design and operation of the building to reduce dependence on non-renewable energy sources.</p> <p>Additional Considerations/ Potential Funding Sources: Anticipated funding through a grant from the Niagara Greenway Buffalo and Erie County standing committee, construction documents are near completion for expansion of the facility.</p>										
2 ECC Residential Sustainable Facility Orchard Park, Erie County	Public Infrastructure/Education Erie Community College	1-2	3-4 5	1	1-3	1-3	1	Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Supports Job Retention and Indirect Job Creation	\$425,000/ \$40,000
<p>Upgrade existing Erie Community College's residential building on their south campus to use as an education tool to train students on many different types of green jobs (wind, solar, geothermal, construction, water and waste management). Upgrade to include the following: 10 kW wind tower, 5 Kw PV panels, geothermal horizontal loop system, underground rain water harvesting system, bio-retention areas directly off the parking lot to collect that water, a filtration system for some of that water from the bio-retention system, a storage shed built from non-traditional construction, different types of lighting/heating/insulation etc., reuse of grey water for toilets, a greenhouse with a composting toilet, greenhouse plantings and hydroponics (tilapia fish and growing fresh greens) in the greenhouse.</p>										
3 Zero Energy Modular Home (ZEMH) Allegany County	Manufacturing Alfred State College	1-2-4	4					Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation	\$500,000/ \$500,000
<p>The ZEMH project is to build on the expertise from the Zero Energy Demonstration Home that was previously constructed by students on the Alfred State College Wellsville campus. The goal is to develop a low cost alternative to trailers in the region that will have a significant operational savings to low income individuals. The ZEMH project advanced systems, including geothermal heating and cooling, small wind, photovoltaic systems and solar thermal for heating water. The goal will include developing a smaller prototype that will be able to go into full production of a highly efficient building design that is affordable and can be produced locally. After the prototype simpler monitoring systems will be installed for a typical homeowner. The renewable energy systems will be options based on availability of funding.</p> <p>Additional Considerations/ Potential Funding Sources: Alfred State College would be committed to the design and construction of the prototype and the first 2 to 3 homes. The project costs include assigning a project manager to the project and material costs. The construction and faculty time to build the projects would all be in-kind match.</p>										

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<p>2</p> <p>Market Street Art Center Solar Energy Project Lockport, Niagara County</p>	<p>Private Infrastructure Market Street Art Center</p>	2	3				Direct Avoidance, and Indirect Avoidance	Yes Direct Job Creation (Temporary)	\$1,000,000/\$1,000,000	
<p>Market Street Art Center is located on the Erie Canal is an aging 75,000 square feet former industrial plant. Currently, only about 1/3 of the building is operational as the Art Center. The future redevelopment of this building would incorporate solar energy while converting the building into a community oriented space that would be a model the reuse of industrial space for community use.</p> <p>Additional Considerations/ Potential Funding Sources: Currently seeking funding from private,in-kind and foundation sources to match public funding.</p>										
<p>2</p> <p>Renewable Energy projects for Allegany County Municipally owned public works Alfred, Allegany County</p>	<p>Planning Alfred University</p>	2			2		Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes No Direct Jobs; Supports Indirect Job Creation and Retention	\$250,000/\$250,000	
<p>Students from Alfred University would do a feasibility study to determine optimal renewable energy projects for county facilities. Replacing aging infrastructure with renewable energy systems, that would have the added benefit of providing a working model of renewable energy powered facilities that area business could visit, and could provide an educational test facility for University courses. The project would introduce renewable systems into remote locations for such facilities as water pumping stations, water filtration plants, and county landfill. Energy storage would be investigated with the concept of providing off-grid energy for some of these plants if feasible. Wind, solar, and biomass energy systems will be investigated.</p>										
<p>1</p> <p>Allegany County Landfill Methane Gas Collection System Town of Angelica, Allegany County</p>	<p>Planning/ Public Infrastructure Allegany County Department of Public Works</p>	2					Direct Reduction	No Supports Indirect Job Creation and Retention	\$750,000/ \$750,000	
<p>This project will involve work at the Allegany County Landfill to utilize the existing and future methane that is being generated. The Allegany County Landfill has been in use since the late 1980's. The facility is in the last ten years of its working life. This facility has six deep wells and an additional two will likely be created in the closure. There are presently thirteen passive vents and an additional three will be likely to be created in the closure. This project will move away from venting the methane to the atmosphere and create a methane recovery, and collection infrastructure. Once the infrastructure is in place an analysis of the quantities that are being created and a determination will be made what is the best method of either burning off or using it for creation of electricity. This project will control of off-site migration of methane through surrounding soils. It will assist with odor control. LFG, particularly sulfur compounds in the mixture, can create significant odor problems around the landfill. Collection and combustion of LFG effectively destroys odorous compounds. The project will control of hazardous volatilized components in the gas, Greenhouse gas emissions control. There is a potential for Energy Recovery.</p> <p>Additional Considerations/ Potential Funding Sources: The County will provide support required matches and provide in-kind service.</p>										
<p>1</p> <p>Daemen College Alternative Energy/Geothermal Technologies Demonstration Project: Historic Patricia Curtis Hall Building Systems Upgrade Amherst, Erie County</p>	<p>Private Infrastructure Daemen College</p>	2	3				Indirect Reduction and Avoidance	Yes Direct Jobs (Temporary); Support Indirect Jobs Creation and Retention		
<p>Daemen College proposing to install geothermal heating and cooling systems and implement energy-efficiency measures in Curtis Hall, a building that has been designated as a historic Local Landmark by The Amherst Historic Preservation Commission. This project builds on Daemen's regional leadership in sustainability and energy-efficiency.</p> <p>Additional Considerations/ Potential Funding Sources: This project would further demonstrate the utilization of geothermal technologies and systems to heat and cool existing buildings on the campuses of institutions of higher education, and, in this case, a building of regional historic significance. This technology also maintains and enhances an historic building's aesthetics because there is no outside equipment.</p>										

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 Somerset Biomass Co-firing Plant Somerset, Niagara County	Private Infrastructure USNYPP Somerset Operating Company	2•3	5				2•3	Direct Reduction and Avoidance	Yes Direct and Indirect Jobs Creation and Retention	\$15,000,000/ \$15,000,000
Co-fire up to 50 mw's of biomass at USNYPP's Somerset Operating Company (SOC) boiler. Install the processing and fuel delivery system to inject biomass fuel into the SOC boiler. In addition, provide a mechanism (PPA) to insure local fuel suppliers, price and volume certainty for a 5 yr period for the fuel. This project would offset approximately 10% of the CO ₂ emissions from coal at the Somerset facility as well as provide a direct outlet for local agriculture crops utilization in energy production. It is estimated that approximately 50,000 acres will be needed to grow the biomass fuel products necessary for 50 mw's of co-firing at SOC, thereby preserving and enhancing agricultural lands.										
 Jamestown BPU Coal Boiler Conversion Jamestown, Chautauqua County	Public Infrastructure Jamestown BPU	3						Direct Reduction and Avoidance	Yes Direct Temporary Jobs and Direct Job Retention	\$2,000,000/ \$1,000,000
The Jamestown BPU, which operates one of three coal plants in WNY, will convert one of their coal boilers to operate on natural gas. This boiler will also provide waste heat to the district heating system.										
Additional Considerations/ Potential Funding Sources: The Jamestown BPU is currently assessing the feasibility of the project and will have a final determination by the end of the year.										
 Sustainable Advance Manufacturing Center (SAMC) Wellsville, Allegany County	Education/Manufacturing Alfred State College	1•2 3•4	3	1				Through Education	Yes Indirect Job Creation and Retention	\$4,000,000/ \$4,000,000
The proposed SAMC at the School of Applied Technology on Alfred State College's Wellsville campus, will integrate Alfred State's existing machine tool, welding, and drafting/CAD students in a highly efficient facility where students will be trained in state-of-the-art techniques of sustainable manufacturing, including lighting, HVAC, and motor upgrades as well as process improvements through waste reduction and LEAN Six Sigma processes. The center will also be used for prototyping and to assist manufacturers in the development of new products and systems. The ultimate goal is to have a zero energy manufacturing system that produces more energy than it uses.										
Additional Considerations/ Potential Funding Sources: Require \$4 million in funding. The college already has all most of the equipment for the facility. This project easily fits the needs of the college and also would be supported by the Educational Foundation of Alfred.										
 Alfred Center for Technology Transfer Allegany County	Public Infrastructure/Manufacturing/ Education Allegany County Office of Development	1•2 3•4	4•5				1•2 3•4	Through Education	Yes Direct and Indirect Job Creation and Retention	\$2,000,000/ \$2,000,000
The Alfred Center for Technology Transfer will translate research and applied technologies, centered in and around Alfred University and Alfred State College, into local industry and jobs. Products and process, ready for prototyping and production, will be identified, recruited and provided business plan development services, back office support, access to venture capital, facilities development and workforce preparation. ACTT will be a Local Development Corporation with focus on development of local manufacturing and job creation.										
Additional Considerations/ Potential Funding Sources: Possible match from NYS Housing Programs, USDA Biomass development funding, foundations and venture capitalists.										
 Buffalo Sewer Authority Combined Heat and Power Project Buffalo, Erie County	Public Infrastructure Buffalo Sewer Authority	1•4					2	Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Temporary Jobs	\$20,000,000/ \$20,000,000
This project will convert sewage sludge into renewable energy. Currently, the Buffalo Sewer Authority (BSA) uses anaerobic digestion to treat bio-solids and create methane. We then use this green gas to incinerate our sludge. Incineration creates waste heat as a by-product which we convert to steam, which we use to heat and cool the plant. This proposed project will entail replacement of our incinerator with a new state-of-the-art incinerator that will provide for cleaner air and use less energy; replacement of old waste heat recovery boilers with new ones that will convert the waste heat to steam; and installation of a new steam turbine create electricity. We will use this electricity for process. This co-generation project will give BSA the flexibility to use the steam or the electricity based upon needs and the energy markets. The new system will allow the BSA to accept additional bio-solids from other municipalities, providing more fuel to energy.										

Energy Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
		 1-2-3	 3-4							
 Identifying Opportunities to Leverage Energy Efficient District Heat & Cooling in Downtown Buffalo Buffalo, Erie County	Planning Buffalo Urban Development Corporation	1-2-3	3-4				No Impact; Supports Indirect Reduction and Avoidance	Yes No Direct Jobs	TBD/TBD	

The City of Buffalo currently owns a steam-generated district heating system that runs throughout parts of downtown Buffalo. While this system may hold potential as an environmentally sustainable economic development tool, it has been infrequently utilized, and in numerous instances, turned down by private property owners as a source of heat for reasons ranging from uncompetitive pricing to incomplete infrastructure connections. The proposed project is a systems assessment & feasibility study, which would assess the challenges and opportunities that may exist for repositioning this infrastructure into a sustainable and viable economic development tool.

 Energy
  Land Use and Livable Communities
  Transportation
  Water Resources
  Waste Management
  Agriculture and Forestry

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  1 Regionwide, Measurable GHG Impacts
  2 Local Measurable GHG Impacts
  3 Not Significant or Measurable GHG Impact
  4 No GHG Impact

Land Use and Livable Communities Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
<p>4 Northern Chautauqua Local Waterfront Revitalization Plan (LWRP)</p> <p>Northern Chautauqua County</p>	<p>Planning</p> <p>Chautauqua County Office of Planning and Development/Chadwick Bay Regional Development Corporation.</p>		1-3-4 5-6		4		1-3	Through Education	<p>Yes</p> <p>No Direct Jobs; Supports Indirect Job Creation</p>	\$90,000/ \$45,000
<p>Development of a community-based, participatory Local Waterfront Revitalization Plan (LWRP) for Northern Chautauqua County, for submission and approval for inclusion in the NYS Coastal Management Program (CMP). The plan will be developed with meaningful participation by all local governments including the Chautauqua County Department of Planning and the governments of the city, villages, and towns described above including SUNY Fredonia. The plan will serve as a blueprint for waterfront related project implementation and the development of policy decisions by local public entities. This plan will be used to guide balanced, sustainable development in the region, taking into consideration it's unique physical characteristics as a Lake Erie Watershed area. This plan will also consider the effect of economic growth decisions on land use, greenhouse gas emissions, energy use, water management, housing, and development.</p> <p>Additional Considerations/Potential Funding Sources: Require an additional \$45,000. Have matching funding from Potential Matching Dollars: Lake Erie Management Association, Chautauqua County Occupancy Tax, Contributions of Localities, Local Economic Development Group, Chautauqua County IDA, and in-kind - County, local, university.</p>										
<p>4 Allegany Plateau Working Landscape Assessment</p> <p>Erie, Chautauqua, Cattaraugus, Allegany Counties</p>	<p>Planning/Education</p> <p>Alfred University, Edgewood GIS Consulting, Allegany County</p>		1-2 5-6		1-4		3	No Reduction of GHG Emissions	<p>Yes</p> <p>No Direct Jobs</p>	\$55,000/TBD
<p>The proposed Allegheny Plateau Working Landscape Assessment project will map existing land use and land cover as well as recent changes in land cover, provide a baseline assessment of watershed composition, evaluate forest connectivity and fragmentation, and overlay important natural resources such as wetlands and biodiversity hotspots on these data sets. All spatial, tabular and written products of this project will be freely available to interested parties.</p>										
<p>3 Zoning Template for Complete Streets Principles and Technical Assistance Education</p> <p>WNY</p>	<p>Planning/Education</p> <p>Cattaraugus County Department of Economic Development, Planning and Tourism; Chautauqua County Department of Planning and Economic Development</p>		1-2-4	1-3	1-3			Through Education and Policy	<p>Yes</p> <p>No Direct Jobs</p>	TBD
<p>This project would develop a template for municipalities to use that provides the terminology necessary to incorporate Complete Streets language into zoning revisions. In addition, it would provide technical assistance and education on Complete Streets so that the language used is common across the three county southern tier region (and perhaps Erie and Niagara Counties in the future).</p>										
<p>3 Competition Transmission Remediation</p> <p>North Tonawanda, Niagara County</p>	<p>Adaptive Reuse</p> <p>Riviera Theatre and Organ Preservation Society Inc</p>	1	1-3					Direct and Indirect Avoidance	<p>Yes</p> <p>Direct and Indirect Job Creation</p>	\$4,000,000/ \$2,800,000

The Competition Transmission site is former automotive repair facility located at 68 Main Street in the downtown area of the City of North Tonawanda. The site was recently purchased by a not for profit organization, the Riviera Theater and Organ Preservation Society who intends to redevelop the property. The anticipated future use of a new building on the site will be for commercial purposes and will include: a multipurpose theater, rehearsal/banquet hall, café/bar and full-service kitchen, as well as office and storage facilities. The first step in advancing redevelopment is to address contamination issues at the site. Brownfield remediation efforts include asbestos abatement, and soil and groundwater remediation.

Additional Considerations/Potential Funding Sources: To date \$850,000 has been secured for the project. A grant application to the Niagara County Brownfields Cleanup Revolving Loan Fund Program totaling \$350,000 is currently under review.

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  Transportation
  Water Resources
  Waste Management
  Agriculture and Forestry

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Land Use and Livable Communities Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 4 Lockport Air Force Base Remediation Lockport, Niagara County	Adaptive Reuse Town of Cambria			3				No Reduction of GHG Emissions	Yes Direct Jobs (Temporary)/ Supports Indirect Job Creation and Retention	\$2,100,000/\$1,150,000
<p>In 1980, the US military abandoned the Lockport Air Force Base, a military command center in the Town of Cambria. Some of the former military housing was transformed into senior and low-income housing units. Several buildings on the site were left in an unusable condition prohibiting their sale or reuse. Environmental site assessments revealed the presence of contamination at the site that needed to be addressed prior to the property being marketed for redevelopment. This project will build upon current site remediation efforts and allow for remediation and demolition of the former military bomb shelter at the site.</p> <p>Additional Considerations/Potential Funding Sources: Requires an additional \$1.15 million in funding. Funding secured and currently being drawn down for the project includes the following: \$250,000 HUD appropriation</p>										
 3 Lehigh Valley Rail Yard Niagara Falls, Niagara County	Adaptive Reuse Niagara County Department of Economic Development		1-3-5	2			1	Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Jobs (Temporary)/ Supports Indirect Job Creation and Retention	\$4,000,000/\$4,000,000
<p>The Lehigh Valley Rail Yard is a 65 acre site owned by the New York State Department of Transportation that contains 19 tracks with capacity ranging from 19 to 69 cars. CSX operates the rail line as well as an adjacent rail yard. Amtrak maintains operating rights over the line. The current Niagara Falls Amtrak station is located on the northwest side of the rail yard.</p> <p>This project involves construction of a 30,000 sq. ft. cold storage warehouse and produce slicing facility at the underutilized Lehigh Valley Rail Yard site. In addition to rail access, the site is proximate to the U.S. interstate highway system. Bulk produce will be brought in by truck and rail, processed and packaged as fresh slices, and then distributed by truck to major urban markets for consumption. Alternatively, the site can be used as an inter-modal truck-train cargo transfer facility.</p> <p>Additional Considerations/Potential Funding Sources: The matching funds needed to bring the project to fruition will be depend upon the equity that can be leveraged by the identified developer/operator of the project.</p>										
 4 Cambria Technology Park Cambria, Niagara County	Adaptive Reuse Town of Cambria; Niagara County		1-3-5	4				No Reduction of GHG Emissions	Yes Direct Jobs (Temporary)/ Supports Indirect Job Creation and Retention	\$1,710,000/\$855,000
<p>The Cambria Technology Park is a New York State Certified Shovel-Ready site through New York State's Build Now New York Program. The project includes the building of the 152-acre park's initial infrastructure. The site is currently undeveloped land, and lacks access roads as well as the necessary storm and sanitary sewer systems, although is located within an existing sewer district. The sewer extension was planned for existing businesses along Lockport Road, and now would include the Cambria Technology Park. The Park is located within the Niagara County Water District (NCWD) system and is presently serviced by a 12 inch waterline that is capable of supplying 3300 GPM at 20 psi.</p> <p>The project development plan avoids and preserves wetlands on the site and also helps to preserve /protect some farming on the site and protects the farming in the area.</p> <p>Will require additional \$850,000 in funding. Local funds will be used for the initial three-acre purchase for the entrance road. This initial purchase will be completed using \$54,000 in local funding.</p> <p>Additional Considerations/Potential Funding Sources: The Town of Cambria also expended approximately \$450,000 to "close the loop" on the water line at the site's western border.</p>										
 4 Exit 24 Sanitary Sewer Service Town of Allegany, Cattaraugus County	Public Infrastructure Town of Allegany		1-3	2-4				No Reduction of GHG Emissions	Yes Direct Jobs (Temporary)/ Supports Indirect Job Creation and Retention	\$789,600/\$52,000

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  Waste Management
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Land Use and Livable Communities Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
		1	2	3	4	5	6			

The project is the extension of sanitary sewer service to Exit 24 on Interstate 86 (Southern Tier Expressway) in the Town of Allegany. The area around Exit 24 is zoned for commercial development and is designated for commercial development in the Town's 2011 Comprehensive Plan. The Project promotes compact development, since the sewer line would be extended into an area that has water service and good highway and local road infrastructure in place. The sewer line would run through an area of town that is now developed, and the Exit 24 area is located close to the Village of Allegany. The project encourages the redevelopment of a currently underdeveloped area. Phase 1 will consist of a Final Engineering Study, in the form of a Map Plan and Report, which will identify a final route for this project, obtain easements if needed, finalize project design, and develop construction detail drawings for the project. Phase 2 would be the actual construction of the sanitary sewer line.

The Town has completed a Preliminary Engineering Report, which examined various options for extending sanitary sewer service to Exit 24. That study was funded, in part, from a grant received from NYS Division of Housing and Community Renewal.

Additional Considerations/Potential Funding Sources: The Town recently completed the installation of a waterline to this area.

4	RiverBend Commerce Park	Adaptive Reuse Buffalo Urban Development Corporation	1-3 4-6	1-3	1-3-4		No Reduction of GHG Emissions	Yes Direct Jobs (Temporary)/ Supports Indirect Job Creation and Retention	\$2,000,000/ \$2,000,000
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The former home of Republic Steel, RiverBend is comprised of 260 acres on 1.3 miles of Buffalo River waterfront, located two miles from downtown Buffalo's central business district. Over the next several decades, this section of the 1,900-acre South Buffalo Brownfield Opportunity Area (BOA) will be transformed into a key contributor to the economic health of the city of Buffalo and the WNY region. The project will involve the implementation of initial infrastructure components of Phase 1 of the RiverBend Master Plan completed in June 2011 which includes: 1.)RiverBend Drive: 1,116 linear feet of new road that connects with RiverBend's only existing thoroughfare, South Park Avenue. This project will concentrate solely on the northern section of RiverBend Drive accommodating a two-lane, two-way street with parking on both sides and generous pedestrian zones with dedicated sidewalks and integrated bioswales, filter boxes and trees for stormwater management, designed in-line with the City of Buffalo and New York State Complete Streets legislation. 2.)Green Infrastructure: This initial phase of green infrastructure will establish the foundation of all future green infrastructure and all future development on the RiverBend site. It will include one bioswale to connect to RiverBend Drive as well as to future street bioswales and biofilters; and one outfall where the bioswale meets the Buffalo River.

3	Green Gateways	Public Infrastructure City of Buffalo	1-3 4-6	1-3	1-3-4		Indirect Avoidance	Yes Direct Jobs (Temporary)/ Supports Indirect Job Creation and Retention	\$15,000,000/ \$15,000,000
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The City of Buffalo is also proposing a Green Gateways initiative to manage blight and the need to actively manage the City's building stock to stabilize the overall housing market. Over thirty three thousand cars travel Ellicott's Genesee, Walden and Broadway radials each day. The blight along these corridors creates a strong, visceral and lasting impression that the City and region are in serious decline. The City is requesting funding to reduce blight and improve perception of three Ellicott Radials. The project will mothball key historic structures, demolish deteriorated buildings along the City's Ellicott radials, create strong gateways at the City's border as per the Queen City plan, rehabilitate demolished and vacant sites along the corridor as innovative, stormwater management landscapes and implement the City's Complete Streets program. This initiative will encourage continued multi-modal travel along the City's radials, providing customer base for surviving businesses; help to concentrate remaining commercial uses at critical nodes improving viability; reduce negative image of City; reduce carrying cost to City of abandoned structures; improves living conditions for remaining residents and aid in the City housing market rationalization.

3	Schreiber Brewery	Adaptive Reuse Broad-Fillmore Neighborhood Housing Services, Inc	1-2	1-3 5	1	1-3	1-2	1-4	Indirect Avoidance	Yes Direct and Indirect Job Creation	\$650,000/ \$408,000
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Energy
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Land Use and Livable Communities Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
		1	2	3	4	5	6			
<p>3 Community Main Street Revitalization Fund Chautauqua County</p>	<p>Adaptive Reuse Chautauqua County Land Bank Corporation</p>			1•3•4		1•3		Direct and Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation (Temporary)	\$250,000/ \$100,000
<p>Create a funding program to assist older communities in demolishing vacant, abandoned and dilapidated buildings. This would be tied directly to the Chautauqua County Land Bank, and would be used specifically for buildings on Main Streets in our communities, thereby removing eyesores and opening up land for urban agriculture activities and greenspace. Priority targets for demolition include dilapidated tax foreclosed properties that undermine otherwise stable neighborhoods in the county's urban center--especially Jamestown and Dunkirk.</p> <p>Additional Considerations/Potential Funding Sources: The Chautauqua County Land Bank Corporation currently has \$150,000 in place to support maintenance, demolition, and other costs. The Land Bank is also pursuing funding opportunities through local foundations.</p>										
<p>1 Urban Street Apartments Buffalo, Erie County</p>	<p>Adaptive Reuse Broadway-Fillmore Neighborhood Housing Services</p>	1•2		1•3 4•5	1	1•3		Direct and Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation (Temporary)	\$1,359,000/ \$1,359,000
<p>Redevelopment of two former Buffalo Schools in to an affordable rental property (27 units) in an economically challenged east Buffalo neighborhood. We are proposing to make the Urban Street Apartment buildings a showcase for innovative 'green' technologies using multiple uses of green roof, solar, wind-energy generation, stormwater diversion with on-site new technology filtration and creation of a large bio-retention cell to 'perc' clean water back to below ground water tables, and some limited food production for lower-income residents.</p> <p>The green space for community food production would remove old tennis courts and dilapidated playground from the 2.5 acre site and add a quality of life element for the tenants of the Urban Street Apartments, and possibly for elementary schoolchildren attending a new Buffalo school across the street. It would be a low-impact site development and soil conservation/use by inner-city residents.</p> <p>Additional Considerations/Potential Funding Sources: Project requires full funding.</p>										
<p>3 Allegheny Bicycle-Pedestrian Connector Trail Allegheny, Cattaraugus County</p>	<p>Planning/Infrastructure Town of Allegheny</p>			1•4 6	1•3			Direct and Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation (Temporary)	\$592,000/ \$40,000
<p>The Project is the construction of a multi-use bicycle/walking trail that will connect the Village of Allegheny with the Allegheny-Limestone Middle and High Schools on the Five Mile Road in the Town of Allegheny. The project will include connecting the Trail to the existing Allegheny River Valley Trail in the Village. The primary goal is to connect the school to existing sidewalks in the Village of Allegheny to promote a safe walking and biking environment for middle and high school students. In addition to providing a route for students, the Trail will serve homes along the Five Mile Road, providing a route to walk into the Village. Phase 1 is the Engineering Study for the project. This Phase is anticipated to take one year or less, depending upon the need to acquire easements. Phase 2, the construction stage, is anticipated to be ready to begin in the spring of the year following completion of the engineering design study.</p> <p>Additional Considerations/Potential Funding Sources: In-kind services from the town of Allegheny, Village of Allegheny and Cattaraugus County Department of Public Works. Additional funding may be available through the "Safe Routes to Schools" program for construction.</p>										

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 Water Resources
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Land Use and Livable Communities Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 Tonawanda Island Redevelopment North Tonawanda, Niagara County	Public Infrastructure City of North Tonawanda and/or Lumber City Development Corporation		1-3 4-6	3	4			Indirect Avoidance	Yes Direct and Indirect Job Creation	\$65,000,000/ \$15,000,000
The Tonawanda Island Redevelopment project involves the redevelopment of 93 acre Tonawanda Island that includes 2.5 miles of Niagara River shoreline. Project elements include: residential, mixed uses, and commercial development; a waterfront park and promenades that provide public access, and upgrading of the existing road network and other infrastructure. The project would most likely be completed in multiple phases over a five to ten year period.										
Additional Considerations/Potential Funding Sources: The City of North Tonawanda has identified the redevelopment of Tonawanda Island as a top priority in its Brownfield Opportunity Area and Local Waterfront Revitalization Program Update plans. As such the City can provide significant financial and in-kind departmental resources for this project.										
 Route 219 Completion Cattaraugus County	Infrastructure NYS Department of Transportation		4	2				No Reduction of GHG Emissions	Yes Direct and Indirect Job Creation (Long Term Temporary)	\$750,000,000/ \$10,000,000 (per year for 15 years)
The completion of Route 219 as a four-lane highway will provide livable communities in Cattaraugus County and bring permanent jobs to the entire region. A primary goal of this project is to improve safety by detouring heavy long distance traffic onto the highway, away from the central business districts; reduce fuel and energy consumption; decrease environmental noise and air pollutant emissions; positively impacting motorists through decreased travel times; and positively impacting neighborhoods by reducing the amount of traffic on local surface streets. Additional benefits are a decrease in motor vehicle crashes and fatality rates, increased access of emergency medical response, and the ability for residents to safety evacuate during a disaster.										
Additional Considerations/Potential Funding Sources: This project would be 80% federally funded and would require 20% from New York State/additional funding sources.										
 Marilla Agriculture and Farmland Protection Plan Marilla, Erie County	Planning Town of Marilla		1-5					No Reduction of GHG Emissions	Yes Supports Indirect Job Retention	\$50,000/ \$25,000
The Town of Marilla, New York (the Town) is a rural and residential community in the center of the eastern edge of Erie County, bordering Wyoming County. It takes pride in its small-town atmosphere and a continuing emphasis on agriculture. To that end, the Town intends to protect and enhance its agricultural activity by developing and implementing an Agricultural and Farmland Protection Plan for the town.										
 Update of Chautauqua County Farmland Protection Plan Chautauqua County	Planning Chautauqua County Department of Planning and Economic Development		1-3 5		4			No Reduction of GHG Emissions	Yes Supports Indirect Job Retention	\$100,000/ \$100,000
Update Chautauqua County Farmland Protection Plan to focus on agricultural economy, and change land use/zoning codes to maintain economic viability of farms. Project would preserve and enhance agricultural lands through a combination of innovative land use techniques and the strengthening of the agricultural economy and ability to maintain the working landscape.										
 Barcelona to Chautauqua Institution Multi-Use Trail Chautauqua County	Public Infrastructure The Friends of Chautauqua County Greenways		1-4 5-6	1				Direct and Indirect Reduction and Avoidance	Yes Direct Job Creation (Temporary); Supports Indirect Job Creation	\$500,000/ \$250,000
The creation of multi-use trail that connects Barcelona Harbor (Lake Erie) to Chautauqua Institution (Chautauqua Lake) to generate increased entrepreneurial activity and job opportunities, strengthen the local and regional economy through diversification, and build on the natural assets of the region. This trail and associated trail heads would serve to increase opportunities for walking trails to enjoy the many attractions along the way. It also preserves this pristine area, including agricultural lands, from future development.										
Additional Considerations/Potential Funding Sources: Require \$250,000 additional funding. Currently seeking funding through locally funded cash and in-kind contributions.										

Land Use and Livable Communities Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 Blue Trails Buffalo, Erie County	Education The Learning Sustainability Campaign		6		4			No Reduction of GHG Emissions	Yes No Direct Jobs; Supports Indirect Job Creation	\$100,000/ Not applicable

Blue Trail-Economic development tool as recreational trail in water (as opposed to shoreside GreenTrail) for sail, motor and paddle boats (kayaks and canoes) that links communities through identification of historic, recreational, environment and nature and commercial sites. First phase targets Buffalo Waterfront and historic Buffalo River sites. Project to be marketed online as a stand alone site, and with printed maps, video and phone apps, etc. Goal is to be a tool to promote recreational and conservation oriented economic development by promoting historic, recreational, environmental/Nature, and commercial places. Links communities with cooperative planning and development towards promoting recognition of water based resources.

Additional Considerations/Potential Funding Sources: This project is currently being developed with coordination with other groups and organizations.

 Art: H2O Buffalo, Erie County	Education Art Services Initiative of WNY		6		1•4	1		No Reduction of GHG Emissions	Yes No Direct Jobs; Supports Indirect Job Creation	\$50,000/ \$45,000
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Provide public access to art on and in the waterfront vicinity. Art will be water and/or sustainability themed. Materials reuse will be encouraged. The works will serve as cultural tourism attraction as well as for education and outreach. Works will be installed in the Buffalo waterfront greenway thereby providing innate connectivity and recreational use.

Additional Considerations/Potential Funding Sources: Additional funding pending. Ideally a 90% state 10% local contribution structure is attainable.

 Triple Divide Trail System Allegany County	Infrastructure/Education Genesee River Wilds		6	1	1•3•4			Direct and Indirect Avoidance	Yes No Direct Jobs; Supports Indirect Job Creation	TBD
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The Triple Divide Trail System will be a unified conservation and recreation system stretching 230 miles along the Genesee River and Pink Creek from Lake Ontario in Rochester, NY to the Susquehanna River in Williamsport, PA. The recreation systems is being created by connecting rail-trails (greenways), water trails (blue ways) and natural park areas including Letchworth State Park, (NY) and Pine Creek Gorge (PA). The approach is integrative and cost effective. It combines water conservation, natural flood control, outdoor recreation, environmental education and sustainable economic development, including new jobs in construction and eco-tourism.

 Genesee River Wilds Project Allegany County	Infrastructure/Education Genesee River Wilds, Inc.		1•6	1	1•3•4			Direct and Indirect Avoidance	Yes No Direct Jobs; Supports Indirect Job Creation	\$8,600,000/ \$8,600,000
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The Genesee River Wilds project is part of the Triple Divide Trail System concept for connecting both greenway trails and Blueway [river] trails that extend from the Rochester NY area south along the Genesee River across the state border south well through Pennsylvania. The Genesee River Wilds Project includes specific development project for recreational access to the River. Approximately 10 new blueway trailheads are proposed to access the river with Kayaks and Canoes, including parking lots, informational kiosks with maps and river information, educational information, picnic tables and benches, and improved access to the river. In addition, the project is working to improve the existing greenways and connect the two: Genesee Valley Greenway and the Upper Genesee River Trail [formerly known as the WAG Trail] from Belfast south to Wellsville. Ecological concerns are also part of this project which will focus on reducing erosion along the river and tributaries of the Genesee River.

Additional Considerations/Potential Funding Sources: There has been initial support from Allegany County and the Department of Public Works, NYS Department of Transportation, Friends of the Genesee Valley Greenway, New York State Office of Parks, Recreation and Historic Preservation, Bicycling Clubs, Hiking Clubs and local Towns and Villages. Potential funding sources include cash, in-kind or volunteer assistance.

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Transportation Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
<p>1 Re-establish Passenger Rail Service in Dunkirk Dunkirk, Chautauqua County</p>	<p>Private Infrastructure Chautauqua County Department of Planning and Economic Development in conjunction with the City of Dunkirk.</p>			1•3•4	1•2			Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation	\$20,000/ \$15,000
<p>Rehabilitate the existing CSX-owned building and train loading platform in the City of Dunkirk to reestablish rail passenger service. This project proposed to update the 2001 structural evaluations and cost estimates for renovation of the CSX railway depot and boarding platform.</p> <p>Additional Considerations/Potential Funding Sources: The remaining \$5,000 will be in the form of in-kind contribution from the City of Dunkirk and County of Chautauqua CCPED.</p>										
<p>1 Enhanced Niagara Street Next Generation Sustainable Transportation Corridor Buffalo, Erie County</p>	<p>Public Infrastructure NFTA, City of Buffalo</p>		1•2	3•4•6	1•3	1•3		Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation	\$500,000/ \$400,000
<p>The Enhanced Niagara Street Next Generation Sustainable Transportation Corridor will improve access and livability for current and future riders who are either transit-dependent or who choose to take advantage of the new park-and-ride and enhanced bus shelter to be established at the intersection of Niagara and Ontario Streets. The enhancements include:</p> <ul style="list-style-type: none"> › New solar powered, green roof bus shelters with next bus notification technology throughout the corridor; › Establishment of the NFTA's first net-zero enhanced bus shelter located at a new park-and-ride facility. The net-zero enhanced bus shelter will include a solar panel array on the main roof that will generate electricity for the facility and a solar-powered water heater will provide water heating needs for the restroom facility. A geothermal system will heat and cool the facility. To conserve the energy the facility produces the building will be wrapped in super-insulation and other innovative building materials and a green roof will keep the interior comfortable in the summer and winter months without added energy use. <p>Additional Considerations/Potential Funding Sources: Should funding be made available by NYS to implement this project the NFTA would pursue matching dollars through its annual Federal Transit Administration formula funding and provide requisite matching local funds.</p>										
<p>2 Buffalo Niagara Medical Campus Vanpool Program Buffalo, Erie County</p>	<p>Private Infrastructure BNMC</p>			4	1•2			Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Supports Indirect Job Retention	\$600,000/ \$500,000
<p>Buffalo Niagara Medical Campus (BNMC) in partnership with Buffalo CarShare (BCS) is looking to pilot an innovative employee vanpooling program, which combines traditional vanpool operations, alternative fuel vehicles and infrastructure, and existing car sharing operations on the Medical Campus. The Program, which will mark the first vanpool fleet in Western NY (WNY) and the first alternative fuel vanpool program in New York State, will offer employees on the BNMC an affordable, highly-efficient, and environmentally sustainable transportation option. In addition, the Program will offer insight and serve as a model for possible replication among other employment centers across the State.</p> <p>Additional Considerations/Potential Funding Sources: Funding for will be for 2 years of service. Additional funding through BNMC In-kind staff time and parking spaces and leveraging marketing dollars from other TDM programs.</p>										

 Energy
  Land Use and Livable Communities
  Transportation
  Water Resources
  Waste Management
  Agriculture and Forestry

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  Regionwide, Measurable GHG Impacts
  Local Measurable GHG Impacts
  Not Significant or Measurable GHG Impact
  No GHG Impact

Transportation Focus Area Sustainability Projects

Project Name, Impact Location and Description		Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
											
 3	Go Buffalo Integrated Mobility Hub Buffalo, Erie County	Public Infrastructure Go Buffalo is an already-established collaboration between various stakeholders, including the Buffalo Niagara Medical Campus, Go Bike Buffalo, Buffalo CarShare and others.		4	1•3				Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Supports Direct and Indirect Job Creation and Retention	\$350,000/ \$350,000
<p>The Go Buffalo is seeking to develop an integrated mobility hub in close proximity to the NFTA Metro Allen/Medical Campus Rail Station. The hub will serve as the main headquarters for Go Buffalo: a campaign led by BNMC, Buffalo CarShare, Go Bike and others to promote and improve the city’s growing alternative transportation system. The hub will provide neighborhood residents and BNMC employees alike with greater access to transit and mobility services, such as Metro info, car sharing, bike sharing, and community bicycle workshops. The hub will serve as a source of information and provide a venue to educate community members and employees on their alternative transportation and transit options.</p> <p>Additional Considerations/Potential Funding Sources: In-kind staff contributions are expected. The integrated mobility hub may be constructed within a BNMC owned property as well, reducing the need for funding assistance.</p>											
 1	S.I.T Transportation Erie, Chautauqua, Cattaraugus and Allegany County; Seneca Nation of Indians	Public Infrastructure South Towns Community Enhancement Coalition		4	1•2				Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation	\$5,500,000/ \$3,000,000
<p>Thirteen rural communities and the Seneca Nation working together to create a unique mass transit system that would extend transit service to the residents of over 30 communities situated in 4 Counties of WNY This system will bring about reduce air pollution by using natural compressed gas and create an environment with fewer vehicles operating on our roads. Provide transportation aid to the Seniors and Shut ins in rural parts of the region; work to increase accessibility for workers, students and residents leisure activities.</p> <p>Additional Considerations/Potential Funding Sources: Pending funding from the Seneca Nation of Indians to fund a portion of infrastructure costs (approximately \$2,500,000)</p>											
 1	Southern Tier West Region Park and Ride Location Allegany, Cattaraugus, Chautauqua Counties	Public Infrastructure Southern Tier West Regional Planning Board		4	1				Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Jobs (Temporary)/ Supports Indirect Job Creation and Retention	\$2,040,000/ \$2,040,000
<p>Development and construction of park and ride lots in the three county region. The project will include the identification of six specific locations (except where currently identified) within these communities: Fredonia and I-86 exit at Panama/Chautauqua Institution in Chautauqua County; Salamanca and Allegany I-86 exit 24 in Cattaraugus County; and Cuba and Belvidere in Allegany County.</p> <p>Additional Considerations/Potential Funding Sources: Additional funding sources have not been identified as of this date. Other cash and in-kind funds are expected to be contributed for this project.</p>											
 3	Southern Tier West Public Transportation Website Allegany, Cattaraugus, Chautauqua Counties	Education Southern Tier West Regional Planning Board		4	1				Indirect Reduction and Avoidance	Yes Supports Indirect Job Creation and Retention	\$10,000/ \$10,000
<p>Develop a website that details routes and provides maps for all available public transportation in the three-county region. The general population in our region does not understand the current options available through our public transportation system. In addition, the website could lead to further collaboration among our three counties and, in the future, lead to collaboration with the systems in Erie and Niagara Counties.</p>											

 Energy  Land Use and Livable Communities  Transportation  Water Resources  Waste Management  Agriculture and Forestry

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Transportation Focus Area Sustainability Projects

Project Name, Impact Location and Description		Project Type and Organization Identified for Implementation	Sustainability Goals ¹				GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
									
1	NFTA Vehicle CNG Conversion Buffalo, Erie County	Public Infrastructure Niagara Frontier Transportation Authority (NFTA)			1•2			Direct Reduction and Avoidance	Yes No Direct Jobs \$437,410/ \$335,000
<p>This project would convert 17 gasoline-fueled paratransit vehicles to compressed natural gas (CNG) fueled vehicles once the CNG fueling station (currently underway) at the Frontier Bus Garage is completed. This project will unlock the ability of a CNG fleet to reduce greenhouse gas emissions, fuel consumption, and maintenance and fuel costs while improving future transit options in Erie and Niagara Counties. The conversion of these gasoline-fueled paratransit vehicles to CNG-fueled vehicles would make these the first vehicles in the NFTA's fleet to be powered by CNG.</p> <p>Additional Considerations/Potential Funding Sources: Should funding be made available by NYS to implement this project the NFTA would pursue matching dollars through its annual Federal Transit Administration formula funding and provide requisite matching local funds.</p>									
1	Purchase of NFTA CNG Fueled Vehicles Buffalo, Erie County	Public Infrastructure Niagara Frontier Transportation Authority (NFTA)			1•2			Direct Reduction and Avoidance	Yes No Direct Jobs \$2,200,000/ \$1,500,000
<p>This project would support the purchase of new compressed natural gas (CNG)-fueled 40 foot buses once the CNG fueling station (currently underway) at the Frontier Bus Garage is completed. The NFTA will procure its first 4 CNG-fueled 40 foot buses over the coming year (2012-2013) through support from the Federal Transit Administration's Bus Livability Program. The addition of new CNG-fueled 40 foot buses, paratransit vehicles and the procurement of additional new CNG-fueled 40 foot buses and paratransit vehicles through future annual rolling stock procurements will allow the NFTA to be well on its way to significant reductions in the greenhouse gas emissions of its fleet and enhanced financial stability of WNY's public transportation system through the savings generated by CNG-fueled vehicles.</p> <p>Additional Considerations/Potential Funding Sources: Should funding be made available by NYS to implement this project the NFTA would pursue matching dollars through its annual Federal Transit Administration formula funding and provide requisite matching local funds.</p>									
1	CNG Fueling Station and Parking Lot Circulators for Buffalo Niagara International Airport Buffalo, Erie County	Public Infrastructure Niagara Frontier Transportation Authority (NFTA)			2			Indirect Reduction	Yes Direct Job Creation (Temporary) \$5,500,000/ \$500,000
<p>This project would install a CNG fueling station at Buffalo Niagara International Airport (BNIA) and purchase parking lot buses and other vehicles that run on CNG. BNIA vehicles, airline vehicles, rental car buses and possibly others could access the CNG fueling station. CNG fueled vehicles lower the greenhouse gas emissions, energy use and operating costs of these vehicles which run continually.</p> <p>Additional Considerations/Potential Funding Sources: This project qualifies for 75% support through the Federal Aviation Administration (FAA) Voluntary Airport Low Emissions (VALE) Program. The BNIA Passenger Facilities Charge (PFC) program has been identified as an additional source of funding for the project.</p>									
2	Regional Arterial Management System; Traffic Signal Coordination in WNY Erie County	Public Infrastructure New York State Department of Transportation		4	1•2			Indirect Reduction and Avoidance	Yes Direct Job Creation or Retention (Temporary) \$6,000,000/ \$6,000,000



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Transportation Focus Area Sustainability Projects

Sustainability Goals¹

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹				GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
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Poorly timed and coordinated traffic signals contribute to deficiencies including; increased travel times and frequent stopping causing increased pavement wear, safety concerns, fuel consumption and emissions. The project is to address these deficiencies long the following routes which make up the project limits; Route 33 Genesee St. from Buffalo City Line to Route 78 Transit Rd., Route 277 Union Rd. from Route 20 Southwestern Blvd. to Route 33 The Kensington Expressway., Route 78 Transit Rd. from Route 33 Genesee St. to Route 5 Main St, Route 952Q Walden Ave., from Buffalo City Line to Route I-90 NYS Thruway, Route 325 Sheridan Extension, Route 324 Sheridan Dr. from Route I-190 Niagara Expressway to Route 78 Transit Rd., Route 384 Delaware Ave. from Sheridan Dr. to Joseph Dr., Route 62 Niagara Falls Blvd. from Eggert Rd. to North Ellicott Creek Rd., and Route 240 Harlem and Orchard Park Rd. from Sheridan Dr. to Union Rd., and in the Central Business District of the City of Buffalo.

Additional Considerations/Potential Funding Sources: Any funding received could possibly be supplemented by funds contributed by the NYSDOT for design resources and project management through construction.

2	Buffalo Niagara Emissions Reduction Signals Optimization Buffalo, Erie County	Public Infrastructure Greater Buffalo-Niagara Regional Transportation Council	4	1•2•3			Indirect Reduction and Avoidance	Yes No Direct Jobs	\$435,000/ \$400,000

This project would retime traffic signals and optimize traffic flow in six corridors in the Cities of Buffalo including Genesee Street; Delaware Avenue; and South Park Avenue. This will have significant energy and environmental benefit.

Additional Considerations/Potential Funding Sources: Approximately \$35,000 in kind would be available through data provision and field implementation to match the NYS amount.

2	City of Buffalo Traffic Signal Synchronization City of Buffalo, Erie County	Public Infrastructure City of Buffalo Department of Public Works	4	1•2•3			Indirect Reduction and Avoidance	Yes No Direct Jobs	\$300,000/ \$300,000

The City of Buffalo is proposing to synchronize the traffic signals along South Park, Genesee Street, Delaware Avenue, and Bailey Avenue. The City would contract with a traffic engineering consultant to collect data and design a timing pattern which would reduce, to the extent practicable, the delay for motorists travelling along these corridors.

2	Alternative Fuel Public Safety Fleet and Shuttle Busses on the Buffalo Niagara Medical Campus Buffalo, Erie County	Private Sector Infrastructure BNMC in partnership with RPCI		1•2			Direct Reduction and Avoidance	Yes No Direct Jobs	\$500,000/ \$500,000

The proposed project will replace the current Roswell Park Cancer Institute (RPCI) Public Safety fleet with alternative fuel vehicles, including 3 plug-in hybrid electric vehicles for patrols and 2 CNG vans for passenger escorts and deliveries. In addition, the BNMC will replace the two currently diesel fueled "Wave" shuttle busses with CNG fueled vehicles. For fueling and charging infrastructure, these vehicles will use the existing 21 EV charging stations on the BNMC, as well as the CNG fueling station at the adjacent NYSDOT facility at Tupper and N Oak Streets.

Additional Considerations/Potential Funding Sources: BNMC and RPCI operational expenses as in-kind match

2	Jamestown CNG Station and Fleet Conversion Jamestown, Chautauqua County	Private Infrastructure Jamestown BPU		2		4	Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation	\$1,500,000/ \$1,500,000

The Jamestown Board of Public Utilities (BPU) will install a CNG fueling station. This station would serve both public and private customers. The BPU and other city entities (Department of Public Works, Parks Dept, School district, etc.) will then begin converting their fleets. The vehicle fleets include: garbage trucks, line trucks, dump trucks, vac trucks, school buses, pickup trucks and other municipal vehicles.

Additional Considerations/Potential Funding Sources: The BPU has conducted a basic feasibility study on the project and is planning on a CNG station constructed in the second half of 2013. The conversion of vehicles to CNG would take a few years due to the number of vehicles and the limited number of individuals capable of doing conversions.



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 2 Local Measurable GHG Impacts
 3 Not Significant or Measurable GHG Impact
 4 No GHG Impact

Transportation Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
2 Alternative Fuel Vehicles for Erie County Sheriffs Erie County	Public Infrastructure Erie County Sheriff; Public Works (Fleet); and Environment and Planning			2				Direct Reduction and Avoidance	Yes No Direct Jobs/Supports Indirect Job Creation and Retention	\$62,500/ \$50,000

The Erie County Sheriff's Office is interested in retrofitting 25 of its vehicles to use propane as a fuel. Propane has been used as an alternative fuel for law enforcement vehicles across the country. The reason that propane has been selected over compressed natural gas (CNG) in law enforcement applications is that propane addresses some of the concerns of acceleration and fueling that CNG poses.

Additional Considerations/Potential Funding Sources: Erie County would provide a match of \$12,500 in in-kind services.

3 Incumbent Worker Training for Automobile Industry Advanced Manufacturers Chautauqua County	Education Chautauqua County Workforce Investment Board (WIB Inc.)			2				Through Education and Policy	Yes No Direct Jobs/Supports Indirect Job Creation and Retention	\$100,000/ \$100,000
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As the auto industry prepares to manufacture the necessary parts to produce a more GHG emission efficient product, incumbent workers employed at advanced manufacturers will require a great deal of training to operate new equipment, participate on new lines, develop new processes, etc. This training will be at great cost to the advanced manufacturing businesses. The Chautauqua County Workforce Investment Board (WIB Inc.) is proposing to provide assistance in off setting the necessary costs that will be incurred to provide this training to potential employees in the region.

3 Ripley Grade Crossing Project Ripley, Chautauqua County	Public Infrastructure NYS Department of Transportation		4	1-2-3				Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation and Retention (Temporary)	\$25,000,000/TBD
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The Ripley Grade Crossing project would include a roadway that goes under the current railroad tracks on Route 76. It would eliminate unnecessary crossing and allow for traffic, (i.e., pedestrian, bicycle, and vehicles), to move freely in the corridor without the need to stop and idle while waiting for trains that are in transit through the area or are stopped on the tracks. This project would increase mobility in the area and greatly increase the safety of the roadways. The project objectives are to improve transportation safety within the hamlet of Ripley while being consistent with overall community objectives. The project would address the issue of at-grade crossing redundancy within the hamlet and the safety issues in terms of accidents/fatalities associated with the existing at-grade crossings. The project will also reduce travel times and GHG and greatly enhance the community aspects of the hamlet.

Additional Considerations/Potential Funding Sources: Any NYSERDA funding could possibly be leveraged supplemented by Federal and in-kind NYSDOT contributions. The NYSDOT plans to complete design services resources for this project, and will would manage the project through construction. NYSDOT estimates the value of their design and construction oversight services to be approximately \$2,000,000.

3 Bicycle Friendly Buffalo City of Buffalo, Erie County	Public Infrastructure/Education GO Bike Buffalo in partnership with City of Buffalo		1-4-6	1-3				Indirect Reduction and Avoidance	Yes No Direct Jobs; Supports Indirect Job Creation and Retention	\$1,000,000/ \$800,000
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GObike Buffalo is working in collaboration with the City of Buffalo, Buffalo Niagara Medical Campus, Buffalo CarShare and multiple businesses to create a balanced transportation system supported through the implementation of Buffalo's Complete Streets ordinance that integrates cycling into an intermodal transportation landscape to establish Buffalo as a bicycle friendly community. To accomplish this goal an investment in a bicycle master plan and roadway striping will need to be achieved. However, this minimal investment will achieve greater economic opportunities for all residents, help persuade young people to stay, attract businesses, enhance the health of our community, and improve our region's environmental sustainability – all at a reasonable cost that municipalities across the globe are finding to be a wise long-term investment.

Additional Considerations/Potential Funding Sources: The City of Buffalo has included \$200,000 in the 2013 capital budget to include additional striping of roadways with bicycle facilities.



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 Not Significant or Measurable GHG Impact
 No GHG Impact

Transportation Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 North Union Street/Walkable Olean Infrastructure Project Olean, Cattaraugus County	Public Infrastructure City of Olean		4	1-3	1-3			Indirect Reduction and Avoidance	Yes Direct Jobs (Temporary) /Supports Indirect Job Creation and Retention	\$2,000,000/ \$500,000

North Union Street, between Route 417 (State Street) to Main Street, is currently a four lane street with diagonal parking and sidewalks, and viewed by many within the community as being unfriendly to pedestrians and bicyclists. Much of North Union Street was designed for relatively high volumes of traffic. There are no medians, no pedestrian islands, no bike lanes and overly-generous shoulders. Curb extensions do exist for several pedestrian crossings along the street, but could be further enhanced to create better visibility. The ultimate goal of the North Union Streetscape Design will be to create a street that reflects the character of the community and makes the corridor a safe, comfortable and inviting place for pedestrians and bicyclists, while also accommodating vehicular traffic.

Additional Considerations/Potential Funding Sources: The City of Olean has successfully applied and received grant funding to move this project forward. In addition, NeighborWorks Home Resources has applied for Main Street funding under this last CFA round which, if awarded, will augment the City's efforts to transform North Union Street.

 Niagara Street Complete Street Improvement Project Buffalo, Erie County	Public Infrastructure City of Buffalo		4-6	1-2-3	1-3			Indirect Reduction and Avoidance	Yes Direct Jobs (Temporary) /Supports Indirect Job Creation and Retention	\$1,200,000
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The Niagara Street Complete Street Improvement Project proposes to convert the existing 4-lane, north/south oriented urban arterial roadway of Niagara Street, to a 3-lane configuration promoting multi-modal use and offering more transportation choices, while improving safety and providing a reliable and accessible transportation network along Buffalo's waterfront. Funding will be used for roadway improvements to approximately 2.65 miles in length on Niagara Street in the City of Buffalo from Ontario Street to Busti Avenue. Improvements include:

- > Implementing a new striping for 2 travel lanes, a center turn, bike lanes, and parking.
- > Installing ladder bar crosswalks at signalized intersections to facilitate pedestrian safety and movements in the corridor.
- > Optimizing traffic signals along the corridor to reduce emissions and improve traffic flow.

Additional Considerations/Potential Funding Sources: Federal funding that has been secured for the project includes:

- > \$2,400,000 Niagara Street Gateway Project (Currently on the MPO TIP)
- > \$3,500,000 NFTA FTA Bus Livability Grant

 Niagara Falls North Gateway Project Niagara Fall, Niagara County	Public Infrastructure City of Niagara Falls		4-6	1-3	1-3-4			Indirect Reduction and Avoidance	Yes Direct Jobs (Temporary) /Supports Indirect Job Creation and Retention	\$27,750,000/ \$5,000,000
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Demolition, consolidation and reconstruction of roadway access along an approximate two (2)-mile segment of the North segment of the Robert Moses Parkway along the Niagara Gorge rim from Main Street to Findlay Drive to create a single, at-grade, Riverfront Boulevard following the current Whirlpool Street right-of-way. This would include the demolition of the existing expressway features in this portion of the RMP North Segment and the high-level bridge that carries a 1/2-mile portion of this RMP segment over the Whirlpool Bridge and Plaza; Construction of an appropriate transition at Findlay Drive to remaining segments of the RMP North; Full-depth reconstruction of the Whirlpool Street, and natural landscape/habitat restoration of reclaimed lands and installation of appropriately-scaled trail access to/along the Gorge.

Additional Considerations/Potential Funding Sources: No matching dollars have been identified at this time.

Transportation Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
3 Buffalo Ave Heritage District Streetscape Niagara Falls, Niagara County	Public Infrastructure		4•6	1•3	1•3			Indirect Reduction and Avoidance	Yes Direct Jobs (Temporary)/ Supports Indirect Job Creation and Retention	\$8,250,000/ \$1,000,000

The Buffalo Avenue project identifies measures to preserve and revitalize one of the City's oldest neighborhoods. The project includes the reconstructing and streetscaping of a one-mile segment of Buffalo Avenue and adjoining streets. Improvements are based upon recommendations in the Niagara Falls Comprehensive Plan and Buffalo Avenue Heritage District Revitalization Strategy. This includes reconstruction of Buffalo Avenue and relatively shorter segment of cross streets as well as sidewalk/crosswalk, gateway, and alley features.

Additional Considerations/Potential Funding Sources: Would require \$400,000 for design, engineering, and environmental clearances. Phase 2 would require \$600,000 for construction of immediately achievable streetscape improvements identified under the initial design and engineering portion.

3 Complete Streets Infrastructure Improvement Projects Allegany and Cattaraugus Counties	Public Infrastructure Cornell Cooperative Extension Allegany and Cattaraugus County		4	1•3	1•3			Through Education and Policy	Yes Direct Jobs (Temporary)/ Supports Indirect Job Creation and Retention	\$300,000-\$500,000/ \$300,000-\$500,000
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Municipalities in the Cattaraugus and Allegany Counties have been diligently working to pass complete streets policies and to create a more walkable/bikeable communities by improving their facilities for pedestrians and bicyclists. This project would work with the communities that have already passed the Complete Streets Policy and would help them to improve their facilities by using their Assessments and implementing the strategies that would create a comprehensive complete street community. This project would also work with the communities in these counties that have not passed a policy, but who would like to, along with assessing their current facilities.

Additional Considerations/Potential Funding Sources: Amount of funding required depends on the number of Complete Streets communities to take part in the program.

2 Springville Bike/Pedestrian Master Plan and Central Business District Streetscape Design Springville, Erie County	Public Infrastructure Village of Springville		1•4	1•3	1•3			Indirect Reduction and Avoidance	Yes Direct Jobs (Temporary) /Supports Indirect Job Creation and Retention	\$140,000/ \$70,000
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Creating a Bike/Pedestrian Master Plan for the Village of Springville will encourage and attract non-vehicular transportation. Design and development of a streetscape will improve community livability and transform Springville into a destination along the proposed Erie Cattaraugus Rail Trail. The initial streetscape phase will address bike and pedestrian access in the Central Business District (CBD) bounded by E. Main St., Franklin Street, and N. Buffalo St., comprising approximately 0.52 miles. Roughly 90% of Springville households are within a 15 minute walk of the CBD. Proposed Streetscape improvements will include:

- › Pavement marking for bike lanes, sharrows, and pedestrian crosswalks
- › Consistent hardscapes in pedestrian areas to identify and theme the Phase I Streetscape
- › Green Infrastructure where opportunities exist such as rain gardens, structural soil planters, permeable pavers
- › ADA accessibility and other bicycle infrastructure improvements where necessary
- › Street trees and other hardy vegetation to define the extent of the Phase I Streetscape, improve air quality, reduce heat island effect and brighten and enhance attractiveness of the CBD
- › Wayfinding signage to inform visitors about nearby attractions and benefits of infrastructure enhancements.

Additional Considerations/Potential Funding Sources: Funding will go toward the development of the Bike/Ped Master Plan as well as the (\$48,000) the First Phase Design and Construction Documents (\$92,000). Possible additional funding may come from historic preservation, land and water conservation, transportation, recreation, air quality enhancement, economic and urban development sources.

Transportation Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 Buffalo Complete Streets Grid Buffalo, Erie County	Public Infrastructure City of Buffalo		1-4-6	1-2-3	1-3			Indirect Reduction and Avoidance	Yes Direct Jobs (Temporary)/ Supports Indirect Job Creation and Retention	\$56,000,000/ \$56,000,000

The City of Buffalo recently adopted a complete streets ordinance, the City is proposing a system of complete, green streets as the modern complement to the Ellicott and Olmsted plans. The system would strategically connect key assets/institutions including the downtown, waterfront, Main Street Knowledge Corridor and Larkin District. The City's Complete Green Street Grid would actively encourage pedestrian, bicycle and transit transportation choices through improved multi modal facilities. The proposed Cobblestone-Ohio Complete/Green Street Corridor at 1.9 miles is predicted to be the longest complete, green street corridor in New York State, second nationally to the Philadelphia Spring Street Greenway.

Additional Considerations/Potential Funding Sources: The City would seek to match any funds with its Capital Improvement Program, General Revenue, and other identified grant funds.

 Energy
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Agriculture and Forestry Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
<p>2 WNY Mobile Meat Processing Unit Allegany County, Cattaraugus County, Chautauqua County, Erie County, Niagara County</p>	<p>Private Infrastructure Allegany County</p>		5	2	1		1•3 4	Indirect Reduction and Avoidance	Yes Direct Jobs/Supports Indirect Job Creation and Retention	\$200,000/ \$200,000
Development of mobile meat processing unit for use in region.										
<p>4 Farmer Recruitment Program Chautauqua County</p>	<p>Public Infrastructure Chautauqua County Planning and Economic Development</p>		1•3•5				1•3	Through Education	Yes No Direct Jobs; Indirect Job Creation and Retention	\$30,000/ \$30,000
Identify lands/active farms available where existing farmer is aging out or has changed careers. Actively recruit young farmers or farm families to the area through marketing of lands to other areas where land is scarce or market prevents entry level farmers from getting into the farming business.										
<p>4 Small Farm Innovation and Entrepreneurship Program Allegany County, Cattaraugus County, Chautauqua County, Erie County, Niagara County</p>	<p>Public Infrastructure/Education Center for Organic and Sustainable Agriculture (COSA) at Alfred State College</p>		5				1•2•4	Indirect Reduction and Avoidance	Yes No Direct Jobs; Supports Indirect Job Creation and Retention	\$750,000/ \$680,000
Program will work with diverse set of public and private partner organizations to address existing barriers to the development of sustainable small farm businesses that fit the natural assets and market characteristics of WNY. Program training staff will develop and supervise summer experiential education programs, internships and business and marketing advisory services for aspiring new farmers and support enterprises. Additional Considerations/ Potential Funding Sources: Private sector and ASC alumni donor cash support - \$25,000, Private sector in-kind (tool, equipment, seed, etc. donations) - \$25,000, In-kind (Alfred State personnel) - \$20,000										
<p>2 WNY Small-Scale Food Processing Center Allegany County, Cattaraugus County, Chautauqua County, Erie County, Niagara County</p>	<p>Public/Private Infrastructure Allegany County</p>		1	5			1•3•4	Indirect Reduction and Avoidance	Yes Direct Jobs/Supports Indirect Job Creation and Retention	\$350,000
Will provide business opportunities for specialty food processors, farmers, growers, and producers. Facility will help farmers add value to locally grown and raised food products through: processing/co-packing, product development, dairy incubator, distribution, marketing, sales, and food safety training. Production capabilities will include: cheeses, cheese spreads and dips; yogurts and other cultured products; dairy spreads and dips; milk, juice, cider and wine products. Value Added specialty equipment available: dicing/slicing/shredding/grinding; modified atmosphere packaging; vacuum packaging; annual storage-cooler/freezer.										
<p>3 WNY Food Hub Project Allegany County, Cattaraugus County, Chautauqua County, Erie County, Niagara County</p>	<p>Planning/Private Infrastructure Market research and business-planning piece: Field and Fork Network. Construction of actual food hub, is dependent on the outcomes of phase 1.</p>		1	5	2		2	1•3 4	Indirect Reduction and Avoidance	Yes Direct Jobs/Indirect Job Creation and Retention Phase 1: \$50,000 Phase 2: \$150K-\$200K (start-up capital)
The first phase will encompass market research to identify the market-based solutions to address bottlenecks and gaps in our current food system infrastructure. Additionally, there will be a demand analysis, which aims to quantify the potential investment by food retail, food service retail and institutional food buying sectors. The second phase of the project is the implementation of a regional Food Hub business plan that will address processing, aggregation, quality assurance and distribution of local farm products, ultimately increasing accessing to these products. Additional Considerations/ Potential Funding Sources: Seek to secure Phase 1 funding through NYS										

 Energy  Land Use and Livable Communities  Transportation  Water Resources  Waste Management  Agriculture and Forestry
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Agriculture and Forestry Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
		1	3-5	1-2	1-3	4	4			
 East Aurora Cooperative Market East Aurora, Erie County	Private Infrastructure/Education East Aurora Cooperative Market	1	3-5	1-2	1-3	4	Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Jobs/Indirect Job Creation and Retention	\$2,200,000/ \$500,000	

The East Aurora Cooperative Market was born out of a desire for easier access to food and other grocery items that are locally grown, healthier for our bodies, better for our environment and beneficial to our local economy. The East Aurora Cooperative Market will be a self standing, full service grocery store that capitalizes on our numerous local growers as much as possible, but with the capability of bringing items in from further away and that are not native to WNY, but produced with a similar standard in mind. The cooperative business model was chosen because of its appeal as an organization of people who work together for a mutual benefit. A food cooperative is open to all to shop in, but is owned and governed by its members, via the board of directors, through a democratic process. There is a high focus on community education and outreach that promotes a healthy, vibrant community and a forward thinking way of life. Meeting the nutritional needs of our members will be realized through access to natural, sustainable goods, while supporting the local economy through our growers.

Additional Considerations/ Potential Funding Sources: Currently seeking additional funding options.

 Community Food Training Center Buffalo, Erie County	Education/Public/Private Infrastructure Massachusetts Avenue Project (MAP), with support of the Food Lab at the University at Buffalo		5	1-2	1-3	4	Indirect Reduction and Avoidance	Yes Job Retention/Indirect Job Creation	\$500,000/ \$500,000
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Create an urban hub for agriculture-based workforce development, community research and education, and new farmer linkages and training. Community Food Training Center will house training space, a teaching kitchen, a resource library, and will be a resource for linking young people and immigrant populations with emerging employment and training opportunities in multiple food system sectors, including sustainable rural and urban agricultural production, processing, distribution and marketing. It will also serve as a community site for the University at Buffalo's Food Lab, and help facilitate community participation in regional food systems research.

Additional Considerations/ Potential Funding Sources: MAP will continue to provide jobs and training to at least 50 young people; in addition the project will create several new farmer apprenticeship/internship positions that will lead to more permanent positions in the food sector.

 ART FARMS Buffalo Buffalo, Erie County	Education/ Public Outreach The Lt. Col Matt Urban Human Services Center of W.N.Y.				1		No GHG Impact	Yes Indirect Job Creation / Retention	\$328,750/ \$197,250
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Buffalo's urban farms are an initial response to vacant land remaining after the mass demolition of its homes. Now, cultural layers are added to make surrounding areas sustainable, relevant, and viable to broader audiences. ARTFARMS combines arts, food, and changes in the landscape into a new community asset and backdrop for other redevelopment to occur. Located in Buffalo's East Side Fillmore District, 10 agricultural artworks will be embedded into 4-5 urban farms. Well known artists representing Buffalo's diverse art community will be commissioned to design and fabricate functional artworks that are used for farming activities. ARTFARMS attracts new interest by changing negative perceptions, encouraging other redevelopment and an upward trajectory for the neighborhood.

 Alfred State - SUNY ESF Biorefining Project: Planning and Design Phase Allegany County, Cattaraugus County	Planning/Education Alfred State College (in partnership with the New Forest Economy Program at SUNY-ESF)	4			1-2		No. GHG reduction in future phase	Yes Supports Indirect Job Creation and Retention	\$85,000/ \$85,000
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Proposal is for initial research, a participatory planning process, refinement of strategy for overall project development, and business plan and design for the integration of a public-private partnership for a biorefining and bioenergy production facility. Proposal will also have connections to sustainable local food production (greenhouses co-located to take advantage of "waste" heat, and post-secondary education for advanced manufacturing and environmental technology.

Additional Considerations/ Potential Funding Sources: Funds used for planning phase.

Agriculture and Forestry Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹					GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
		  		 					
 Erie County Purchase of Development Rights Program Erie County	Planning/Policy Erie County Department of Environment and Planning		1•3•5	1•2•3		1•3 Through Policy	Yes Indirect Job Creation/ Retention	\$100,000/ \$5,000	

Determine the feasibility of developing an Erie County purchase of development rights (PDR) program. Program will use farmland prioritization and voluntary, pre-application process to determine farmers/landowners interested in protecting their land. Review of the land prioritization and pre-applications will culminate in a ranking of potential projects.

Additional Considerations/ Potential Funding Sources: Matching funds through USDA Natural Resources Conservation Service and New York State Department of Agriculture and Markets.

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  Land Use and Livable Communities
  Transportation
  Water Resources
  Waste Management
  Agriculture and Forestry

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  No GHG Impact



Water Resources Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 WPCF Building 3 and 40 Sludge Collection Modifications Amherst, Erie County	Public Infrastructure Town of Amherst Engineering Department	1	3		1-2			Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	No Direct (Temporary) Job Creation; Indirect Job Creation	\$3,600,000/ \$3,260,000

Primary treatment at the Amherst WPCF includes gravity settling in one of four (4) Equalization (EQ) Basins (Buildings 3 and 40). These four basins are each equipped with influent control gates, traveling bridge units, scum collection systems, and sludge cross-collectors. The current sludge and scum collection traveling bridge system is approximately 35 years old and is severely dilapidated. The current traveling bridge equipment will be replaced with chain-and-flight equipment that is more energy efficient and will provide the plant a more stable operating condition and less permit exceedances. The quality of the treated water discharged is being impaired due to the functionality of the equipment.

 Chautauqua Utility District WWTP Up-grade Town of Chautauqua, Chautauqua County	Public Infrastructure Chautauqua Utility District		3		1-2 4		No		Yes Direct (Temporary) Job Creation; Indirect Job Creation	\$6,500,000/ \$6,500,000
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Chautauqua Lake has recently been listed as "impaired" by NYSDEC because of high nutrient loading which causes algae blooms and aquatic vegetation growth. A TMDL is currently under review by NYSDEC and the USEPA for Chautauqua Lake to address the phosphorus loading issues. This TMDL will result in a SPDES Permit revision for the Chautauqua Utility District wastewater treatment facility. The revised permit will require tertiary treatment as well as a complete upgrade of the 34 year old secondary treatment process equipment. The details of the project are replacement of headworks, installation of an influent pump station, secondary treatment replacement with two Sequencing Batch Reactors, tertiary treatment addition with phosphorus removal plus ultraviolet disinfection, replacement of motor control center, generator, addition of sludge handling, and odor control.

 Storm Drain Received Cells Amherst, Erie County	Public Infrastructure Amherst Conservation Advisory Council				1-2 3	1		Indirect Avoidance	Yes Direct (Temporary) Job Creation	\$11,000/ \$10,000
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Demonstration project in Amherst, New York using "Jellyfish" or similar engineered storm drain receiver that filters sediment, chemicals and other storm water pollution. Intent is to mitigate pollutants closer to the source and to prevent them from entering the storm water system.

Additional Considerations/ Potential Funding Sources: Anticipate 10% funding match

 Southern Tier West Stormwater Demonstration Facility Chautauqua, Cattaraugus and Allegany Counties	Education/Public Infrastructure Southern Tier West Regional Planning and Development Board				1	3		Through Education	Yes Supports Indirect Job Creation and Retention	\$74,100/ \$14,150
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Southern Tier West will establish a permanent location for a Stormwater Demonstration Training Facility. Permanent Best Management Practices will be established at the proposed permanent location and may include rock lined ditches, rock check dams, demonstrations of silt fence and various types of erosion control fabric (both degradable and permanent); and some green infrastructure stormwater practices such as permeable pavement, bio-retention systems (rain gardens, bioswales), and riparian buffers. Construction of this facility will begin in 2013; however, additional funding is needed to implement additional practices, such as construction of additional green infrastructure, and continue an ongoing educational component.

Additional Considerations/ Potential Funding Sources: Approximately \$37,050 has been requested from the Appalachian Regional Commission. Another \$5,500 cash from vendors displaying their wares at a Demonstration Day for the opening of the Training Facility. Approximately \$15,000 in labor and equipment to be donated by local sources, along with \$2,400 the value of the land donated for the Facility.

Water Resources Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 Chadwick Bay Regional Development Corporation-Regional Water Project City of Dunkirk, Towns of Pomfret, Portland, Dunkirk, Sheridan and Villages of Fredonia and Brocton	Planning/Public Infrastructure Chadwick Bay Regional Development Corporation (CBRDC)	1	1•2•3 5•6		1•2 3•4			Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct (Temporary) Job Creation	\$50,000,000/ \$49,800,000
Implement a regional water project in northern Chautauqua County. Individual municipal water systems in this region produce an average of 7 million gallons of water per day and serve over 42,000 people. Immediate improvements are necessary at the water filtration plants, storage and distribution facilities in almost every community. Preliminary cost estimates indicate more than \$50 million dollars will be required to address the safety and distribution concerns of each independently operated system. This amount however, could be reduced significantly if a regional water system approach is implemented.										
Additional Considerations/ Potential Funding Sources: CBRDC has been awarded \$150,000 grant from ARC and \$50,000 from Chautauqua County										
 Big Sister WTP Aeration Upgrades Angola, NY	Public Infrastructure Erie County Division of Sewerage Management	1	3		1•2			Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Jobs (Temporary)/ Supports Indirect Job Creation/ Retention	\$920,000/ \$750,000
Replace existing aeration system with new system that uses more efficient diffuser heads and less corrosive construction and to replace existing blower units with variable speed turbo blowers. Completion of this project would significantly reduce the power consumption, reduce man hours to continually repair and operate existing system and improve the treatment process at the plant, both by increase capacity and also improving the quality of the discharge.										
Additional Considerations/ Potential Funding Sources: Project qualifies for a \$125,000 energy efficiency incentive from National Grid.										
 Bioaugmentation of Sanitary Sewer Collection Systems Evans, Angola, Boston, North Collins	Public Infrastructure Erie County Division of Sewerage Management		3		1•2			Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation and Retention	\$250,000/ \$250,000
Using Bacillus soil bacteria (naturally occurring bacteria found in soil) for bioaugmentation of the sanitary sewer collection system. Bacillus is a naturally occurring non-pathogenic bacteria found in soil that breaks down sanitary waste. Bioaugmentation has been shown to reduce sludge production at treatment plants by as much as 30%. Additional benefits are: increased treatment capacity, and odor and grease reduction. The project would be pilot study to determine the benefits that could be achieved at the Big Sister WTP through continuous implementation.										
 Power Production through Sewage Treatment Erie County	Public Infrastructure Erie County Division of Sewerage Management	1•2•3	3		2			Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation and Retention	\$500,000/ \$500,000
Universities have shown utilizing an anaerobic process in which bacteria oxidize organic matter in sewage can produce power when the process is placed in a fuel cell like reactor. As much as 2 kW of electricity can be generated for each cubic meter of reactor volume. Small scale reactors have be proven to work effectively. Project would be a pilot to implement technology in a production environment on scale large enough to prove viability.										
Additional Considerations/ Potential Funding Sources: There may be a potential for additional funding through the university producing the technology.										

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Water Resources Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
2 Rush Creek Interceptor Blasdell, Hamburg	Public Infrastructure Erie County Division of Sewerage Management	1	3		1•2 3			Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation and Retention	\$12,500,000/ \$5,000,000

Project will allow for elimination of Electric Avenue Pumping Station (PS) and its permitted sanitary sewer overflow (SSO), Blasdell Milestrip PS and its permitted SSO, permitted SSO at the Labelle PS in Blasdell, the Blasdell Wastewater Treatment Plant (WWTP), and the Main WWTP PS located at the Blasdell WWTP site. All wastewater currently tributary to these locations will be conveyed to the Southtowns AWWTF via the proposed Rush Creek Interceptor sewer and the Northeast Interceptor, or via the wet weather relief force main during extreme flow events.

Additional Considerations/ Potential Funding Sources: This project has been awarded a \$5M grant through the NYSDEC Water Quality Improvements Projects program. Additional funding is available through local and EFC borrowing.

2 Town of Amherst, NY Wastewater Treatment Facility Town of Amherst, NY	Public Infrastructure/Education Town of Amherst, NY	2	3		2			Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation and Retention	\$91,000,000/ \$83,000,000
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Major renovation of waste water treatment facility. Project to include environmental education center and natural water reclamation facility built to meet the highest standards and best practices currently available in sustainable architecture. Educational opportunities for students, teachers, scientists, contractors, architects, elected officials, and many others will be a part of the project. Wastewater treatment without chemicals and the use of solar and geothermal systems to provide energy, heating, and cooling for the building and processes will be optimized.

Additional Considerations/ Potential Funding Sources: 10% match

4 Lackawanna Wastewater Treatment Plant Elimination Lackawanna, Erie County	Public Infrastructure Erie County Division of Sewerage Management in cooperation with the Buffalo Sewer Authority		3•4 6		1•2 3		No		Yes Direct and Indirect Job Creation and Retention	\$40,000,000/ \$40,000,000
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The Cities of Buffalo and Lackawanna in WNY share approximately five miles of waterfront along Lake Erie. This stretch of prime waterfront has long been underutilized, mostly consisting of barren land and abandoned industrial properties. A significant roadblock for future redevelopment of this portion of waterfront exists that includes the lack of sewerage conveyance and treatment capacity. Within the City of Buffalo, only about half the Outer Harbor waterfront area targeted for development contains sewer. Faced with a significant investment to address sewer capacity issues and because of their proximity, the DSM and BSA are jointly considering a project that would eliminate the Lackawanna WTP, provide improved sewer service to targeted waterfront redevelopment areas, and improve water quality in Smoke's Creek and downstream waterfront areas.

Additional Considerations/ Potential Funding Sources: The project is currently completing the feasibility study phase. SWMM modeling and preliminary design has been done, however detailed design has not yet been started.

4 Elimination of Redundant Services Clarence, Lancaster, East Aurora, Hamburg, Erie County	Public Infrastructure Erie County Division of Sewerage Management	1	3		1•2			Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation and Retention	\$6,100,000/ \$6,100,000
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The Erie County Division of Sewerage Management (ECDSM) is a conglomerate of small municipal and private sewer systems that have been, and continue to be, transferred to the County once maintenance and upkeep prove unsustainable on an independent scale. By combining these individual systems into larger regional systems, the ECDSM has the opportunity to improve collection and treatment efficiency by eliminating redundant facilities through the construction of regional gravity systems that can cross municipal boundaries. In a continued effort to improve efficiency and reduce energy consumption for collection and treatment of sanitary waste water in Erie County, the DSM has several upcoming projects to eliminate un-needed facilities through construction of regional gravity sewers to combine flows. These upcoming projects include the elimination of the Commerce Green Pumping Station, the Rogers Road Pumping Station, and the Clarence Research Park Wastewater Treatment Plant.

Additional Considerations/ Potential Funding Sources: These are upcoming projects that have had feasibility work completed. The ECDSM has been continuously, and will continue to identify, approach and carry out these types of elimination projects in the future.

Water Resources Focus Area Sustainability Projects

Project Name, Impact Location and Description		Project Type and Organization Identified for Implementation	Sustainability Goals ¹				GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
			     						
 2	Aurora North Pumping Station Elimination Lancaster, Cheektowaga, Erie County	Public Infrastructure Erie County Division of Sewerage Management		3	1-2 3-4		Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation	\$7,500,000/ \$2,500,000
Construction of gravity sewerline to conduct wastewater flow from the Aurora North and Aurora South service areas directly to the Borden Rd trunk line to the BSA. Benefits include reduced power consumption by eliminating the pumping station, redirecting significant flow away from Village of Lancaster to help alleviate frequent SSOs and basement flooding, redirect flow from Depew Pumping station to reduce power consumption, provide sewer service to several hundred acres of unserved land to facilitate residential and commercial growth, and allow existing commercial businesses to eliminate their privately owned pumping stations, further reducing area power consumption.									
Additional Considerations/ Potential Funding Sources: The DSM has identified \$5,000,000 for this project through capital reserves and EFC borrowing.									
 2	Village of Hamburg Potable Water System Consolidation Hamburg, Erie County	Public Infrastructure Village of Hamburg		3	1-2 3-4		Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes No Direct Job Creation; Supports Job Retention	\$60,000/ \$60,000
Consolidate the village of Hamburg's potable water system with Erie County's system through the most economical means while continuing to providing high quality drinking water to the residents of the Village . This project would eliminate significant redundancies and a duplication of government services in the region.									
 4	Track Down and Eliminate Bacteria and Nutrient Sources to Erie County Beaches Village of Farnham; Town of Hamburg; Erie County	Public Infrastructure Erie County Department of Environment and Planning Division of Environmental Compliance Services		6	1-2 3-4		No Impact on GHG Emissions	Yes Direct and Indirect Job Creation	\$267,325/ \$228,090
This project will lead to the elimination of bacteria and nutrient sources from stormwater outfalls discharging to two Lake Erie beaches and reduce the number of beach closings at these locations. In a partnership between the Erie County Department of Environment and Planning, Erie County Department of Health, Town of Hamburg, Village of Farnham, and Buffalo State, this project will also create a reproducible procedure for sampling, analyzing, and modeling the track down of pollution sources to be used at other Erie County and Great Lakes beaches.									
Additional Considerations/ Potential Funding Sources: In-kind match from ECDEP will include 25% of the time of the Deputy Commissioner of Environmental Compliance Services (ECDEP).									
 2	Village of Allegany Sanitary Sewer Upgrades Allegany and Olean, Cattaraugus County	Planning/Public Infrastructure Village of Allegany		3	2-3 4		Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Job Creation (Temporary)	Phase 1: \$60,000/ \$60,000 Phase 2: TBD
The Project is the reduction of infiltration and inflow in the Village of Allegany sanitary sewer system. The Village of Allegany has a known problem of stormwater infiltration and inflow into its sanitary sewer lines. A two-phased Project approach has been developed to address this problem. Phase 1 will consist of a Sewer System Evaluation Study, using meters placed in selected locations within the system to measure flow. The Study will identify problem areas within the system and identify techniques to improve infiltration and inflow issues. The second Phase of the project would be the completion of the remedial work recommended through the Sewer System Evaluation Study. The Village of Allegany Sanitary Sewer System is part of an interconnected system that includes parts of the Town of Allegany and the City of Olean.									
Additional Considerations/ Potential Funding Sources: Village of Allegany Department of Public Works would contribute in-kind services to facilitate the study, such as opening up manholes and traffic control during monitoring, as needed.									

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Water Resources Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 2 Sanitary Sewer System Pump Elimination and I & I Elimination Project Hamburg, Erie County	Public Infrastructure Village of Hamburg			3		1•2 3•4		Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes No Direct Job Creation; Supports Job Retention	\$1,030,000/\$1,030,000
Cooperative effort between the village of Hamburg and Erie County Sewer Department to eliminate four sanitary sewer pump stations and install new gravity mains to reduce both energy consumption and I and I into the sewer treatment systems.										
 4 Assessment of Barriers to Green Infrastructure Erie County, Niagara County	Planning/Policy/Education Erie County DEP/ Western NY Stormwater Coalition			1		1•3		Through Education and Policy	No No Direct Job Creation; Supports Job Retention	\$85,000/ \$85,000
Project entails qualitative assessment of barriers posed by local codes and permitting processes to green infrastructure approaches, will eliminate local administrative obstacles, make green infrastructure practices second nature and ultimately, improve water quality. Education piece of project will ensure planning committees/permitting agencies gain solid understanding of green infrastructure techniques and practices that are conducive to primary limiting factor on local sites, clay soils.										
Additional Considerations/ Potential Funding Sources: Minimal inkind from municipal staff assisting and Western NY stormwater Coalition membership										
 4 Green Infrastructure Solutions for Clay Soils/Flat Topography Erie County, Niagara County	Planning/Public Infrastructure Erie County DEP/ Western NY Stormwater Coalition			1		1•3		No Impact on GHG Emissions	No Supports Indirect Job Creation/Retention	TBD
Perception that having soils with high clay content in areas where topography is flat automatically precludes utilizing a green infrastructure approach to stormwater management. Project entails development of design solutions that would apply to these types of projects and demonstration of their viability. Local permitting officials and regulatory agents will be involved in the project to ensure design solutions meet green infrastructure requirements and local code as well.										
Additional Considerations/ Potential Funding Sources: In kind salary from municipality hosting demonstration site; site work such as excavating.										
 2 Amherst Greenways Town of Amherst	Public Infrastructure Town of Amherst Conservation Advisory Council and AmherstGreenways.org.			6		1•3		Direct Reduction	Yes Direct and Indirect Job Creation	\$100,000/ \$50,000
Convert commons, islands and medians to rain gardens, indigenous gardens and low/no mow meadows. Primary objective is to reduce stormwater run-off and reduce combined sewer incidents.										
 4 State Park Buffer Niagara Falls	Public Infrastructure Wafer Inc property owner and Wyndham Green			6	1•3	1•3		No Impact on GHG Emissions	Yes Direct (Temporary) Job Creation	\$10,000/ \$10,000
Pervious parking at Hotel Lot/State Park interface, Parking lot stormwater run-off reduction. Reduce impact of stormwater pollutants on parkland and the Niagara River.										
Additional Considerations/ Potential Funding Sources: Additional funding pending										

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Water Resources Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										

 4 Municipal Runoff Reduction/Green Infrastructure Study Erie County, Niagara County	Public Infrastructure Erie County DEP	1			1-3		No Impact on GHG Emissions	Yes No Direct Job Creation; Supports Job Retention	\$100,000/\$100,000
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This project will assist municipal separate storm sewer systems (MS4s) in efforts to identify cost effective runoff reduction techniques and green infrastructure for their conveyance systems and municipal properties. The retrofit projects will result in runoff treatment and/or reduction.

Additional Considerations/ Potential Funding Sources: Inkind salary/fringes from municipal staff working with contractor to identify opportunities

 2 Municipal Green Roofs Project Erie County, Niagara County	Public Infrastructure Erie County DEP	2			1-3		Direct and Indirect Reduction	Yes Direct (Temporary) Job Creation	\$250,000/ \$250,000
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Project will fund construction of green roofs on municipal properties.

Additional Considerations/ Potential Funding Sources: Inkind salary and fringes from municipal staff assisting; possible equipment use

 2 Erie County Green Park Pilot Project in Black Rock Canal Park Improvements Black Rock Canal Harbor	Planning/Public Infrastructure Erie County's Department of Environment and Planning	1-2-3	3-6	1	1-3		Direct and Indirect Reduction	Yes No Direct Job Creation; Supports Job Retention	\$2,000,000/ \$100,000
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Erie County is utilizing the county's Black Rock Canal Park as green parks pilot project. Park is currently testing several different green pilot projects. Improvements such as permeable pavement, permeable asphalt, and bio-swales are testing alternatives to traditional stormwater management, this reduces stormwater run-off and filters waters that enters the groundwater system. Erie County is also testing LED light fixtures throughout the park, as a means to reduce electricity consumption. Other green improvements, include the testing of solar power garbage cans.

Additional Considerations/ Potential Funding Sources: Black Rock Canal Park improvements funding is currently at \$2,100,000.

 3 Rainwater Reuse Cistern at the Southtowns WTP Hamburg, Erie County	Public Infrastructure Erie County Division of Sewerage Management				1-3		Indirect Avoidance	Yes Direct (Temporary) Job Creation	\$300,000/ \$300,000
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The Central Region of the Erie County Division of Sewerage Management uses approximately 360,000 gallons of potable water annually for watering plants, washing vehicles, and flushing sanitary sewers. A rainwater capture cistern connected to the maintenance and storage garages (combined roof area of 18,000 sq. ft.) could accommodate nearly 99% of this water demand based on 30 yr average rainfall data.

Additional Considerations/ Potential Funding Sources: Engineering study and report has already been completed for this Project.

 2 Green/Blue Roof for the Southtowns WTP Hamburg, Erie County	Public Infrastructure Erie County Division of Sewerage Management				1-3		Direct and Indirect Reduction	Yes Direct (Temporary) Job Creation	\$2,500,000/ \$2,500,000
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The roof of main building of the Southtowns WTP is approximately 83,000 sq. ft. or nearly 1.9 acres and is reaching the end of its useful life. Replacing this roof with a combination green/blue roof instead of a traditional roof would provide several benefits for both the plant and the region, including reduced heating/cooling costs, providing a GHG sink, storing rainwater, creating habitat, and improving regional image.

Additional Considerations/ Potential Funding Sources: A local match of 10% to 20% could be available.

Water Resources Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 Municipal Runoff Reduction Project Erie County, Niagara County	Public Infrastructure Erie County DEP				1•3			No Impact on GHG Emissions	Yes Direct (Temporary) Job Creation	\$250,000/ \$250,000
Project will fund construction of green infrastructure/runoff reduction practices on municipal properties such as pervious parking lots, cisterns, stormwater planters, vegetated swales and rain gardens.										
Additional Considerations/ Potential Funding Sources: Inkind from participating municipalities; possibly equipment/excavation tasks										
 Smokes Creek Restoration Lackawanna, Erie County	Public Infrastructure City of Lackawanna		1•3•6		3•4			No Impact on GHG Emissions	Yes Supports Indirect Job Creation/ Retention	TBD
City of Lackawanna is focusing on restoration of Smokes Creek through: improving flood control capacity of the Creek (supported by an announced NY Works allocation of \$3.2M); working to secure funding for the USACE to complete habitat restoration studies; and through the Brownfields Opportunity Area (BOA) planning process carrying out analysis of recreation options along the Creek.										
 Bear Lake Watershed Conservation Town of Stockton, Chautauqua County	Public Infrastructure Chautauqua Watershed Conservancy and/or Foundation for Sustainable Forestry		5		1•4		1•4	Indirect Avoidance and potential for sequestration	Yes Supports Indirect Job Creation/ Retention	\$400,000/ \$250,000
Conserve 311 acres of Bear Lake watershed, including 0.85 mile of lakeshore near the Village of Brocton emergency municipal water intake. Site possesses approximately .250 acres of wetlands adjacent to, and tributary to Bear Lake. Project proposes purchasing the property, managing it for ecologically-based sustainable timber production, fish and wildlife habitat and watershed water quality protection purposes.										
 Sustainable Shoreline Action Initiative Town of Chautauqua, Chautauqua County	Public Infrastructure Operations Office Chautauqua Institution		1•3•6		1•4			Direct reduction and avoidance, Indirect Avoidance and potential for sequestration	Yes Direct Job Creation	\$1,500/ \$1,500
An assessment of Chautauqua Institution's shoreline exhibits stressed conditions along 80% of the shoreline while an assessment of Chautauqua Lake's shoreline exhibited 74% stressed conditions. The NYSDEC has determined that Chautauqua Lake exhibits an over abundant presence of nutrients (phosphorus and nitrogen) and has therefore EPA 303(d) listed the lake as impaired due to nutrients (phosphorus). A TMDL is being developed that will require shoreline and other actions. This project mitigates and eliminates shoreline stress conditions and reduces the inflow of nutrients into Chautauqua Lake. The project will serve as a first of its kind regional green infrastructure demonstration. Natural habitat will be restored, buffer zones will be created to absorb runoff and nutrients and a land use master plan will be established that can serve as a model for other communities to utilize throughout a region that currently has no other such plans in existence.										
Additional Considerations/ Potential Funding Sources: Chautauqua Institution will commit to internally fund any participating funds requirement and will only apply for such funds as can be so afforded.										

 Energy
  Land Use and Livable Communities
  Transportation
  Water Resources
  Waste Management
  Agriculture and Forestry

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  Local Measurable GHG Impacts
  Not Significant or Measurable GHG Impact
  No GHG Impact

Water Resources Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 Elma Forcemain Upgrade Elma, Erie County	Public Infrastructure Erie County DSM			3		2-4		No Reduction GHG Emissions	Yes Direct and Indirect Job Creation and Retention	\$5,000,000/ \$5,000,000

Steuben Foods, located in Elma, is a major food and beverage processing plant with 30 production lines over 500 employees. The plant is currently undergoing significant expansion that will double its production capabilities. Being in Elma however, there is no local treatment for production effluent. The plant is currently serviced by a pumping station that conveys the production plant's effluent to the Erie County Sewer District No. 3 service area through a seven (7) mile long forcemain. With the significant ongoing expansion at the Steuben plant, the capacity of the forcemain may soon be exceeded. A failure within the forcemain would force a shutdown of the Steuben plant and have significant economic impact on the large regional employer. The existing forcemain needs to be replaced with a larger diameter pipe in order to ensure system integrity.

 Tri-County Lake Erie Watershed Management Plan Erie, Cattaraugus and Chautauqua Counties	Planning Erie County Department of Environment and Planning in coordination with the other members of the Lake Erie Watershed Protection Alliance (LEWPA)			1-6		1-2 3-4		No. GHG reduction in based on Plan implementation	Yes Supports Direct and Indirect Job Creation	\$1,200,000/ \$689,000
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The Tri-County Lake Erie Watershed Management Plan will involve the preparation of a regional watershed management plan for the Lake Erie watershed area in Cattaraugus, Chautauqua, and Erie Counties. Major waterways include the Niagara and Buffalo Rivers, as well as Tonawanda, Cattaraugus, and Little Canadaway Creeks.

The Lake Erie Watershed Protection Alliance (LEWPA), which includes sub-watersheds in the above three counties that drain to Lake Erie, has identified the development of a regional watershed management plan as its top priority. The proposed planning work will follow the step-by-step approach outlined in the NYS Department of State's Watershed Plans Guidebook and will also incorporate the nine key watershed planning elements that have been identified by the US Environmental Protection Agency (USEPA) which will increase the scope and number of projects within the watershed eligible for implementation funding from the Great Lakes Restoration Initiative (GLRI) and other sources.

Additional Considerations/ Potential Funding Sources: Matching funds in the form of in-kind services have been identified for the project from the Erie County Department of Environment and Planning Divisions of Sewerage Management and Environmental Compliance Services; the Soil and Water Conservation Service in all three counties; and the Chautauqua County Planning Department.

 Chautauqua Lake Wastewater Nutrient Reduction Strategy Chautauqua County	Planning/Public Infrastructure The Chautauqua Lake Management Commission (CLMC) and the Chautauqua County Department of Planning and Economic Development (CCPED)			1-6		1-2 3-4		No. GHG reduction in based on Plan implementation	Yes Supports Direct and Indirect Job Creation	\$250,000/ \$125,000
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Chautauqua Lake is listed as an impaired water-body under the Federal Clean Water Act 303(d) due to excess levels of phosphorus present in the lake. The Chautauqua Lake Management Commission (CLMC) and the Chautauqua County Department of Planning and Economic Development (CCPED) developed is proposing to develop a strategy to work collaboratively with the communities surrounding Chautauqua Lake to assess the feasibility and costs of upgrading municipal and "package" Wastewater Treatment Plants, as well as extending sewer to the approximate 30% of the lake shoreline not served by public sewers (approximately 1000 residents). The communities surrounding the Lake clearly recognize that the weed and algae growth in the Lake is seriously affecting our local/regional economy, quality of life, public health, and lake ecology.

Additional Considerations/ Potential Funding Sources: Chautauqua County and its partners are prepared to provide a 25% funding match and a 25% in-kind match

 Energy  Land Use and Livable Communities  Transportation  Water Resources  Waste Management  Agriculture and Forestry

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Water Resources Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 Chautauqua Heights Sewer District Evaluation Chautauqua County	Planning/Public Infrastructure Town of Chautauqua				2			No Impact to GHG Emissions	Yes Direct (Temporary) Job Creation; Indirect Job Creation	\$12-\$16 million/ \$6-\$10 million
 Storm Drain Identification Project Erie County, Niagara County	Education/Public Infrastructure Erie County DEP/Western NY Stormwater Coalition							No Impact to GHG Emissions	Yes No Direct Job Creation; Supports Indirect Job Retention	\$250,000/ \$250,000
 Scajquada Creek Water Quality Improvement Demonstration Project Buffalo, Erie County	Public Infrastructure/ Planning New York State Department of Transportation (NYSDOT)		6		2-4			No Impact to GHG Emissions	Yes Direct (Temporary) Job Creation; Supports Indirect Job Creation and Retention	\$442,000/ \$352,000

Evaluate the existing Chautauqua Heights WWTP facility to comply with anticipated Phosphorus reduction requirements and to evaluate proposed sewer extensions to include the NE side of Chautauqua Lake within Town of Chautauqua and to utilize existing North Chautauqua Lake Sewer District WWTP for treatment.

Project entails attaching metal medallions to curbside storm drains that relay the message: No Dumping Drains to Waterway. Through education, outreach and public involvement, project helps to address problem of public misunderstanding and ideally, will eliminate pollutant loadings to local waterways.

The project proposes to improve the water quality of Scajquada Creek by intercepting untreated stormwater runoff from the adjacent elevated highway and treating it with green infrastructure measures such as flow-through planters, infiltration planters and trenches, and rain gardens. An additional key component of this project is to develop a monitoring system that provides tangible/measured results that can be utilized to demonstrate the benefit and effectiveness of green infrastructure implementation.

Additional Considerations/ Potential Funding Sources: In-kind funding through NYSDOT for design resources and oversight for this project is estimated at \$90,000.



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Waste Management Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 WNY Sustainable Business Roundtable Allegany County, Cattaraugus County, Chautauqua County, Erie County, Niagara County	Planning/Education Erie County Department of Environment and Planning	1		2	1•3	1•2 3•4		Through Policy and Education	Yes No Direct Jobs; Supports Indirect Job Creation/Retention	\$450,000/ \$350,000
Capture and promote growing interest within business community for developing Sustainable initiatives and programs to reduce overall GHG contribution from private business sector WNY. Through Sustainable Business Roundtable, would create resource to encourage and assist businesses to reduce their carbon footprint and other environmental impacts and would establish sustainable framework for measuring and tracking sectors contribution GHG reductions. Educate businesses on Sustainable practices and benefits. Partner with the ECIDA, BNP, Empire State Development and other business support groups. Get the membership to adopt and participate in an environmental benchmarking system to track ghg reductions in the region .Get businesses to work together to not only advance their own sustainable efforts but to advance sustainable initiatives within their communities Additional Considerations/ Potential Funding Sources: \$50,000 inkind from Erie County, \$50,000 inkind from participating businesses										
 Boosting Recycling and Reducing Waste in WNY WNY	Education Buffalo Recycling Alliance					1•2		Through Policy and Education	Yes Indirect Jobs	\$100,000/ \$50,000
Will boost recycling rates and reduce waste amounts throughout WNY by educating residents and businesses on the benefits and ease of recycling and waste reduction (including composting), the costs of waste, and the laws requiring recycling. The project will succeed by: Training volunteer educators to make presentations to block clubs, schools, neighborhood groups, faith groups, business groups, civic association, etc; Producing and disseminating educational materials; Publicizing recycling and waste reduction through media and social media. Additional Considerations/ Potential Funding Sources: The Buffalo Recycling Alliance currently being supported with grant from Community Foundation for Greater Buffalo and in-kind support from Partnership for the Public Good, Citizens Campaign for the Environment, Buffalo First, Sierra Club – Niagara Group, Olmsted Center for Sight, and other groups.										
 Mattress Recycling Buffalo, Erie and Niagara Counties	Infrastructure/Education Cascades Recovery					1		Indirect Avoidance	Yes Direct Jobs; Supports Indirect Job Creation	\$1,140,000/ \$120,000
Establish a Mattress Recycling facility in WNY. Target 8,000 mattresses the first year with a goal of 15,000 at year four. 75-90% of mattresses and box spring are recyclable, yet most are landfilled. A recycling program needs to be accessible and affordable by residents, municipalities and commercial mattress sellers. Additional Considerations/ Potential Funding Sources: Tipping fees of \$15 per mattress, and selling of recovered materials will cover cost differences in the first 3 years										
 Textbook Recycling Depew, Erie County	Infrastructure/Education Cascades Recovery					1		Indirect Avoidance	No Direct/Indirect Job Creation	\$70,000/ \$40,000
Provide recycling services for discarded textbooks for institutions in the region. Targeting schools, colleges, legal offices, and libraries. Additional Considerations/ Potential Funding Sources: \$30,000 from sale of recovered fiber										

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  Transportation
  Water Resources
  Waste Management
  Agriculture and Forestry
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Waste Management Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
3 Agricultural Plastic Recycling Allegany County, Cattaraugus County, Chautauqua County	Infrastructure/Education The Chautauqua County Soil and Water, Cattaraugus County Soil and Water, Cornell Cooperative Extension		5		1	1•4	Through Policy and Education	Yes Direct Jobs; Supports Indirect Job Creation/ Retention	\$85,000/ \$75,000	

As silo use decreases, the use of plastic to maintain feed on these farms has significantly increased. Another increase is in the use of mulch films and greenhouse film. The RAPP program (Recycling Agricultural Plastics Project) through Cornell University, educated on the best practices for management of plastic material through Cornell Cooperative Extension. A collection system is needed to move forward. This project will propose to educate the farms as to the best practices for plastic film management, bale the plastic from these farms, and bring it to a market for recycling.

Additional Considerations/ Potential Funding Sources: Some in Kind from Water and Soil

3 Material Recovery Facility in Allegany County Allegany County	Infrastructure Allegany County Department of Public Works				1•2		Indirect Avoidance	Yes Direct and Indirect Jobs Creation	\$4,000,000/ \$4,000,000
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This project would construct a Material Recovery Facility at the Allegany County Landfill or another site to increase recycling rates, reduce disposal rates (land filled waste), reduce waste disposal/hauling (taxpayer) costs, increase revenues, reduce environmental impacts.

The Allegany County Landfill is near full capacity – the remaining site life is estimated at 3 years and a new one is not proposed in Allegany County. Therefore, waste will need to be hauled to other landfill facilities. To help control taxpayer costs, we must increase recoverable materials and reduce waste volumes destined for landfills. There is also interest in increasing the quantity of compostable materials and addressing this waste stream more effectively. The County's current recycling rate is approximately 22%. This is likely to increase significantly during the next five years as the County moves to a per-bag pricing system and away from the current bulk method.

Additional Considerations/ Potential Funding Sources: The County is willing to support required matches and provide in-kind service to make this project work. Exact amounts needed and which programs are applicable have not been fully researched at this time so the exact amounts aren't known.

2 WNY Anaerobic Digester Multiple	Private Infrastructure Casella Waste Systems	3	5	1	1•2	1•2•3	Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Job Creation; Supports Indirect Job Creation and Retention	TBD
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We are exploring feasibility of constructing one or more anaerobic digesters in the WNY region. The project would provide capacity for diverting food waste from disposal, generating renewable energy, and producing organic-based soil amendment and fertilizer materials.

2 Urban Organic Waste Composting Operation Buffalo, Erie County	Public Infrastructure SRG Buffalo, Broadway-Fillmore Neighborhood Housing Services, Inc, Community Action Organization, MAP, Cascades Recovery Olmsted Parks		1•5		1•2	1•3•4	Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Job Creation; Supports Indirect Job Creation and Retention	\$765,000/ \$560,000
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Establish an urban organic composting operation to divert 15-20,000 cubic yards of yard and green food waste annually. The compost facility will be able to handle yard waste and organic waste generated by area residents and commercial entities on a contracted basis. Income would also be generated by selling finished organic soil amendments.

Additional Considerations/ Potential Funding Sources: Self-sustaining after 3 years. Income generated from tip-fees and sale of finished product

 Energy
  Land Use and Livable Communities
  Transportation
  Water Resources
  Waste Management
  Agriculture and Forestry

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  Local Measurable GHG Impacts
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Waste Management Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 Blasdel WTP Decommissioning and Biodiesel Production Blasdel	Public Infrastructure Erie County Division of Sewerage Management	4	3	2	2-4	2	2	Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Job Creation; Supports Indirect Job Creation and Retention	\$3,200,000

The first phase consists of decommissioning the Blasdel Wastewater Treatment Plant (WTP), which will be effectively bypassed through the Rush Creek Interceptor project, taking it out of service. The plant and the equipment within would then need to be recycled, repurposed, or made ready for redevelopment. The second phase involves converting the former WTP site to a local biodiesel production plant to recycle waste grease from restaurants and other food processing establishments to produce biodiesel.

Additional Considerations/ Potential Funding Sources: Preliminary feasibility and cost estimates have already been completed.

 Urban/Suburban Food Waste Composting Project City of Buffalo and Niagara Falls	Planning/Public Infrastructure/ Education Erie County DEP, Mass Ave Project, CAO, Waste and Recycling Haulers, local compost sites such as Good Earth Organics and Lardon Construction		5		1	1-2	1-3-4	Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Job Creation; Supports Indirect Job Creation and Retention	\$600,000/ \$400,000
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Establish food waste composting programs in the cities and surrounding communities of both Niagara Falls and Buffalo. The program will target commercial and institutional food waste including facilities such as schools, hospitals, supermarkets, food processors, and larger restaurants. The project will be established in two phases. The first phase will be developing a business plan and an associated RFP for implementation of the developed business plan. The second phase will be implementing the food waste composting scope and program as outlined.

 Commercial Composting Portville, Allegany County	Public Infrastructure BFC Corporation			3		1-2		Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct Job Creation; Supports Indirect Job Creation and Retention	\$400,000/ \$400,000
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Commercially composting of organic waste (food, yard and agricultural waste) that has a composting value will be considered. Concept is to provide an option to landfill disposal of organic materials that can be composted and then provided to a variety of end users. The present site being considered is a Brownfield Site and has great potential to be an active site that will increase employment in region. The ultimate goal is to build an environmentally superior disposal option for generators of organic waste at a lower cost than present tipping fees at the local landfills. Based on testing end compost we intend to provide a consistent quality compost that will have a value out the back door.

 Asphalt Shingle DOT Test Projects WNY	Planning/Infrastructure Triad Recycling					1-3		Through Education and Policy	Yes Direct (Temporary) Jobs; Supports Indirect Job Creation	\$110,000/ \$100,000
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Triad Recycling is a locally owned, operated and permitted C&D Recycling Facility located in Erie County. It is presently recovering scrap asphalt shingles converting them into a supplemental additive (5-10%) to congenital hot asphalt paving material. Presently NYS DOT will not approve the use of this recovered material in NYS roads without further trial studies. The purpose of this grant would to fund 10 study trials in WNY at \$10,000 each. Asphalt shingle recycling will lead to further reduction in C&D waste generation, which is the goal of NYS DEC as well as EPA. In addition, shingle recycling contributes to sustainability in construction practices as well as green building objectives. In the WNY region, we estimate that there is at least 8,000 tons of roofing shingles disposed of annually. If NYS DOT were to allow for these materials to become a certain percentage of road pavement mix, a significant portion of this stream can be diverted from disposal and recycled. Once approved and with time allowed to begin full operation and collection, a goal of reclaiming 25% of roofing material would be expected.

Additional Considerations/ Potential Funding Sources: The winning vendor would select ten road paving contractors to use recovered materials in test section of road paving, perform a variety of proscribed tests, and report findings to vendor and to NYS DOT during a timeframe determined by DOT (approximately 1yr). The vendor would supply funds, at least \$10,000, to monitor tests and produce the results to NYS DEC. EPA WARM model estimates that 100 ton of shingles recycled saves 13 tons of GHG emissions, resulting in a savings of 1,300 tons of GHG annually, with the potential for additional GHG savings through

Waste Management Focus Area Sustainability Projects

Project Name, Impact Location and Description	Project Type and Organization Identified for Implementation	Sustainability Goals ¹						GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
										
 Gypsum Recycle Project WNY	Private Infrastructure Triad Recycling					1-3		Indirect Reduction and Avoidance	Yes Direct and Indirect Job Creation	\$750,000/ \$250,000
Triad Recycle and Energy is proposing set up NYSDEC registered WNY drywall recycling center which will reduce landfilling and provide soil amendment to farms and create jobs. Approximately 20,000 tons/year could be diverted from WNY landfills if a recycle center is established. The new construction drywall (cut offs) will be diverted from landfill and recycled as soil amendment. This requires collection, sorting, inspection, shredding, grinding, screening and distribution to farms.										
 WNY Carpet Recovery WNY	Private Infrastructure Triad Recycling, Cascades Recovery					1-3		Indirect Reduction and Avoidance	Yes Direct Job Creation	\$300,000/ \$150,000
Carpets represent approximately 1.4% of our waste stream, which means we are likely disposing over 4,000 tons annually of our old unwanted carpets; There is virtually no carpet recycling being done in this region. The proposed project would fund a responsible vendor to help offset initial start up costs to begin collecting, sorting and transporting recyclable carpets to a carpet reclamation facility. Presently collected carpets will need to be sent to New Jersey to have the nylon fiber removed for recycling. A long term goal of the project would be to generate high enough levels of collected carpets to where there would be favorable market conditions to attract investments in a regional carpet reclamation center. This would save on transportation cost, reduce GHG, and create more local employment opportunities.										
Additional Considerations/ Potential Funding Sources: Project cost would cover two years of start up costs. The qualified bidder would minimally match the grant allocation of \$150,000										
 Modern Disposal Compressed Natural Gas Fleet Conversion Cattaraugus County, Erie County, Niagara County	Private/Public Infrastructure Modern Disposal			2		4		Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct (Temporary) Jobs; Supports Indirect Job Creation/ Retention	\$5,000,000/ \$1,250,000
The purpose of this project is to further build Modern's compressed natural gas (CNG) infrastructure for its vehicle fleet. Modern operates about 300 vehicles throughout WNY and has already begun to convert its fleet to CNG. Currently Modern operates a filling station at its Model City location in Niagara County. This project would build additional filling capacity in Buffalo to more efficiently operate CNG trucks that service customers in Erie and Cattaraugus County. Providing public filling stations may be included as part of this project. Modern would also purchase additional CNG vehicles that would be used to haul trash, recycling, and organic wastes.										
 Casella CNG Fueling Station WNY	Private Infrastructure Casella Waste Systems			2		4		Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	Yes Direct (Temporary) Jobs; Supports Indirect Job Creation/ Retention	TBD
Casella Waste System is working to convert their refuse and recycling collection fleet to run on compressed natural gas, which is a cleaner, quieter, and domestically-produced fuel source. It also paves the way for transitioning to renewable natural gas, which can be produced from landfill gas and other sources of biogas. We intend to convert our WNY vehicles to run on CNG, and construct a CNG fueling station.										

 Energy
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  Transportation
  Water Resources
  Waste Management
  Agriculture and Forestry

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Conceptual Projects

Project Name Impact Location	Sustainability Goals ¹						Estimated Project Cost/ Required Funding
							
Niagara Frontier Ammonia Buffalo and Niagara Falls, Erie and Niagara County	X					X	\$75 to \$125 million/Requires access to low cost hydropower
Utilize a combination of hydroelectricity and wind based electricity or biomass, hydroelectricity and wind based electricity to produce ammonia from electricity, water and air or biomass, oxygen, electricity, water and air. The existing air separation facilities (Praxair, Linde) would be used as the source of nitrogen (electricity and water) or nitrogen and oxygen (biomass, electricity and water). Waste heat from the process would be used to provide warmth for associated greenhouses, which are the prime employment (20 to 40 acres)							
Additional Considerations for Implementation: Financing for this project is mostly provided by Canadian investors (\$75 to \$125 million) through the Fixed Asset Investment Trust (FAIT) mechanism. There are several tens of billions of dollars in available funding -this ONLY works for renewable energy production OR consumption.							
Middle Income Residential Energy Conservation Program WNY	X	X					TBD
Provide residents with clear, reliable information that is easily accessible for home performance energy efficient home improvements. Information will include information on Program Representatives and reliable Contractors in their area, target problems that will be identified and discussed, potential project scope and financing options.							
Additional Considerations for Implementation: Can develop this potential PON or existing further. This is something that can be discussed immediately on a local, state and federal level.							
Jamestown Light Rail Service Jamestown, Chautauqua County		X	X				\$100,000,000
The City of Jamestown, though rather small in population, could benefit from the addition of a highly efficient means of public transportation: light passenger rail on the City's abandoned rail lines. The rail lines pass through areas that would be well served by the addition of a light rail system to supplement the area's CARTS public bus system. The light rail could easily run from Falconer to Lakewood to provide access to downtown business, manufacturing in Falconer, and shopping and entertainment in Lakewood. Furthermore, the area may be even better served if the line would continue out to Salamanca, NY to provide access to the Seneca Casino.							
Additional Considerations for Implementation: Note: This is more of an idea that hopefully has potential than a project that is currently fully formed. At the very least, I hope this proposal generates robust discussions among the working groups.							
WNY Land Use/Land Cover Inventory WNY		X	X	X		X	TBD
Develop a land use planning tool to identify current conditions and provide a way to track changes in land use activity. All 5 municipalities would have access to local and regional information when developing policy and projects. It would provide a regional view of WNY and assist with collaboration between municipalities.							
Regional Land Use Planning Technical Assistance Handbook WNY		X	X	X		X	\$200,000/ \$200,000
Develop a land use planning handbook to assist municipalities to implement Smart Growth principles in their comprehensive plans and zoning updates.							
Additional Considerations for Implementation: Funding cover the development and printing of the guidebooks as well as the training/education for municipalities.							
Wendy Sustainability Center Alden, Erie County	X	X	X	X	X	X	TBD
Renovation of the Wende Home and Rehabilitation Center, which is scheduled to close in 2013, converting it under the premise of sustainable reuse into a livable community that incorporates economic, societal and environmental considerations that deliver business and educational development. Redevelopment will include Green enterprise research and development, green infrastructure; Wind Turbine manufacturing; Biomass combined heat and power distributed generation (acres of adjacent land for feed stock production) which provides steam to Erie County Correctional Facility; Storm/Gray water Reuse; Rental/ Condo residential units;potential retail space; Instruction/ dormitory space for educational organizations interested in agricultural/ energy/ green job skills; Enable skills development opportunity for inmates of Erie County Correctional Facility; Teach/ promote construction waste recycling practices.							
Additional Considerations for Implementation: Potentially funded through NYPA (distributed energy generation demonstration), ESF (biofuels) and smart growth organizations							

 Energy  Land Use and Livable Communities  Transportation  Water Resources  Waste Management  Agriculture and Forestry

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Conceptual Projects

Project Name Impact Location	Sustainability Goals ¹						Estimated Project Cost/ Required Funding
							
Selective Widening of Route 60 Gerry, Chautauqua County		X	X				TBD
Widen selective portions of Route 60 between Fredonia and Gerry which is the main north-south route through from Jamestown to Fredonia, and incorporate a bike lane as it is currently one-way in each direction (approximately 20 miles). This raises safety concerns, quality of life issues, economic issues and environmental issues.							
WNY Greenway Plan WNY		X	X				TBD
Develop a plan to build greenway, walking and biking infrastructure that connects the regions natural resources and population centers to each other.							
Additional Considerations for Implementation: Potential funding through the Federal Highway Transportation Enhancement Funds							
Erie Niagara National Marine Sanctuary Erie and Niagara Counties		X		X			TBD
The development of a Erie Niagara Marine Sanctuary that would encompass the US portions of Lake Erie and the Niagara River from approximately Woodlawn Beach to just beyond Grand Island and Buckhorn Marsh and includes portions of Buffalo River. Sanctuary will be used as an economic tool to promote nature and environment, history, heritage and culture. This will not prevent use of the waters, but will be a tool to promote economic development through tourism and recreation.							
Chautauqua Lake Septic Systems Town of Ellery, Town of Stocton, Town of Chautauqua, Village of Mayville, Town of North Harmony				X			TBD
The excess phosphorous in Chautauqua Lake leads to dense weed and algal growth that impairs the resources of the Lake. Chautauqua Lake Watershed Management Plan (2010) and various studies have identified that septic systems within 1300 feet of shoreline are most likely out-dated, contributing to phosphorous and potentially hazardous bacteria. It is recommended that these 1000 homes/businesses be connected to municipal sewer systems.							
Sewage Treatment Plant Upgrades for Chautauqua Lake North Chautauqua Lake Sewer District, Chautauqua Utility District, South and Center Chautauqua Lake Sewer District				X			TBD
Excess phosphorous in Chautauqua Lake leads to dense weed and algal growth that impairs the water quality and recreational resources of the Lake. The Chautauqua Lake Watershed Management Plan (2010) and various studies have identified that sewage treatment plants (STP) contribute greater than 20% of the total phosphorous loading to the Lake. Current STPs do not significantly remove the nutrients, such as phosphorous, prior to discharging the treated water. The STPs will have to be upgraded to tertiary treatment systems.							
Municipal and Business Leaders Educational Program Allegany County, Cattaraugus County, Chautauqua County, Erie County, Niagara County	X				X		TBD
Develop and implement an annual summit/roundtable series to educate municipal leaders about waste management policy and program choices and their implications. Develop similar program for business leaders, but run the business and municipal programs separately because needs are different. The structure of these programs could include multiple topic areas or focus solely on waste management.							

 Energy
  Land Use and Livable Communities
  Transportation
  Water Resources
  Waste Management
  Agriculture and Forestry

¹Represents the goal number as listed in the Plan
  Regionwide, Measurable GHG Impacts
  Local Measurable GHG Impacts
  Not Significant or Measurable GHG Impact
  No GHG Impact

Conceptual Projects

Project Name Impact Location	Sustainability Goals ¹						Estimated Project Cost/ Required Funding
							
Route 400 Extension Erie, Cattaraugus and Allegany Counties		X	X				TBD
<p>The proposed extension of Route 400 from its current ending in South Wales, Erie County southwesterly to an intersection with State Route 417 in the Village of Wellsville. This is an important highway for Buffalo and WNY. The extension of Route 400 would provide direct access from the Greater Buffalo Niagara area to Allegany County, which would facilitate access for manufacturing and tourism in Allegany County. The proposed project is a study and engineering design to Interstate standards and after the study is done, the corridor picked and land purchased. Funds for construction itself can be sought at a later date.</p> <p>Additional Considerations for Implementation: Project could be funded with Appalachian Regional Commission (ARC) grant funding</p>							
New York's Legacy Vehicle New York State							TBD
<p>Create a community foundation that is modeled after the Giving Indiana Funds for Tomorrow (GIFT) Program where a core group of private individuals formed a not-for-profit foundation that has the missing of addressing the particular county needs. What this would mean for NYS? While we have a significant number of foundations in NYS, rural counties may only have a small private trusts of local foundations with a very narrow focus. By modelling after the "GIFT Program" NYS could create "Community Legacy Vehicles" that would allow individuals that have left the state and enjoyed success elsewhere to give back to communities that they still have a bond.</p> <p>Additional Considerations for Implementation: Exact focus of this foundation is unclear. Initial contact with the Indiana "GIFT Program" indicated willingness to work with NYS to create a model similar to GIFT.</p>							
Updating the New York State Forest Tax Law 480a New York State		X				X	TBD
<p>The NYS Forest Tax Law 480a is outdated and needs to be changed. Introduction of new legislation is required to make it more attractive for forest landowners to maintain their property in forest condition for timber coupled with smaller acreage thresholds and less restrictions on owners. Implement tax credits for sustainable harvest of forests. Accept and recognize forestry as being agricultural in municipal planning.</p>							
WNY Greenway Project WNY		X				X	TBD
<p>The WNY Greenway would utilize "existing former corridors of commerce" and natural trails to create a logical network of "Hubs and Linkages". This will be accomplished by creating linkages and hubs between already existing trails, parks and natural bodies of water.</p>							
Development of Multi-use "Rails to Trails" WNY		X					TBD
<p>Evaluate our current abandoned and about to be abandoned railroads to be reclaimed and reformatted to serve future generations for tourism and or industry of commerce.</p>							
Significantly Sustainable NY WNY	X		X				TBD
<p>Develop a plan that addressed the how renewable energy including biofuels, hydropower, biogas and wind as well as assess the integration of energy efficiencies, low cost electric mass transit, and modifications to existing coal plants can be used in the region to benefit the environmental as well as the economy especially job creation.</p>							
Conversion of Huntley Power Plan to Biomass Tonawanda, Erie County	X					X	TBD
<p>In order to avoid the Huntley coal powerplant from shutting down, the possibility of converting it to biomass burning should be considered. In order to convert Huntley to a biomass fueled unit, a significant long term Power Purchase Agreement (PPA) for much of the electrical output would be needed, and a set of suppliers obligated to provide fuel at given prices for a long term would be needed.</p>							

 Energy  Land Use and Livable Communities  Transportation  Water Resources  Waste Management  Agriculture and Forestry

¹Represents the goal number as listed in the Plan  Regionwide, Measurable GHG Impacts  Local Measurable GHG Impacts  Not Significant or Measurable GHG Impact  No GHG Impact

GHG Emissions Impact

Direct Reduction of GHG Emissions. Will result in a reduction of direct baseline emissions, through the reduction in current direct energy use, or some other change or elimination of an activity that currently produces emissions.

Indirect Reduction of GHG Emissions. Will result in a reduction of indirect baseline emissions, through the reduction in current electricity energy use, which then leads to less direct energy burned to produce electricity.

Direct Avoidance of GHG Emissions. Will result in the avoidance of future increases in emissions from direct sources, compared to “Status quo” continuation of activities or actions.

Indirect Avoidance of GHG Emissions. Will result in behaviors and actions that will indirectly avoid future emissions, including emissions in other regions.

Project Will Create/Retain Jobs

Direct Job Creation. Represents people whose work is directly billed (full-/part-time) to the project

Direct Job Retention. Represents people whose existing work is directly billed (full-/part-time) to the project

Direct (temporary) Job Creation. Represents people whose work is directly billed (full-/part-time) to the project for a finite duration, such as construction jobs

Indirect Job Creation/Retention. Represents new or saved jobs as a result of the need for production of materials, equipment, and services that support the project

No Direct Jobs Created. No new direct/indirect jobs and no jobs clearly saved as a result of the project

Supports Indirect Job Creation/Retention. Project does not directly create jobs but creates an environment or infrastructure that has the potential to result in new or saved jobs

Appendix B Planning Consortium and Working Group Directory

WNY Regional Sustainability Plan Working Group Members

Name	Organization	County Represented	Name	Organization	County Represented
Regional Planning Consortium			Economic Development Working Group		
Kelly Tyler	NYSERDA	WNY Region	Brenda Young	Daemen College	Erie
Lindsey Robbins	NYSERDA	WNY Region	Beth Ackerman	Erie County Environmental Management Council - Town of Marilla	Erie
Richard Zink	Southern Tier West Regional Planning and Development Board	Chautauqua, Cattaraugus and Allegany	Ben Gehl	Farmer (small business)	Erie
Ben Bidell	Niagara County Department of Economic Development	Niagara	Tom Szulist	Singer Farm Naturals	Niagara
Robert Dimmig	Town of Tonawanda Economic Development Corporation	Erie	Ginny Carlberg	Cornell Cooperative Extension of Chautauqua	Chautauqua
Jason Knight	Erie County Department of Environment and Planning	Erie	Kim LaMendola	Southern Tier West Regional Planning and Development Board	Allegany
John Foels	Allegany County Industrial Development Agency	Allegany	Terry Tucker	SUNY Alfred State College of Technology	Allegany
Bill Daly	Jamestown Board of Public Utilities (BPU)	Chautauqua	Bonnie Lawrence	Erie County Department of Environment and Planning	Erie
Paul Bishop	Cattaraugus County Economic Development, Planning and Tourism	Cattaraugus	Energy Working Group		
Kenneth Swanekamp	Erie County Department of Environment and Planning	Erie	Christina Orsi	Empire State Development	WNY Region
Tim Vaeth	Ciminelli Real Estate Corporation	Erie	Laura Smith	Buffalo Niagara Partnership	WNY Region
Mark Shriver	Curbell Plastics Inc.	Erie	Graham Smith	Buffalo Niagara Enterprise	WNY Region
Mark Geise	Chautauqua County Department of Planning	Chautauqua	MaryGrace George	National Grid	Erie
Fred Sinclair	Allegany County Legislator	Allegany	Robert Mills	Daemen College	Erie
Thomas Hersey, Jr.	Erie County Department of Environment and Planning	Erie	John Foels	Allegany County Industrial Development Agency	Allegany
Kier Dirlam	Allegany County Department of Planning	Allegany	Crystal Abers	Cattaraugus County Economic and Planning and Tourism	Cattaraugus
Leonard Pero	Town of Brant Supervisor	Erie	Kenneth Swanekamp	Erie County Department of Environment and Planning - Economic Development	Erie
Agriculture and Forestry Working Group			Fred Sinclair	Allegany County Legislator	Allegany
Megan Mills Hoffman	WNY Land Conservancy	WNY Region	Lenora Leasure	Cattaraugus County Economic and Planning and Tourism	Cattaraugus
Diane Picard	Massachusetts Avenue Project	Erie	Joe Williams	Cattaraugus County Economic and Planning and Tourism	Cattaraugus
Cathy Lovejoy Maloney	Cornell Cooperative Extension of Niagara County	Niagara	Mike Casale	Niagara County Department of Economic Development	Niagara
Jeff Simons	Dairy farmer	Erie	Tom Hersey	Erie County Dept of Environment and Planning	Erie
Lynn Bliven	Cornell Cooperative Extension of Allegany and Cattaraugus	Allegany, Cattaraugus	Energy Working Group		
Paul Bencal	New York Farm Bureau	Niagara	Diane Ciurczak	Sierra Club	WNY Region
Jim Bittner	Singer Farms	Niagara	Bill Nowak	Sierra Club	Erie
Lisa Tucker	Edible Buffalo; Field and Fork Network	WNY Region	Kevin Kennedy	National Grid	WNY Region
Mark Rountree	Erie County Department of Environment and Planning - Division of Planning	Erie	Susan Westphal	NYSEG	WNY Region
John Whitney	National Resource Conservation Service - United State Department of Agriculture	Erie	Julian Dautremont-Smith	Alfred State College	Allegany
Bryant Zilke	Erie County Farm Bureau	Erie	Daniel Reynolds	Jamestown BPU	Chautauqua
			Mike Jabot	SUNY Fredonia	Chautauqua

Name	Organization	County Represented
Wendy Sanfilippo	Cornell Cooperative Extension - NYSERDA Energy Smart Communities	Chautauqua
Gary Carrel	Cornell Cooperative Extension - NYSERDA Energy Smart Communities	Chautauqua
Tom Meara	Sustainability Coordinator for Jamestown Community College	Chautauqua/Cattaraugus
Bill Daly	Chautauqua Industrial Development Agency	Chautauqua
Terry Yonker	Buffalo Ornithological Society / Wind Action Group	Erie
Robert Dimmig	Town of Tonawanda Economic Development Corporation	Erie
Isabell Berger	Amherst Citizens Advisory Committee on Energy	Erie
Mark Casell	Siemens	Erie
Deb Gondek	Rich Products	Erie
Leonard Pero	Town of Brant - Supervisor	Erie
Eric Walker	PUSH Buffalo	Erie
Phil Wilcox	IDEW Local 97	Erie
Carol Sampson	NYPA, Niagara Power Project	Niagara
Jack White	Upstate New York Power Producers	Niagara
David Burke	Covanta Energy	Niagara
Dan Engert	Town of Somerset - Supervisor	Niagara
Thom Fleckenstein	Niagara Wind and Solar	Niagara
Melanie Hamilton	Solar Liberty	Erie
Daniel Spitzer	Hodgson Russ (on behalf of Allegany County)	Allegany
Ben Bidell	Niagara County Department of Economic Development	Niagara
Tom Hersey	Erie County Department of Environment and Planning	Erie
Land Use and Livable Communities Working Group		
Nadine Marrero	City of Buffalo Office of Strategic Planning	Erie
George Grasser	Partners for a Livable WNY	Erie
Jason Knight	Erie County Department of Environment and Planning	Erie
Jim Simon	University at Buffalo Office of Sustainability	Erie
Ken Swanekamp	Erie County Department of Environment and Planning - Division of Economic Development	Erie
Mary Holtz	Town of Cheektowaga - Supervisor	Erie
Chuck Bell	City of Lockport Department of Planning and Development	Niagara
Ben Bidell	Niagara County Department of Economic Development	Niagara
Mark Geise	Chautauqua County Planning Department	Chautauqua
Peter Lombardi	Jamestown Renaissance Corporation	Chautauqua
Carol Horowitz	Town of Ellicottville - Town Planner	Cattaraugus
Paul Bishop	Cattaraugus County Economic Development, Planning and Tourism	Cattaraugus
Kier Dirlam	Allegany County Planning Services Division	Allegany

Name	Organization	County Represented
Anne Bergantz	Erie County Environmental Management Council - Town of Orchard Park	Erie
Megan Mills Hoffman	WNY Land Conservancy	WNY Region
Bonnie Lawrence	Erie County Department of Environment and Planning	Erie
Transportation Working Group		
Larry Kaminski	Allegany Western Steuben Rural Health Network	Allegany
Ginger Malak	Southern Tier West Regional Planning and Development Board	Allegany
Paul Bishop	Cattaraugus County Economic Development, Planning and Tourism	Cattaraugus
Kate O'Stricker	Cornell Cooperative Extension of Allegany and Cattaraugus	Cattaraugus/Allegany
Mary George	City of Olean	Cattaraugus
Cheryl Gustafson	Chautauqua Area Regional Transit (CARTS)	Chautauqua
Paul Abram	Chautauqua Area Regional Transit (CARTS)	Chautauqua
Cynthia Neu	The Resource Center	Chautauqua
Justin Booth	Green Options Buffalo	Erie
Creighton Randall	Buffalo Carshare	Erie
Bill Smith	Buffalo Niagara Medical Campus (BNMC)	Erie
Paul Gavin	New York State Department of Transportation (NYSDOT) - Region V	Erie
Gary Bennett	Niagara Frontier Transportation Authority	Erie
Leonard Pero	Town of Brant - Supervisor	Erie
Anne Bergantz	Erie County Environmental Management Council - Town of Orchard Park	Erie
Aliesa Adelman	Wendel	Erie
Jennifer Lucachik	ITT Enidine	Erie
Pasquale A. Greco	Coca-Cola Bottling Company of Buffalo, Inc.	Erie
Elizabeth (Liz) Drag	Seneca Nation of Indians	Erie/Cattaraugus
Kelly Dixon	Greater Buffalo-Niagara Regional Transportation Council (GBNRTC)	Erie/Niagara
Matt Hartrich	Buffalo Niagara Partnership	Erie/Niagara
Kevin O'Brien	Niagara County Department of Public Works	Niagara
Bonnie Lawrence	Erie County Dept of Environment and Planning	Erie
Waste Management Working Group		
Dawn Timm	Niagara County Division of Environmental/Solid Waste Management	Niagara
Michele Pratt	Republic Services, Allied Waste Niagara Falls Landfill	Niagara
Katy Duggan-Haas	Modern Recycling, Modern Corporation	Niagara/Erie
John Hannon	Triad Recycle and Energy Corp.	Niagara/Erie
Sam Magavern	Partnership for the Public Good, UB Law School	Erie
Frank Scarpinato	Erie County Department of Environment and Planning	Erie
Andrew Goldstein	Cascades Recovery U.S. Inc.	Erie

Name	Organization	County Represented
Adam Shine	Manitoba Corp., Sunnking Buffalo	Erie
Mark Shriver	Curbell Plastics Inc.	Erie
Paul Kranz, P.E.	Erie County Dept of Environment and Planning - Environmental Compliance	Erie
Efrat Forgette	NYSDEC, Division of Solid and Hazardous Materials, Region 9	Erie
Dave Majewski	Urban Habitat Project/SRG Buffalo	Erie
Gary Carrel	WNY Energy Smart Communities, Cornell Cooperative Extension	Erie/Chautauqua/ Cattaraugus
Wendy Sanfilippo	WNY Energy Smart Communities, Cornell Cooperative Extension	Chautauqua
Ted Osborne	New York State Association for Reduction, Reuse, and Recycling (NYSAR3)	Chautauqua
Tim Palmiter	Allegany County Solid Waste Department	Allegany
Abbie Webb	Casella Waste Systems, Inc.	Chautauqua/ Cattaraugus/ Allegany
Water Resources Working Group		
James Isaacson	Cattaraugus County	Cattaraugus
Mary Rossi	Erie County Department of Environment and Planning	Erie
Kim Lorenz	NYS Department of Transportation - Region 5	Erie, Niagara, Chautauqua, Cattaraugus
Mark Seider	Niagara County Soil and Water Conservation District	Niagara
Julie Barrett-O'Neill	Buffalo Sewer Authority	Erie
Dave Majewski	Sustainable Resources Group of Buffalo	Erie
Garry Pecak	Erie County Division of Sewerage Management	Erie
John Jablonski	Chautauqua Watershed Conservancy	Chautauqua
Conn Keogh	LEED Concepts	Erie
Matt Mattison	Buffalo Niagara Riverkeeper	Erie/Niagara
Ginger Malak	Southern Tier West Regional Planning and Development Board	Chautauqua / Cattaraugus / Allegany

WNY Sustainability Planning Team

Name	Organization	Working Groups Supported
Liz Santacrose	Ecology and Environment, Inc. (E & E)	Project Manager
Rachel Smith	E & E	Working Group Coordinator
Rachel Silva	E & E	Working Group Coordinator
Bob Gibson	E & E	Transportation
Dan Castle	E & E	Land Use and Livable Communities
David Weeks	E & E	Agriculture and Forestry
Donna Kassel	E & E	Waste Management
Emily Doren	E & E	Energy
Katie Dixon	E & E	Water Resources
Bart Roberts	SUNY at Buffalo Regional Institute (UB RI)	Economic Development and Land Use
Paul Ray	UB RI	Transportation and Waste Management
Kathryn Friedman	UB RI	Water Resources
Bradshaw Hovey	UB RI	Energy
Laura Quebral	UB RI	Agriculture and Forestry

Appendix C Public Meeting Outcomes

**Western New York Regional
Sustainability Plan
July Public Workshop Series
Summary**

August 2012

Prepared by:

**ECOLOGY AND ENVIRONMENT, INC.
and
UNIVERSITY OF BUFFALO REGIONAL INSTITUTE**
in support of the
Western New York Regional Sustainability Plan



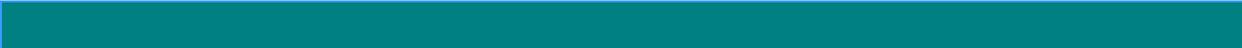


Table of Contents



Section		Page
1	Introduction and Overview	1-1
2	Working Group Goals	2-1
	2.1 Land Use and Livable Communities	2-2
	2.2 Transportation	2-3
	2.3 Agriculture and Forestry	2-4
	2.4 Energy	2-5
	2.5 Waste Management	2-6
	2.6 Water Management	2-7
3	Conclusions and Next Steps	3-1
Appendix		
A	August 2012 Comment Matrix.....	A-1
B	Project Comment Sheet.....	B-1

1

Introduction and Overview

In late July 2012 residents from Niagara, Erie, Chautauqua, Cattaraugus and Allegany counties were invited to attend a series of public workshops to discuss sustainability in Western New York. The purpose of these workshops was to hear the public's ideas about what sustainability means for their region and to collect comments about the ongoing work of topic area working groups. The public's comments will be used to inform and guide the working groups as they set sustainability goals and identify projects that will further the mission of the Western New York Regional Sustainability Plan ("the Plan").

This document describes the demographic characteristics of the workshop attendees, summarizes the goals drafted by each working group, and summarizes the public input received to date. The document also identifies the prominent themes heard across several of the meeting discussions and describes next steps in development of the Plan.

The meetings were held at four venues across the Western New York region.

- July 18 at Starpoint High School in Lockport
- July 24 at Millennium Hotel in Cheektowaga
- July 25 at Ramada Jamestown Hotel in Jamestown
- July 26 at Moonwinks Restaurant in Cuba

These meetings drew 110 stakeholders. A demographic snapshot of the attendees from across all the meetings and as compared to the same indicators for the five-county region is shown below.

1 Introduction and Overview

Affiliation	Lockport	Cheektowaga	Jamestown	Cuba	All Meetings
Concerned citizen	47%	24%	33%	17%	26%
Business owner	13%	10%	0%	19%	12%
Member CBO or NGO	27%	26%	27%	6%	19%
Elected official	0%	2%	7%	28%	11%
Agency Rep: state, federal or local	13%	12%	20%	22%	17%
Student	0%	5%	0%	3%	3%
Other	0%	21%	13%	6%	12%

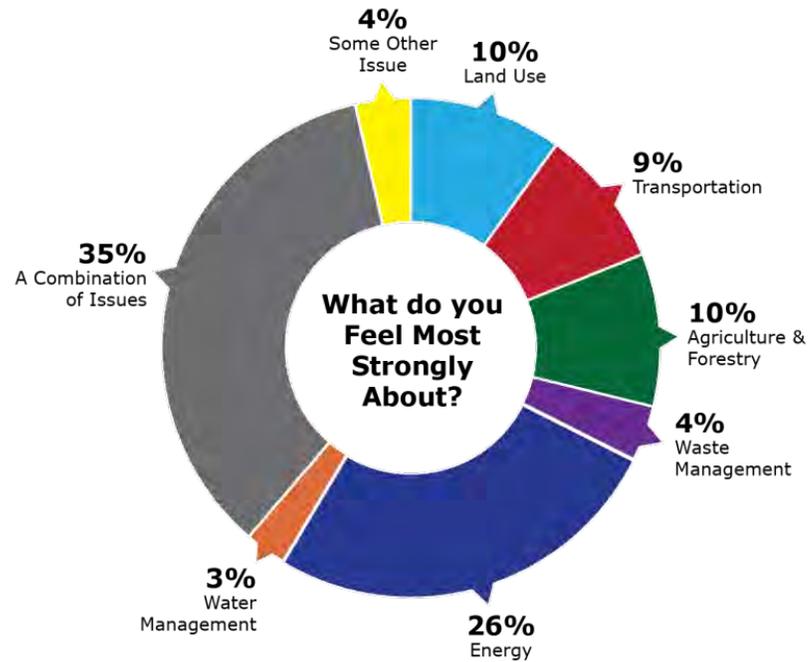
Age	Lockport	Cheektowaga	Jamestown	Cuba	All Meetings	Five-County Region
Under 18 years old	0%	5%	0%	0%	2%	21.7%
18 to 24 years	0%	9%	0%	6%	6%	10.6%
24 to 34 years	13%	9%	27%	6%	11%	11.4%
35 to 44 years	13%	14%	7%	9%	11%	12.1%
45 to 54 years	50%	12%	7%	21%	19%	15.5%
55 to 64 years	6%	28%	40%	38%	30%	12.9%
65 years and older	19%	23%	20%	21%	21%	15.8%

Gender	Lockport	Cheektowaga	Jamestown	Cuba	All Meetings	Five-County Region
Male	53%	56%	67%	70%	62%	48.5%
Female	40%	39%	33%	30%	36%	51.5%

Race	Lockport	Cheektowaga	Jamestown	Cuba	All Meetings	Five-County Region
White	93%	84%	87%	89%	87%	81.7%
African-American	0%	5%	0%	3%	3%	9.9%
Hispanic	0%	0%	0%	0%	0%	4.1%
Asian/Pacific Islander	0%	2%	0%	0%	1%	2.0%
Native American	0%	0%	0%	0%	0%	0.7%
More than one race	7%	0%	0%	0%	1%	1.5%
Other	0%	2%	7%	3%	3%	0.1%
Prefer not to answer	0%	7%	7%	6%	5%	

Attendees were from...	All Meetings	Five-County Region
Niagara County	7%	15.5%
Erie County	49%	65.7%
Cattaraugus County	6%	5.7%
Chautauqua County	11%	9.6%
Allegany County	26%	3.5%

Community members were invited to discuss a range of topics related to sustainability, including land use, transportation, agriculture and forestry, waste management, energy and water management. Several of the attendees expressed interest in specific topic areas, while others had concerns across several topic areas. When asked about the topic about which they felt the most strongly, attendees indicated the following:

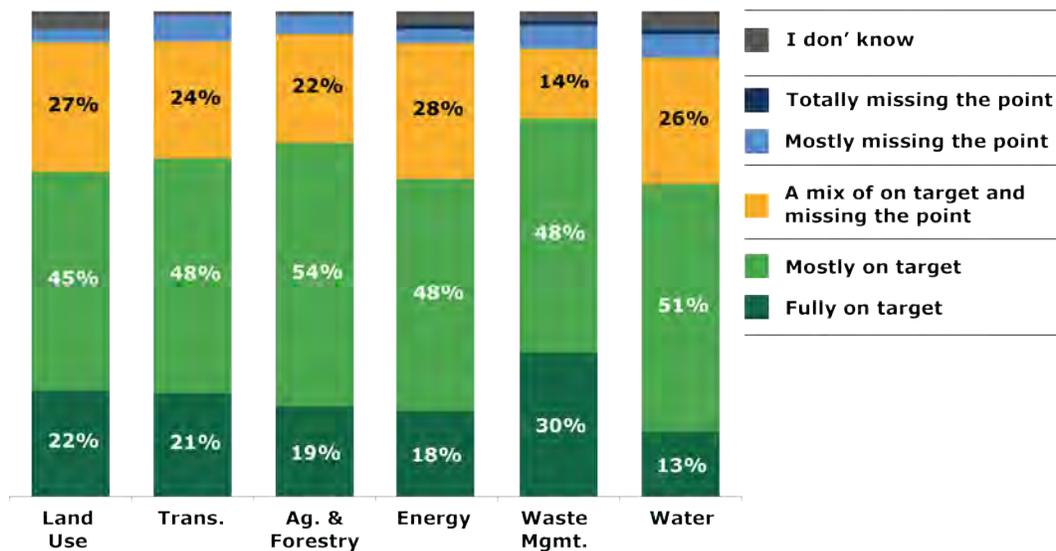


2

Working Group Goals

Following a brief project introduction and overview, meeting attendees participated in a facilitator-led, technology-enhanced discussion. The Project Team summarized the progress of each working group, provided examples of sustainability for each topic, and summarized the draft/preliminary goals for each topic. The attendees then used wireless electronic devices to indicate if the goals were on target. The attendees were asked to comment and expand upon their responses (i.e., if the goals were not fully on target, why?). In general there seemed to be agreement that the goals were on target or needed slight modifications. Attendees thought that the waste management goals were the most on target and that the water management goals, while still mostly on target, needed slightly more improvement than the others. The aggregated responses from all the meetings are shown below.

The goals set by the workgroups are...



Following the meetings, the Project Team reviewed detailed meeting notes and hard copy/email comments received and summarized the comments in a matrix by working group topic (see Attachment A). If a comment or theme was repeated across several meetings, it is called out specifically in the sections below as a prominent theme.

2.1 Land Use and Livable Communities

The goals drafted by the **Land Use and Livable Communities** working group were summarized as follows:

- Encourage and support municipalities to develop and implement smart growth policies
- Prioritize, promote brownfield clean-up/redevelopment and adaptive re-use
- Preserve, protect and enhance agricultural lands and urban agriculture
- Encourage expansion of location-efficient housing
- Develop a mechanism for WNY regional land use planning oversight
- Connect regional greenway and waterfront planning to natural resources and recreation

Meeting attendees thought the goals set by the **Land Use and Livable Communities** working group were...

	Lockport	Cheektowaga	Jamestown	Cuba	All Meetings
Fully on target	19%	33%	29%	6%	22%
Mostly on target	69%	46%	36%	36%	45%
A mix of on-target and missing-the-point	13%	20%	21%	45%	27%
Mostly missing the point	0%	0%	14%	3%	3%
Totally missing the point	0%	0%	0%	0%	0%
I don't know	0%	2%	0%	9%	4%

Prominent **Land Use and Livable Communities** themes heard across several of the meeting discussions were as follows:

1. Consider the different needs of urban, suburban and rural communities when discussing location-efficient housing.
2. Do not forget about the linkages between land use and existing infrastructure and policies, especially those dealing with transportation, potable water and waste water.

3. Focus more on quality of life issues in small town centers, especially public safety and housing.
4. Focus more on conservation of natural forests, farmland and ways to combat habitat fragmentation.

2.2 Transportation

The goals drafted by the **Transportation** working group were summarized as follows:

- Increase and improve alternatives to driving alone (transit, car/vanpool, park and ride, bicycle, walking)
- Improve regional fuel efficiency and increase the use of alternative fuels, especially in fleets
- Prioritize road and highway infrastructure projects in line with regional smart growth efforts, especially through “Complete Streets” principles

Meeting attendees thought the goals set by the **Transportation** working group were...

	Lockport	Cheektowaga	Jamestown	Cuba	All Meetings
Fully on target	19%	27%	36%	9%	21%
Mostly on target	50%	56%	50%	35%	48%
A mix of on-target and missing-the-point	31%	17%	14%	35%	24%
Mostly missing the point	0%	0%	0%	18%	5%
Totally missing the point	0%	0%	0%	0%	0%
I don't know	0%	0%	0%	3%	1%

Prominent **Transportation** themes heard across several of the meeting discussions were as follows:

1. More emphasis needs to be placed on the infrastructure for alternative fueled vehicles; fleets are a good place to start, but the infrastructure should also be available to the public.
2. Promote the increased use of public transportation and carpooling through increased education, efficiency and safety.
3. Address congestion due to highway interchanges, lack of signal coordination and bridge crossings.

2.3 Agriculture and Forestry

The goals drafted by the **Agriculture and Forestry** working group were summarized as follows:

- Strengthen the economic viability of agriculture and forestry enterprises
- Achieve more efficient uses of energy inputs
- Use agricultural and forest industry by-products for energy production
- Achieve increased support from the public and elected officials through education on the importance of agriculture
- Protect farmland for continued use for farming
- Promote environmentally sustainable management systems for the agriculture and forestry sector

Meeting attendees thought the goals set by the **Agriculture and Forestry** working group were...

	Lockport	Cheektowaga	Jamestown	Cuba	All Meetings
Fully on target	20%	22%	29%	9%	19%
Mostly on target	67%	64%	36%	42%	54%
A mix of on-target and missing-the-point	13%	9%	36%	39%	22%
Mostly missing the point	0%	2%	0%	9%	4%
Totally missing the point	0%	0%	0%	0%	0%
I don't know	0%	2%	0%	0%	1%

Prominent **Agriculture and Forestry** themes heard across several of the meeting discussions were as follows:

1. There needs to be more focus on locally sourced food and more opportunities for small farmers to transport and sell their goods in the local economy.
2. There needs to be more emphasis on education about the importance of local food producers and the protection of farm land.
3. Small farmers need more support to take advantage of new technologies in communications, equipment and farming practices.

4. Focus more on conservation of natural forests and ways to combat habitat fragmentation.

2.4 Energy

The goals drafted by the **Energy** working group were summarized as follows:

- Increase renewable energy generation in WNY (including solar, wind, hydro-power, hydrokinetic, biomass, geothermal, and biogas sources)
- Promote energy efficiency efforts in the most environmentally sound and cost effective way, promoting access to all incomes and business sizes and resulting in reduced GHG emissions
- Upgrade the transmission system and increase fuel diversity in an economical-ly and environmentally sustainable way

Meeting attendees thought the goals set by the **Energy** working group were...

	Lockport	Cheektowaga	Jamestown	Cuba	All Meetings
Fully on target	29%	24%	14%	6%	18%
Mostly on target	36%	48%	57%	48%	48%
A mix of on-target and missing-the-point	36%	22%	29%	33%	28%
Mostly missing the point	0%	2%	0%	6%	3%
Totally missing the point	0%	0%	0%	3%	1%
I don't know	0%	4%	0%	3%	3%

Prominent **Energy** themes heard across several of the meeting discussions were as follows:

1. Consider a feed-in tariff program.
2. Energy that is produced here should be consumed here.
3. Need to promote the efficient use of energy by consumers before addressing the energy sources; education and new technologies can help us get there.
4. Local production and installation of energy efficient technologies can boost economic development in the region.

2.5 Waste Management

The goals drafted by the **Waste Management** working group were summarized as follows:

- Reduce municipal waste generation and increase recycling to reduce amount of solid waste sent to landfills or incinerators
- Encourage/support increased use of recycled materials in locally produced goods
- Educate the public on reducing, reusing, and recycling waste
- Share BMPs with municipalities to improve their recycling policies
- Enhance recycling infrastructure to maximize beneficial use of organic waste (e.g., composting)
- Increase construction and demolition (C&D) waste recycling
- Increase the number of waste collection fleets running on clean/green fuels (e.g., CNG)
- Encourage manufacturers to minimize waste and maximize economic benefits of the product
- Increase waste management practices while decreasing GHG emissions and cost

Meeting attendees thought the goals set by the **Waste Management** working group were...

	Lockport	Cheektowaga	Jamestown	Cuba	All Meetings
Fully on target	53%	40%	21%	9%	30%
Mostly on target	40%	51%	50%	47%	48%
A mix of on-target and missing-the-point	7%	2%	29%	28%	14%
Mostly missing the point	0%	5%	0%	9%	5%
Totally missing the point	0%	0%	0%	3%	1%
I don't know	0%	2%	0%	3%	2%

Prominent **Waste Management** themes heard across several of the meeting discussions were as follows:

1. Address the increased need for disposal of compact fluorescent light bulbs and electronic waste.
2. There needs to be better education about recycling for the public, businesses and elected officials.
3. The goals do not mention hazardous waste disposal.

2.6 Water Management

The goals drafted by the **Water Management** working group were summarized as follows:

- Coordinate water management with land use and conservation planning and decisions on where future development occurs
- Improve regional water management systems and increase regional water use efficiency
- Identify and manage pollution sources as a way to improve regional water quality
- Address regional water quantity concerns (flooding, storm water/runoff, and regional water use by hydraulic fracturing)

Meeting attendees thought the goals set by the **Water Management** working group were...

	Lockport	Cheektowaga	Jamestown	Cuba	All Meetings
Fully on target	20%	19%	15%	3%	13%
Mostly on target	53%	63%	31%	42%	51%
A mix of on-target and missing-the-point	20%	12%	46%	39%	26%
Mostly missing the point	0%	2%	8%	9%	5%
Totally missing the point	0%	0%	0%	3%	1%
I don't know	7%	5%	0%	3%	4%

Prominent **Water Management** themes heard across several of the meeting discussions were as follows:

1. Water is not a scarce resource here now, but it may be in the future. We need to make sure our waters are protected and kept as a local resource.
2. We need increased education about importance of local water resources and conservation methods.
3. Address aging infrastructure that impacts our water quality.

3

Conclusions and Next Steps

At the end of each public meeting, attendees were reminded to submit additional comments by hard copy or email (see Attachment B for a sample project comment sheet). The Project Team continues to receive and log comments. All input received to date (via meeting, comment sheet, email or mail) has been captured and documented in Attachment A, August 2012 Comment Matrix. Moving forward, the working groups and Project Team will review the comments received and will address/incorporate them as appropriate in the draft Sustainability Plan. Working group agendas and meeting minutes will continue to be posted to the Project's public web site, www.sustainable-ny.com.

As indicated at the public workshops and on the web site, the working groups continue to meet monthly and will:

- Finalize the working group goals and indicators;
- Collect data; and
- Identify implementation projects that will meet the goals outlined in the Plan.

The public will be invited to comment on the draft Sustainability Plan at a second and final series of public meetings in the Fall of 2012.

A

August 2012 Comment Matrix

Agriculture and Forestry	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany Cattaraugus Meeting	Email/mail comment
Explore possibility of collecting/recycling fertilizer/nutrient runoff and return to farm	X				
Consider landowner rights when addressing stormwater runoff	X				
Address flaws in regulations that limit community progress, i.e., some communities do not allow composting	X				
Include climate adaptation strategies for agriculture and forestry (including potential new crop opportunities, and invasive species outbreaks)	X				X
Increase public education/awareness	X	X		X	
Bring new technology (including broadband) to farms and rural land	X				X
Focus on business aspect of agriculture	X				
Need for more processing facilities (we are losing them)	X				
Utilize biogas capture for energy production on farms	X				
Focus on and maximize local food sourcing (good for economic vitality and healthier communities)	X	X	X	X	X
Implement Farmland Protection Plans	X				
Develop incentives for agricultural community to protect farmland		X			
Address issue of using farmland for things other than food (energy needs outweigh food needs)		X			
Increase government support, farmers should become more involved in the political processes		X	X		
Create greater access/outlets to/for agricultural products.		X	X		X
Forestland should be called out separately in the goals, e.g., decrease forest fragmentation to protect forestland			X		
Add procurement of goods somewhere in the goals			X		
The goals and the plan need to acknowledge the connection and distinction between urban versus rural, private versus public land			X		
As a region, focus on value-added agriculture			X		
Implement and increase stewardship of land			X		
Need to educate the public and provide support for our next generation of farmers			X		X

Agriculture and Forestry	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany Cattaraugus Meeting	Email/mail comment
There is a need for state-of-the-art storage systems to extend the shelf life of food			X		
Tie together agriculture and transportation of agricultural products				X	
Address community gardens				X	
Address the topic of genetically modified seeds				X	
Ensure that the goals and the plan can work on their own, through environmental stewardship and education, not through increased governmental regulations				X	
Support methane digesters on farms of all sizes. Subsidize and provide grant money to study the feasibility of collaborative methane digesters.					X
Tie in agro-tourism opportunities with economic development and transportation.					X
Focus on specialty crops					X
This biggest challenge for farmers is financing infrastructure and equipment					X
Address invasive species					X
Use farmers markets to connect people with their food (where it comes from and how it is grown.)					X
Encourage cows using pasture					X
Will gas and oil ever be considered industry by-products under this plan?					X

Energy	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/ mail
The goals/sub-goals discussed need more focus.	X				
Consider a Feed-in Tariff (FIT) program	X	X	X		X
Energy produced in the region should stay in the region. Use local sources of energy.			X	X	X
Conservation and efficiency should be prioritized over renewable energy development. The amount we produce and use is more important than where it comes from.		X	X		
Education is an important component (educate on efficiency and generation). Habits and behavior need to be changed.		X		X	X
Focus education on helping farmers realize they can take advantage of energy efficiency					X
Coal plants need to be addressed.			X	X	
Heat should be addressed.	X				
The cost of electric rates should be addressed.	X				
There should be a comprehensive review of the systems benefit charge.	X				
PACE programs should be considered.	X				X
Geothermal energy should be a main focus.	X				
Energy sources should be located close to demand.	X				
Job aspects should be addressed in the energy goals (including job loss and changes in taxes)	X				X
Businesses need to be educated on how to access energy programs and energy reviews.	X				
Focus on projects that have a payback and that balance in respect to who pays and who benefits.	X				
There isn't as much focus on reduction as there should be. Increased efficiency may not really reduce energy use.		X			
Energy efficiency is the great frontier in terms of clean technology, work force development, and emerging industry.		X			
Universities are developing new technologies that can offer more efficient energy use.		X			

Energy	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/ mail
Waste-to-energy is a good technology but doesn't fit into this sustainability plan. Technically waste isn't a "renewable" energy source. Keep renewable energy "clean". This type of technology shouldn't be competing with truly renewable energy sources and sustainable projects for funding.			X		X
Consider creating energy parks.			X		
Tree planting should be promoted.			X		
Consider net metering.			X		X
It is impossible for New York to bring renewable energy through the grid right now because natural gas is at an all-time low.			X		
Consider low-tech space heating such as black panels on the outside walls of houses. This simple, old technology seems to be overlooked.			X		
The goals should address/include smart grids.				X	
There needs to be a change in regulations for siting of renewable facilities and transmission. Consider the zoning challenges and barriers for renewable energy.				X	X
The plan could include a unique demonstration project for energy efficiency with a Buffalo flair. Or a public art project that generates energy.					X
The grid is owned by a global corporation with most of its shares owned by corporations and trusts. This could be a security issue. It is also not well maintained or updated.					X
Consider Renewable Energy Credits as a more viable alternative to FIT programs					X
Reframe Energy Goals 1 and 2: "Decrease dependence on nonrenewable energy sources in WNY by promoting energy reduction through conservation and efficiency and by increasing renewable energy production."					X
Consider a sustainable energy exposition center as part of waterfront development.					X

Energy	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/ Cattaraugus Meeting	Email/ mail
Hydraulic fracturing should not be used as an energy source. It requires too much water, creates waste water, disturbs open space and agricultural lands.					X
Dimmable and motion sensitive street lights should be incorporated into the plan to save energy.					X

Land Use and Livable Communities	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/ mail
The definition of “equitable” land use is unclear.	X				
The definition of “location efficient” housing is unclear.		X			
Go slow on location-efficient housing. Not everyone wants to live in a town/city.					X
The definition of smart growth needs to be clarified before policy is developed. The definition may vary depending on location.				X	
The goals are very broad.	X			X	
The goals should push for a more productive use of land. For example, solar energy (and other renewable sources: wind, geothermal) should be captured wherever possible.	X				X
Public safety is an issue.	X				
There should be a focus on the benefits of multi-family residences	X				
It is difficult to achieve consensus with respect to home rule.		X			
Global warming needs to be explicitly addressed somewhere in the goals.		X			
The region’s bi-national component should be addressed.		X			
The current land use situation is a result of our transportation policies.		X			
Transportation corridors and existing infrastructure should be integrated into this discussion.		X			
The goals should address the redevelopment/ demolition of existing housing infrastructure.			X		
Habitats such as forested areas need to be protected from fragmentation.			X		
Too much regulation will inhibit development. This plan should not create another level of government.				X	
The competition for farmland between sustainable agriculture and hydraulic fracturing wells should be addressed.				X	
Goal #5 is not realistic and should not be included in the final plan.				X	

Land Use and Livable Communities	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/ mail
Regarding goal #5, what is the mechanism that will be put in place and who is responsible for the oversight?					X
Biodiversity and invasive species management should be addressed. We are an international birding area of importance. There are ecotourism opportunities in the region.					X
Only build efficient housing.					X
Reinvest in urban centers.					X
Open farmland up for development.					X
The plan should create incentives for re-habbing existing structures for new/contemporary uses.					X
Extend sewers into new areas.					X

Transportation	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany Cattaraugus Meeting	Email/mail comment
Address traffic control systems (traffic light coordination, etc.)	X				
Address international bridge congestion	X	X			
Incentivize smaller parking lots for new buildings to encourage carpooling.	X				X
Build demand for public transportation	X		X		
Address convenience (timing and location), public safety, and stigma of public transportation	X				X
Address Niagara Falls Airport transportation	X				
Address the need for high-speed rail, which will create jobs, reduce GHG and increase economic growth		X			X
Measure carbon footprints and compare between areas with and without new development to increase awareness sensitivity		X			
Consider transportation and land use together (decreasing need for excessive transportation)		X			
Revise the goal of Complete Streets to “Complete GREEN streets”		X			
Public education is key to behavioral change. Education specifically on the benefits and rewards of alternative transportation options.	X	X			
Consider fleets (including school fleets)			X	X	
Increase partnerships for transportation (including alternative fuel vehicles)			X	X	
Make CNG, and other clean energies more viable			X		
Improve/create infrastructure for alternative fuel vehicles	X	X		X	
Loosen government regulations on transportation in order to decrease the cost of economic development				X	
In rural areas, there are problems with semi-trucks driving on roads that are already in disrepair				X	
Smart growth initiatives are compounding hardships in smaller villages				X	
Increase coordination with employers to make public transit more viable				X	

Transportation	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany Cattaraugus Meeting	Email/mail comment
Create more pedestrian zones instead of opening Main Streets to cars					X
Reduce large surface area parking areas, locate parking structures under buildings, and consider using permeable pavement					X
Encourage community based organizations to coordinate existing transportation resources.					X
Allow alternative modes of transportation to be safer. Without sidewalks, it becomes unsafe to walk, run, or bike on the road. Pleasant View Drive and Transit Road in Lancaster need sidewalks.					X
Develop a multistate greenway corridor (Genesee River Wilds Project objective)					X
Promote the use of already available fuel efficient and infrastructure friendly vehicles (walking, bikes, scooters, motorcycles, etc.).					

Waste Management	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/ mail
The nine goals of this group suggest a lack of focus			X		
CFL and electronic-waste disposal is an issue	X	X	X		
Chemical and nuclear waste management and toxic emission need to be addressed	X	X			
WNY should not accept any more hazardous waste	X	X			
We should increase our capacity to collect, sell, and reuse heavy metals	X				
It is important to look at material production even before the material becomes waste	X				
Encourage industries to see that one person's waste can be another person's raw materials.	X				
As worded, the goal is to capture and dispose of landfill methane. It should be "reuse" not "dispose of". Focus on capturing methane at landfills to reuse as energy.		X			X
There should be a goal to incentivize synergistic siting between industries so that excess waste from one industry can be used by a nearby industry.		X			X
An educational campaign to keep grass and leaves (yard waste) out of waste stream should be created.			X		
The goals should mention encouraging the enforcement of recycling.			X		X
Education of the public and leaders needs to be mentioned. (Create workshops to educate)			X		X
Increase support for commercial composting businesses.			X		X
There should be a fine for those who refuse to recycle at residential and commercial levels.			X		
The plan should eliminate no cost and single-cost recycling and move towards a pay-as-you-go type system.			X		
The waste aspect of hydraulic fracturing fluids is an issue.			X		
We need regional coordination on what can be recycled.			X		X
Statewide deposit laws should be expanded into all containers (bleach bottles, condiment jars, etc.)					X
We should consider changing our packaging materials.				X	

Waste Management	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/ mail
Cost-benefit analysis is needed.				X	
There is a need for simplification of a universal recycling system.				X	
Infrastructure and public education on what to buy should be mentioned (i.e., purchase products with recycled/recyclable packaging)				X	
In a rural county, it is hard to payback the huge capital investment of expensive technologies				X	
The cost of regulations (ex: DEC fines) are crushing				X	
Product stewardship should be a highlight or sub goal					X
Outlaw the use of non-biodegradable materials in applicable places					X
Vendors should be made responsible for picking up and sorting recyclables.					X
Recycling efforts should pay back communities with neighborhood upgrades (performance review).					X
Find and establish small entrepreneurial uses of recyclable products within local areas and help establish small businesses to do so.					X
Discourage use of pre-packaged plastic wrapped products.					X
Encourage “bulk sales” and push for “American-made” products.					X

Water Management	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany Cattaraugus Meeting	Email/mail comment
The goals should include stormwater capture and slow release	X				
Public education is an importance component of water management.	X	X		X	
Incorporate green infrastructure into new projects/strategies for water management	X		X		
Wording ('manage') is very broad / goals are very generic	X				
Goals should differentiate between clean water, wastewater, and stormwater	X				
Need for better housing water systems	X	X			
Water is a scarce resource. Keep water resources local / conserve (issue of drought) / protect.	X	X	X	X	
Address the health impacts related to hydration problems		X			
Address climate change as it relates to water levels		X			X
Include all energy production tied with water usage (expand the goals beyond hydrofracking)			X		
Address stormwater runoff and flooding, aging municipal infrastructure and pollution source concerns			X	X	X
Regulations on water quality are too stringent				X	
Support Soil and Water Conservation districts					X
Increase funding for water quality grants and incentives to improve conservation practices near waterways					X
Increase education on using non-potable water for landscaping					X
Address the issue of Asian Carp					X
Provide information, education, and access to affordable water testing.					X
Identify and eliminate possible/probably water pollution sources before they pollute the water.					X

General/Overall Hardcopy/emailed Comments:

- Implement regional education programs through CCE and establish offices in each county.
- Consider climate change adaptation strategies when developing projects.
- The goals are too broad.
- Education should be at the forefront as the groups move forward and look for projects for implementation.
- Make sure new projects, regulations, and policies do not add an additional layer of government
- The goals and ideas are great, but historically top-down control and command government has failed miserably.
- Historically, implemented plans tend to benefit friends of those in power.
- Regarding efficiency, individuals acting in the free market are more effective.
- Concern was expressed over if this plan is truly serious about environmental and economic sustainability, or is the goal just to fish for government grants for the region.
 - If it requires grants and subsidies, it isn't sustainable by definition.
- The most potential benefit lays in the energy, water management, and agriculture and forestry sectors. The rest of the working groups all have impacts and deserve similar efforts.
- Projects with multiple value-added qualities should be emphasized.
- A truthful discussion needs to deepen the thoughts and investigations of the public. Then they will make more informed and sustainable decisions.
 - Ex: Hydraulic fracturing natural gas is no better than coal in regard to its carbon footprint; and are genetically modified seeds a sustainable practice and good for the environment?
- This plan should be working to simplify and improve existing programs rather than making new ones.
- Consumers pollute and waste more energy than the farmer and businesses we constantly try to regulate. Where is the public responsibility?
- Address the shrinking and aging population.
- Get youth involved in sustainability planning.
- Address the differences between urban and rural regions regarding sustainability as a whole (especially important when addressing storm-water runoff, land use and surrounding landscape, and aging infrastructure).
- Environmental literacy should be a major component of the general education curriculum from K to graduate school.
- We have entertainment, food and gossip columns in our WNY newspapers-how about an environment column?
- Concerned that funding will be very thin by the time it is split between the five counties within the region.
- It is in WNY's best interested to be proactive, rather than reactive when it comes to planning for potential climate change. This plan should include a commitment to prepare our communities for this climate change and hold discussions with all stakeholders on the potential impacts.
- Several comments have been received via email containing specific project implementation ideas for this plan.
- This sustainability plan is in line with the goals of the Genesee River Wilds Project (<http://flihappenings.wordpress.com/2012/08/01/the-genesee-river-wilds-project/>)
- Aggressive investment in greenways and blueways will attract and retain young, educated individuals who can further create more quality jobs. This also will further the goals stated within the sustainability plan by improving the quality of life within local communities.

- Greater cooperation between the WNY and Rochester/Finger Lakes regions (specifically in regards to the Genesee River Wilds Project) will optimize funding and increase economic development.
- Funding should be used in part to train staff to assist in applying for grants.
- The current regional boundaries in NY create planning obstacles. A whole-river or watershed approach should be used to draw boundaries.
- Regarding the future of this sustainability plan, questions and concerns arose around the following:
 - What is the timeline of this plan?
 - Who interprets, implements and enforces the plan?
 - How much input and representation will be allotted to the working class citizens of the region?

B

Project Comment Sheet



Western New York Regional Sustainability Plan

We want to hear from you!

The Western New York Regional Sustainability Planning Project Team is seeking your input and feedback as we develop a Plan to make Western New York a more sustainable region.

You are invited to comment on the Team's progress and provide input on the issues that are most important to you. Comments may be submitted in any of the following 3 ways: (1) Fill out this comment sheet and drop it into a comment box before leaving today's meeting; (2) Attend one of four July 2012 workshops to participate in a facilitated discussion; 3) Mail this form; or 4) email your comments to dmccloe@ene.com.

The NYSERDA-funded Western New York Regional Sustainability Plan will:

- Plan for energy production and conservation, transportation, waste and water management, land use and livable communities, agriculture and forestry, economic development, and open space;
- Build upon Regional Economic Development planning efforts to integrate our work toward economic prosperity with efforts to promote long-term sustainability;
- Measure key indicators of sustainability, including greenhouse gas emissions and energy use, available natural resources and economic assets, liabilities, and opportunities; and
- Prioritize eligible projects that can apply for Cleaner, Greener Communities implementation funding from the New York State Energy Research and Development Authority.

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

New York State Research and Development Authority (NYSERDA)



Working groups have formed around Key Topic Areas, and have established the following Preliminary Goals. Please visit www.sustainable-ny.com for additional information.

Land Use and Livable Communities

1. Encourage and support municipalities to develop and implement smart growth policies
2. Prioritize, promote brownfield clean-up/ redevelopment and adaptive re-use
3. Preserve, protect and enhance agricultural lands and urban agriculture
4. Encourage expansion of location-efficient housing
5. Develop a mechanism for WNY regional land use planning oversight
6. Connect regional greenway and waterfront planning to natural resources and recreation

Agriculture and Forestry

1. Strengthen the economic viability of agriculture and forestry enterprises
2. Achieve more efficient uses of energy inputs
3. Use agricultural and forest industry by-products for energy production
4. Achieve increased support from the public and elected officials through education on the importance of agriculture
5. Protect farmland for continued use for farming
6. Promote environmentally sustainable management systems for the agriculture and forestry sector

Transportation

1. Increase and improve alternatives to driving alone
2. Improve regional fuel efficiency and increase the use of alternative fuels, especially in fleets
3. Prioritize road and highway infrastructure projects in line with regional smart growth efforts, especially through “Complete Streets” principles

Waste Management

1. Reduce municipal waste generation and increase recycling to reduce amount of solid waste sent to landfills or incinerators
2. Encourage/support increased use of recycled materials in locally produced goods
3. Educate the public on reducing, reusing, and recycling waste
4. Share BMPs with municipalities to improve their recycling policies
5. Enhance recycling infrastructure to maximize beneficial use of organic waste (e.g., composting)
6. Increase construction and demolition (C&D) waste recycling
7. Increase the number of waste collection fleets running on clean/green fuels (e.g., CNG)
8. Encourage manufacturers to minimize waste and maximize economic benefits of the product
9. Increase waste management practices while decreasing GHG emissions and cost

Energy

1. Increase renewable energy generation in WNY (including solar, wind, hydropower, hydrokinetic, biomass, geothermal, and biogas sources)
2. Promote energy efficiency efforts in the most environmentally sound and cost effective way, promoting access to all incomes and business sizes and resulting in reduced GHG emissions
3. Upgrade the transmission system and increase fuel diversity in an economically and environmentally sustainable way

Water Management

1. Coordinate water management with land use and conservation planning and decisions on where future development occurs
2. Improve regional water management systems and increase regional water use efficiency
3. Identify and manage pollution sources as a way to improve regional water quality
4. Address regional water quantity concerns (flooding, storm water/runoff, and regional water use by hydraulic fracturing)

**Western New York Regional
Sustainability Plan
Draft Public Meeting Series
Summary**

November 2012

Prepared by:

ECOLOGY AND ENVIRONMENT, INC.
and
UNIVERSITY OF BUFFALO REGIONAL INSTITUTE
in support of the
Western New York Regional Sustainability Plan






Table of Contents

Section	Page
1	Introduction and Overview 1-1
2	Final Working Group Goals and Project Types Submitted to Date 2-1
2.1	Land Use and Livable Communities 2-1
2.2	Transportation 2-3
2.3	Agriculture and Forestry 2-5
2.4	Energy 2-6
2.5	Water Management 2-8
2.6	Waste Management 2-9
2.7	Additional Comments 2-11
3	Conclusions and Next Steps 3-1
Appendix	
A	October 2012 Comment Matrix A-1
B	October 2012 Comment Sheet B-1

1

Introduction and Overview

In late October 2012, residents from Niagara, Erie, Chautauqua, Cattaraugus and Allegany counties were invited to attend the second series of public meetings to discuss sustainability in Western New York. The first series of meetings/workshops was held in July in the same counties to hear the public's ideas about what sustainability means for their region and to collect comments about the ongoing work of topic area working groups. The public's comments helped to inform and guide the working groups as they set sustainability goals and began to identify projects that could further the mission of the Western New York Regional Sustainability Plan ("the Plan").

The purpose of the final series of public meetings was to present a project update, seek public input on the implementation projects submitted to date, and solicit new project ideas so that the working groups could finalize the Plan. The project team is managed by E & E with key support from the University at Buffalo Regional Institute (UBRI).

As described at the October public meeting series, the primary goals of the project are to create a regional GHG inventory, develop long and short term goals for regional sustainability, and to identify specific projects that will help the region reach those goals. Working Groups are charged with attending monthly meetings to finalize goals, collect data, and prioritize projects.

At each October public meeting, the E & E project manager and team members provided a project overview and described the team's progress to date; described how the Plan would align with other ongoing efforts within the region; presented the GHG inventory; and described the criteria for inclusion of proposed implementation projects in the Plan.

The main focus of the meetings was to identify implementation projects that should be included in the Plan. Ideally, these projects should help to achieve the sustainability goals, reduce GHG emissions, align with REDC criteria, and be well-formed/ready for implementation.

This document describes the demographic characteristics of the workshop attendees, summarizes the final goals of each working group, and summarizes the

public input received to date. The document also identifies the prominent themes heard across several of the meeting discussions.

The meetings were held at four venues across the Western New York region.

- October 15 at the Millennium Hotel in Cheektowaga (Erie County)
- October 18 at Jamestown Community College in Jamestown (Chautauqua County)
- October 23 at Niagara County Community College in Sanborn (Niagara County)
- October 25 at Moonwinks Restaurant in Cuba (Allegany County)

The October meetings drew approximately 160 stakeholders, as compared to approximately 110 stakeholders at the July public meeting series. A demographic snapshot of the attendees from across all the October meetings and as compared to the same indicators for the five-county region is shown below.

Affiliation	Sanborn	Cheektowaga	Jamestown	Cuba	All Meetings
Concerned citizen	59%	19%	39%	17%	39%
Business owner	6%	8%	10%	12%	9%
Member CBO or NGO	9%	23%	10%	8%	17%
Elected official	0%	0%	10%	12%	5%
Agency Rep: state, federal or local	3%	15%	14%	18%	12%
Student	3%	19%	38%	0%	5%
Other	21%	15%	19%	10%	13%

Age	Sanborn	Cheektowaga	Jamestown	Cuba	All Meetings
Under 18 years old	31%	4%	0%	0%	2%
18 to 24 years	6%	15%	10%	0%	6%
24 to 34 years	12%	11%	10%	6%	9%
35 to 44 years	9%	15%	10%	4%	9%
45 to 54 years	21%	15%	14%	23%	20%
55 to 64 years	21%	22%	38%	28%	27%
65 years and older	27%	19%	19%	38%	28%

Gender	Sanborn	Cheektowaga	Jamestown	Cuba	All Meetings
Male	54%	43%	62%	66%	57%
Female	26%	46%	33%	28%	32%

Attendees were from...
All Meetings

Niagara County	18%
Erie County	28%
Cattaraugus County	15%
Chautauqua County	12%
Allegany County	21%
Other	6%

Percentage of attendees who participated in a July workshop...
Sanborn
Cheektowaga
Jamestown
Cuba
All Meetings

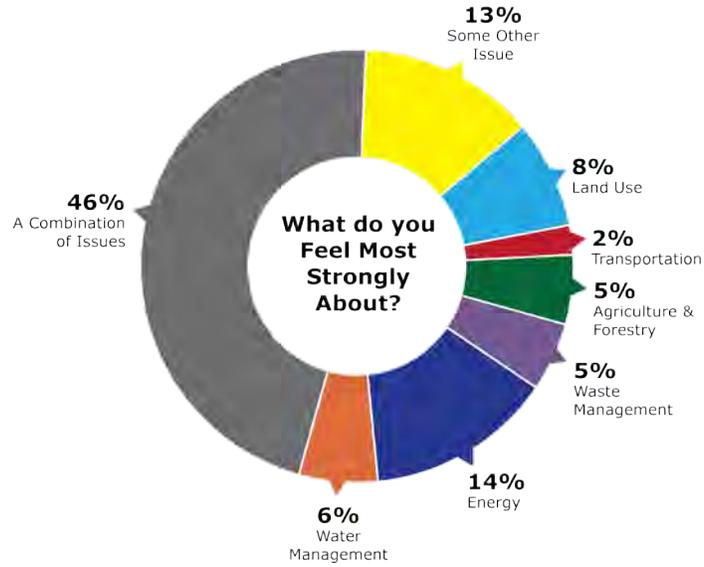
Attended July workshop	17%	41%	37%	24%	27%
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Percentage of attendees who are working group members...
Sanborn
Cheektowaga
Jamestown
Cuba
All Meetings

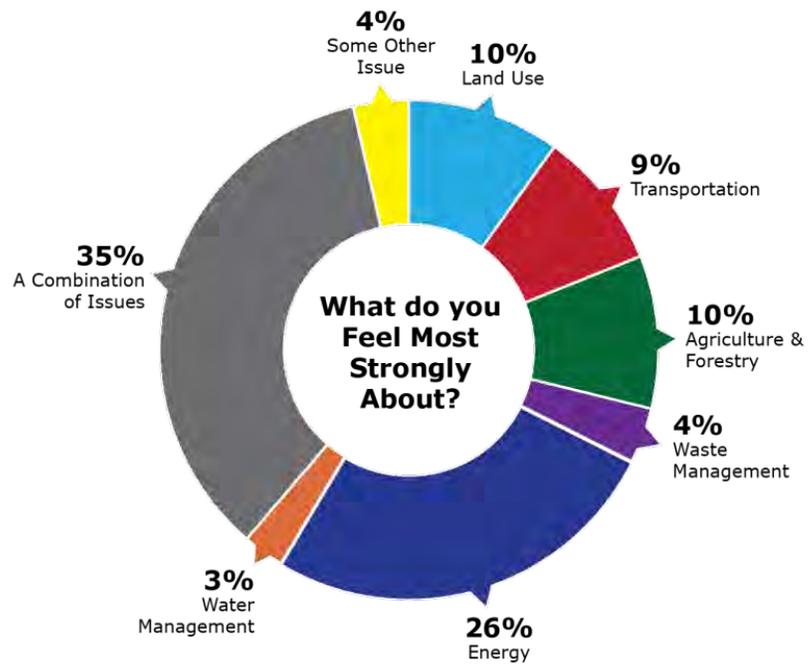
Working group members	23%	29%	24%	17%	22%
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Community members were asked to identify which topics were of the greatest interest to them, of the following categories: land use, transportation, agriculture and forestry, waste management, energy and water management. Several of the attendees expressed interest in specific topic areas, while others had concerns across several topic areas.

When asked about the topic about which they felt the most strongly, attendees indicated the following:



In July, when asked the same question, meeting attendees indicated the following:



2

Final Working Group Goals and Project Types Submitted to Date

Following the project introduction and overview, meeting attendees participated in a facilitator-led, technology-enhanced discussion. For each topic area, a project team member presented the focus of their working group discussions, common themes that emerged from previous stakeholder feedback, and a summary of the final goals of their working group. They also described the types of projects that had been submitted to date.

The meeting attendees were then invited to participate in a facilitated discussion, using wireless electronic devices to indicate which project type was the most important to them, i.e., which project type would have the greatest impact on regional sustainability, or to submit new project ideas. At the first few meetings, the stakeholders had the option to select “Wild Card” if they wanted to submit new project ideas. At the final meeting, a new category, “Other Comments”, was added to the survey questions to distinguish between new project ideas (“Wild Card”) and general comments.

Following review of the audience responses, the attendees were asked to comment and expand upon their responses.

Following the meetings, the Project Team reviewed detailed meeting notes and hard copy/email comments received and summarized the comments in a matrix by working group topic (see Attachment A).

2.1 Land Use and Livable Communities

At the July workshop series, 67% of the meeting attendees thought the draft goals set by the **Land Use and Livable Communities** working group were mostly or fully on target. Following the July meetings, working groups reviewed comments and feedback, and further discussed whether the goals needed to be refined or expanded.

At the October meetings the final goals developed by the **Land Use and Livable Communities** working group were summarized as follows:

2 Final Working Group Goals and Project Types Submitted to Date

- Increase the number of municipalities that are developing and implementing smart growth policies (tech assistance, education, zoning)
- Focus development in areas with existing infrastructure (brownfields and adaptive re-use)
- Preserve, protect and enhance the viability of agriculture
- Encourage expansion of location-efficient housing
- Develop a mechanism for regional land use planning assistance and collaboration
- Connect regional greenway and waterfront planning to natural resources and recreation

At the time of the October public meeting series, over 100 implementation project ideas had been submitted by stakeholders. Some of these addressed the goals of the **Land Use and Livable Communities** working group. The project types were summarized as follows:

- Redevelop Brownfields, Vacant and Under-utilized land
- Municipal and County Level Land Use Planning Tools
- Revitalize Main Streets and Community Centers
- Improve Regional Waterfront Access and Recreational Trails

When asked to indicate the project type that would have the greatest impact on sustainability in the region, meeting attendees responded as follows:

	Sanborn	Cheektowaga	Jamestown	Cuba	All Meetings
Redevelopment of underutilized land	29%	33%	11%	14%	22%
Land Use Planning Tools	6%	17%	26%	7%	45%
Main St./Community Center Revitalization	10%	17%	16%	37%	27%
Enhance Waterfront Access and Trails	13%	13%	32%	21%	3%
WILD CARD/Additional Projects	42%	20%	16%	9%	0%
Other comments	NA	NA	NA	12%	4%

2 Final Working Group Goals and Project Types Submitted to Date

Stakeholders who selected “Wild Card” were first invited to comment and provide input on the existing project types or new project ideas. A number of general comments were also made/discussed. All comments submitted are summarized in Attachment A.

Some key comments/themes discussed are as follows:

1. We need to implement projects that address land conservation and the use of land in an environmentally safe way
2. Prioritize greenway planning, multi-use trails, and natural systems
3. Prioritize projects that limit fragmentation and prioritize ecological communities
4. Protect farmland from development through land trusts and farmland protection programs.
5. See Attachment A for additional comments/projects.

At the Sanborn (Niagara County) and Cuba (Allegany County) meetings, numerous meeting attendees voiced their concern that sustainability would lead to increased land use regulations and the elimination/reduction of private landowner rights.

2.2 Transportation

At the July workshop series, 69% of the meeting attendees thought the draft goals set by the **Transportation** working group were mostly or fully on target. Following the July meetings, working groups reviewed comments and feedback, and further discussed whether the goals needed to be refined or expanded.

At the October meetings the final goals developed by the **Transportation** working group were summarized as follows:

- Increase and improve alternatives to driving alone through interagency partnerships and cooperative efforts
- Improve regional fuel efficiency and increase the use of alternative fuels, especially in fleets
- Prioritize transportation infrastructure projects in line with regional smart growth efforts, especially through “Complete Streets” principles

At the time of the October public meeting series, over 100 implementation project ideas had been submitted by stakeholders. Some of these addressed the goals of

2 Final Working Group Goals and Project Types Submitted to Date

the **Transportation** working group. The project types were summarized as follows:

- CNG Fleet Vehicle conversions and fueling stations
- Regional Complete Street Infrastructure Projects
- Improve Alternative Transportation Options
- Traffic Optimization Projects

When asked to indicate the project type that would have the greatest impact on sustainability in the region, meeting attendees responded as follows:

	Sanborn	Cheektowaga	Jamestown	Cuba	All Meetings
CNG Fleet Vehicle conversions and fueling stations	26%	15%	32%	27%	22%
Regional Complete Street Infrastructure Projects	10%	22%	32%	30%	45%
Improve Alternative Transportation Options	13%	30%	26%	16%	27%
Traffic Optimization Projects	16%	11%	5%	7%	3%
WILD CARD/Additional Projects	25%	22%	5%	5%	0%
Other comments	NA	NA	NA	16%	4%

Stakeholders who selected “Wild Card” were first invited to comment and provide input on the existing project types or new project ideas. A number of general comments were also made/discussed. All comments submitted are summarized in Attachment A.

Some key comments/themes discussed are as follows:

1. Implement projects that promote ridesharing and develop carpool lots, especially in outlying suburbs/communities.
2. Consider traffic signal optimization and traffic optimization projects.
3. The goals, or projects, need to address border crossing issues.
4. Train staff for new emissions standards and product lines in the auto industry.
5. Consider implementing projects that prioritize rail: using the rail system to transport goods, and using high-speed rail for commuters.
6. Provide tax incentives for owning hybrid vehicles.

2 Final Working Group Goals and Project Types Submitted to Date

7. Economic impacts can be maximized through transportation efficiency.
8. See Attachment A for additional comments/projects.

2.3 Agriculture and Forestry

At the July workshop series, 69% of the meeting attendees thought the draft goals set by the **Agriculture and Forestry** working group were mostly or fully on target. Following the July meetings, working groups reviewed comments and feedback, and further discussed whether the goals needed to be refined or expanded.

At the October meetings the final goals developed by the **Agriculture and Forestry** working group were summarized as follows:

- Strengthen the economic viability of agriculture and forestry enterprises
- Achieve more efficient uses of energy inputs and use agricultural and forest industry by-products for energy production
- Increase support from government officials and the public for protection and continued use of farmland, and to strengthen business climate for ag and forestry
- Promote environmentally sustainable management systems for the agriculture and forestry sector

At the time of the October public meeting series, over 100 implementation project ideas had been submitted by stakeholders. Some of these addressed the goals of the **Agriculture and Forestry** working group. The project types were summarized as follows:

- Establish a WNY Food Hub or Agricultural Processing Facilities
- Promote and preserve agricultural enterprises
- Develop energy using Agriculture and Forestry products or bi-products

When asked to indicate the project type that would have the greatest impact on sustainability in the region, meeting attendees responded as follows:

2 Final Working Group Goals and Project Types Submitted to Date

	Sanborn	Cheektowaga	Jamestown	Cuba	All Meetings
Establish a WNY Food Hub or Agricultural Processing Facilities	17%	16%	25%	36%	22%
Promote and Preserve Agricultural Enterprises	13%	40%	30%	25%	45%
Develop energy using Agriculture and Forestry products or bi-products	30%	16%	20%	16%	27%
WILD CARD/Additional Projects	40%	28%	25%	9%	0%
Other comments	NA	NA	NA	14%	4%

Stakeholders who selected “Wild Card” were first invited to comment and provide input on the existing project types or new project ideas. A number of general comments were also made/discussed. All comments submitted are summarized in Attachment A.

Some key comments/themes discussed are as follows:

1. Promote agricultural tourism opportunities to stimulate economic development.
2. Prioritize forestry projects; none were submitted to date.
3. Focus on projects that educate the region and our young people about agriculture.
4. Encourage policies and regulations that encourage small farmers.
5. See Attachment A for additional comments/projects.

2.4 Energy

At the July workshop series, 66% of the meeting attendees thought the draft goals set by the **Energy** working group were mostly or fully on target. Following the July meetings, working groups reviewed comments and feedback, and further discussed whether the goals needed to be refined or expanded.

At the October meetings the final goals developed by the **Energy** working group were summarized as follows:

- Increase renewable energy generation in WNY (support regulatory reforms; promote access to funding/financial incentives; education; upgrades to transmission system)
- Promote energy efficiency efforts in the most environmentally sound and cost effective way, promoting access to all incomes and business sizes and resulting in real reduction of GHG emissions

2 Final Working Group Goals and Project Types Submitted to Date

- Upgrade existing conventional energy arena in an economically and environmentally sustainable way

At the time of the October public meeting series, over 100 implementation project ideas had been submitted by stakeholders. Some of these addressed the goals of the **Energy** working group. The project types were summarized as follows:

- Advance the Regional Renewable Energy/Green Manufacturing Industry
- Promote Energy Efficiency/Renewable Energy Funding Programs
- Installation of Renewable and Alternative Energy Projects
- Green Buildings
- Local Government GHG Assessments

When asked to indicate the project type that would have the greatest impact on sustainability in the region, meeting attendees responded as follows:

	Sanborn	Cheektowaga	Jamestown	Cuba	All Meetings
Advance Regional Renewable Energy/Green Manufacturing Industry	4%	0%	25%	22%	22%
Promote Energy Efficiency/Renewable Funding Programs	8%	31%	30%	20%	45%
Install Renewable and Alternative Energy Projects	17%	35%	25%	24%	27%
Green Buildings	4%	23%	10%	0%	
Local Gov't GHG Assessments	8%	8%	0%	2%	
Wild Card/Additional Projects	58%	4%	10%	7%	0%
Other Comments	NA	NA	NA	24%	

Stakeholders who selected “Wild Card” were first invited to comment and provide input on the existing project types or new project ideas. A number of general comments were also made/discussed. All comments submitted are summarized in Attachment A.

Some key comments/themes discussed are as follows:

1. Green building design and standards should be incorporated into mobile homes, schools, universities and other construction projects.

2 Final Working Group Goals and Project Types Submitted to Date

2. Provide legislative, financial and regulatory support for renewable energy projects.
3. Energy programs that target small businesses, municipalities and homeowners should be better utilized.
4. There are varying perspectives on hydraulic fracturing: some stakeholders want to prohibit drilling at all costs; others want to permit drilling as a way to increase jobs/economic development.
5. Collaborate with Jamestown on the pilot program for development of central heating systems.
6. See Attachment A for additional comments/projects.

2.5 Water Management

At the July workshop series, 64% of the meeting attendees thought the draft goals set by the **Water Management** working group were mostly or fully on target. Following the July meetings, working groups reviewed comments and feedback, and further discussed whether the goals needed to be refined or expanded.

At the October meetings the final goals developed by the **Water Management** working group were summarized as follows:

- Ensure better coordination of water management with land use and conservation planning and decisions on where future development occurs, including continued and increased public access
- Improve regional water management systems and increase regional water use efficiency
- Improve regional water quality through a focus on identification and management of pollution sources and protection of healthy watersheds
- Address regional water quantity concerns (flooding, storm water/runoff, infiltration, and regional water use)

At the time of the October public meeting series, over 100 implementation project ideas had been submitted by stakeholders. Some of these addressed the goals of the **Water Management** working group. The project types were summarized as follows:

- Increase Efficiency and Effectiveness of Water Management Infrastructure
- Promote Green Infrastructure

2 Final Working Group Goals and Project Types Submitted to Date

- Energy from Water Treatment By-Products
- Improve and Protect Regional Water Quality

When asked to indicate the project type that would have the greatest impact on sustainability in the region, meeting attendees responded as follows:

	Sanborn	Cheektowaga	Jamestown	Cuba	All Meetings
Increase efficiency and effectiveness of water management infrastructure	20%	15%	67%	16%	22%
Promote Green Infrastructure	8%	33%	14%	9%	45%
Energy from Water Treatment By-Products	24%	19%	10%	14%	27%
Improve and Protect Regional Water Quality / Protect and Improve Access to Water for Recreation*	16%	22%	0%**	33%	
Wild Card/Additional Projects	32%	11%	10%	7%	
Other Comments	NA	NA	NA	21%	

* "Access to water for recreation" was included as a selection at the Cheektowaga meeting only.
 ** For the Jamestown meeting, this category was not presented. Those participants who wished to select water quality improvement projects were asked to select "Wild Card."

Stakeholders who selected "Wild Card" were first invited to comment and provide input on the existing project types or new project ideas. A number of general comments were also made/discussed. All comments submitted are summarized in Attachment A.

Some key comments/themes discussed are as follows:

1. Prioritize projects that will address the management of streams, rivers, flood-plains and riparian areas.
2. Protect our water quality by prohibiting or tightening standards for hydraulic fracturing.
3. Allow the use of gray water for non-potable residential uses.
4. Prioritize projects that update antiquated infrastructure.
5. Research and develop a county-wide plan an integrated water and sewer system.
6. See Attachment A for additional comments/projects.

2.6 Waste Management

At the July workshop series, 78% of the meeting attendees thought the draft goals set by the **Waste Management** working group were mostly or fully on target.

2 Final Working Group Goals and Project Types Submitted to Date

Following the July meetings, working groups reviewed comments and feedback, and further discussed whether the goals needed to be refined or expanded.

At the October meetings the final goals developed by the **Waste Management** working group were summarized as follows:

- Reduce amount of municipal solid waste disposal via reduction of waste generation or increase in recycling
- Enhance infrastructure to maximize diversion of organic wastes from disposal facilities and beneficial reuse of organic material
- Increase construction and demolition (C&D) waste recycling
- Increase the number of waste transport vehicles running on clean/green fuels (e.g., CNG)

At the time of the October public meeting series, over 100 implementation project ideas had been submitted by stakeholders. Some of these addressed the goals of the **Waste Management** working group. The project types were summarized as follows:

- Promotion of Best Practices
- Increase Recycling Ventures and Use of Recycled Materials in the Region
- Diversion of Waste from Landfills
- Conversion of Waste Transport Vehicles to Alternative Fuel

When asked to indicate the project type that would have the greatest impact on sustainability in the region, meeting attendees responded as follows:

	Sanborn	Cheektowaga	Jamestown	Cuba	All Meetings
Promote Best Practices	18%	25%	27%	3%	22%
Increase Recycling and Use of Recycled Materials	23%	0%	5%	24%	45%
Diversion of Waste from Landfills	27%	27%	9%	47%	27%
Convert Waste Transport Vehicles to Alternative Fuel	0%	27%	55%	8%	
Wild Card/Additional Projects	32%	12%	5%	3%	
Other Comments	NA	NA	NA	16%	

2 Final Working Group Goals and Project Types Submitted to Date

Stakeholders who selected “Wild Card” were first invited to comment and provide input on the existing project types or new project ideas. A number of general comments were also made/discussed. All comments submitted are summarized in Attachment A.

Some key comments/themes discussed are as follows

1. Need to handle waste segregation more efficiently.
2. Encourage manufacturers to practice product stewardship and recycle the packaging of their goods.
3. Compost kitchen waste to protect water quality.
4. Educate the public on consumer habits as a way to reduce waste generation.
5. Explore the use of methane gas to fuel waste fleets.

2.7 Additional Comments

A number of comments were submitted, both verbally and in writing, that did not fall into a specific working group. Some of these comments are as follows:

- Some residents felt that the Plan and any future implementation projects were being ‘forced’ on the community
- Some attendees questioned how working group members were selected;
- Several attendees disagreed that the five counties belonged in the same region-wide plan, and that rural/urban/suburban needs differed.
- Some commenters indicated that this project, and future implementation projects, are examples of government waste and should not be funded via taxpayer/user dollars.

3

Conclusions and Next Steps

At the end of each public meeting, attendees were reminded to submit additional comments by hard copy or email (see Attachment B for a sample project comment sheet). The Project Team continues to receive and log comments. All input received to date for the October meeting series (via meeting, comment sheet, email or mail) has been captured and documented in Attachment A, October 2012 Comment Matrix. Moving forward, the working groups and Project Team will review the comments and project ideas received for incorporation into the draft Plan as appropriate.

As indicated at the public meetings, the Plan will be available for review in November 2012 on the project's public website, www.sustainable-ny.com.

A

October 2012 Comment Matrix

Land Use and Livable Communities	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/mail/comment sheet
Wal-Mart should be moved to Main Street in order to help revitalize the town center in Olean and help with declining population.				X	
Implement the Friends of Genesee Valley Greenway project					X
Counties should have access to updated individual GIS systems.	X				
We should implement projects that address land conservation and the use of land in an environmentally safe way.			X		
Prioritize the Chautauqua greenway plan, recreation trails and natural systems			X		
Horse trails should be included in land use planning.			X		
Projects should be implemented that limit fragmentation and prioritize ecological communities.		X			
Incorporate green design principles into public health facilities.		X			
Mixed use development and collaboration are key.		X			
Adapt the goals to include New Urbanism principles.		X			
Protect farm land from development through land trusts and farm land protection programs.					X
Rehabilitate the former Sinclair Refinery masonry structure (aka the Barrel House' in the town of Wellsville. It is adjacent to the 10-mile upper Genesee trail and the Wellsville Campus of SUNY Alfred.					X
Collaborate with Allegany Trails, Inc. on development of bicycle and recreation trails. There are plans to extend some trails throughout Allegany County to Catt. And Steuben counties and to Potter and McKean counties in PA.					X
Transportation					
Truck routes between WNY and Canada should be improved.				X	
When discussing alternative fuels, CNG and electric should not be discussed simultaneously.			X	X	
Management of border crossings between the U.S. and Canada should be incorporated in the goals.		X			

Land Use and Livable Communities	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/mail/comment sheet
The region has a lot of advanced manufacturing working on auto parts. With new emissions standards, we need to train staff for new standards and product lines.			X		
Traffic signal optimization is too limiting; the goal is traffic optimization all around.			X		
Clean technology is a high priority of NYSERDA.			X		
We need projects that promote ridesharing and develop car-pool lots.			X		
Remove the skyway.		X			
Oppose CNG. This will lead to hydraulic fracturing. Use wind turbines to plug in transit vehicles and bypass natural gas.		X			
Projects should address high-speed rail.		X			
Prioritize a multi-modal, inter-regional, NYS-wide greenway.		X			
Prioritize rail as a way to transport goods.		X			
Revise 'complete streets' to 'complete green streets'		X			
Provide tax incentives for owning hybrid cars and others good on gas mileage.					X
Eliminate corn in fuels.		X			
New York State should re-visit expansion of Route 400 south of Buffalo and consider major improvements to the Route 16 Corridor to tie into Interstate 86.				X	X
Explore the use of methane gas from landfills to fuel waste transportation vehicles.					X
Agriculture and Forestry					
Provide more agro-tourism opportunities to stimulate economic development for farmers.				X	
The farmer's market model is a good way to encourage more consumption of locally grown foods.				X	
Farmland should not be controlled by the government.	X				
Projects are all agricultural and there are no forestry projects. Most people don't draw connection with forestry protection and water aquifers.		X	X		

Land Use and Livable Communities	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/mail/comment sheet
We need a large regional dry kiln to utilize hardwood so we don't transport outside of the region to be dried and brought back to be sold in stores. Energy could be used in a more efficient way.			X		
The Plan should focus on educational programs and learning centers to connect people with agriculture and sustainability. We need to educate our youth about agriculture and the importance of growing your own food. Also, teach horticulture and water conservation in high schools. Create landscaping that reduced energy required for maintenance.		X	X	X	
Cattaraugus County has an active nature sustainability forestry program.			X		
We need policies that encourage, not restrict, small farmers (e.g., Food Safety Act has a negative financial impact; younger family members aren't allowed to handle hay or train horses)			X	X	X
Regional branding could help people know what is made here and what is not.			X		
Land use is a way to preserve the viability of agriculture.		X			
Climate change is a threat to the viability of agriculture.		X			
Eliminate the use of corn-based fuel and ethanol in agriculture.		X			
Give grants and incentives to start up farms, and government should favor small and medium-sized farms.					X
Energy					
Government should limit regulation on cheap energy.				X	
Allowing gas drilling will provide jobs and economic development				X	X
Projects should focus on investing in shale gas for heating and cooling, in addition to co-gen projects.				X	
Geothermal systems should be encouraged in the region.				X	
We need to keep energy local. WNY supports the energy consumed in NYC.				X	

Land Use and Livable Communities	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/mail/comment sheet
Forcing individuals to make sacrifices, such as converting from wood-burning heaters to other types of heaters make it so everyone has to purchase their heat from the energy companies.	X				
Under Governor Cuomo, there is no home rule in Niagara County, and the siting of energy is dictated by the state.	X				
If hydropower is such a huge resource to decrease the impact of GHG emissions from our region, it does not make sense that the highest ratepayers are in WNY and all the energy is exported outside the region.	X				
The public should not support the government's wasteful use of energy by higher rates.	X				
The amount of renewable energy that is not hydro is less than 1 percent, so the region should improve on this.		X			
Jamestown has a pilot program for the development of central heating systems.			X		
Energy standards for mobile homes should be improved, including wall thickness and draft skirts around the base to improve energy.			X		
There should be a small town sustainability project using internal systems to create renewable energy and create local jobs allowing workers to stay in their towns.			X		
The current system should allow for easier implementation of new energy projects at a more affordable rate and with greater efficiency.			X		
Feed-in-tariff and other policy recommendations are not projects, but they are policies. It is not clear how policy feeds into the Plan.		X			
Expand green building design to include schools. A joint proposal should be submitted for districts to renovate their buildings, integrating green design and education into the project. Include Seneca Nation of Indians and other groups in the effort to conserve energy.		X			
We need projects that support grants for research and development to explore ways to eliminate CO2 emissions; we could use the lost coal at coal-fired power plants if we do so.					X

Land Use and Livable Communities	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/mail/comment sheet
Decentralize the energy sector. Create ways to install solar panels on every new house.					X
Provide legislative, regulatory and financial support for installation of solar, small wind and geothermal heating.					X
Fund universities to create open source designs for energy efficient housing (e.g., solar gain, solar trombe walls, celestial windows) to reduce the need for fossil fuels. (PA created low-income housing using green design; no extra cost to build and cut energy usage by 40%).					X
Energy programs such as “Small-head hydro” and “remote net metering” that target small businesses, municipalities and homeowners should be better utilized.					X
Do not use taxpayer money for hydraulic fracturing, or natural gas as a bridge fuel.					X
Natural gas is not a clean or green fuel.		X			
Establish co-ops for villages to give gas and oil rights of village properties for hydraulic fracturing. The funds used could promote green energy.					X
Water Management					
We need projects that will address stream/river management and appropriate management of floodplains and riparian areas.				X	
FEMA and USACE should use gravel to build impoundments.				X	
Improve the Genesee River water quality.				X	X
Salting of roadways during winter months should be handled more efficiently so as to not pollute local water resources.				X	
Modify legislation to allow the use of gray water for non-potable residential uses.			X	X	
Waste/water management should be handled locally and fall outside of the scope of a regional planning process.				X	
New York State should say no to hydraulic fracturing. Water is our most important resource. There should be a region-wide prohibition on the use of fresh water for hydraulic fracturing.			X		X

Land Use and Livable Communities	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/mail/comment sheet
Chautauqua Lake needs an upgraded water treatment project. Significant energy goes into growing weeds; if we reduce phosphorus levels we can spend less energy to grow the weeds. About 20-25% of phosphorus going in to the lake is from wastewater treatment.			X		
To reduce losses of fresh water, antiquated infrastructure should be updated.			X		
The region needs more networking and collaboration. Promote Great Lakes stewardship via education. Projects should be consistent with other states' plans for the Great Lakes.		X			
We need more emphasis on the natural environment, specifically, waterways.					X
Need a project in Allegany County: research and development of county-wide plan for both water and sewer that would utilize current existing municipal systems to interlock county-wide..					X
Protect water quality at all costs.					X
Do not allow the spreading of hydraulic fracturing solids on roads.					X
Pass legislation that forces the hydraulic fracturing industry to conform to the Clean Air, Clean Water and Superfund Acts.					X
Establish land use/watershed protection areas that could be used to develop water bottling facilities that make use of our the region's spring/artesian resources.					X
Implement the Genesee River Wilds project					X
The Village of Hamburg proposes a Village Potable Water System Consolidation with Erie County Water Authority.					
The Village of Hamburg proposes a cooperative effort between the Village and the Erie County Sewer Department to eliminate four sanitary sewer pump stations and install new gravity mains to reduce energy consumption and I & I into the sewer/treatment systems.					X
Waste Management					
Waste segregation should be handled more efficiently, similarly to the large \$2-3M machines that are utilized in Europe.				X	

Land Use and Livable Communities	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/mail/comment sheet
Waste/water management issues should be handled locally and fall outside of the scope of a regional planning process.				X	
There should be more emphasis in this region on the “cradle to cradle” concept so that manufacturers practice product stewardship and recycle the packaging of their goods.			X		
Compost kitchen waste to reduce waste in streams and waterways in the region.			X		
Educate the public on consumer habits that create waste and packaging.					X
Likelihood of accidents at W. Valley Disposal site is higher as a result of climate change. This will affect our water supply.		X			
Projects that address the disposal of pharmaceutical waste should be proposed.		X			
Work with Waste Management for methane production.					X
General Comments					
The working groups should include a category on the public health cross sector.					X
The project is something being forced upon the public by government.				X	
Traffic from I-86 and I-90 should not be incorporated in GHG emissions calculations for Erie County.				X	
Allegany and Erie Counties should not be in the same regional planning effort.				X	
GHG impacts are not proven.				X	
The working group membership process should have been more transparent; and the public should have had access to those meetings.		X		X	
Not all subject areas are relevant to the southern counties due to the primary demographic of rural and low- or middle-income families.				X	
Project ideas seem to come from Buffalo and fall more in line with urban priorities.				X	
The region needs to focus on embracing a free market economy.				X	

Land Use and Livable Communities	Niagara County Meeting	Erie County Meeting	Chautauqua County Meeting	Allegany/Cattaraugus Meeting	Email/mail/comment sheet
RGGI legislation causes an increase in the price of utilities which negatively impacts small businesses, thereby discouraging economic development in the region.				X	
None of these projects should be funded. The taxpayer cannot continue to fund the cost of government.				X	X
Global warming is not a proven science.				X	
The mission statements for the working groups should be modified.	X				
Keynesian economics are the basis of this plan.	X				
We need a clinical long-term study on how to increase life expectancy.		X			
Education is key. We need to practice civic responsibility, teach sustainability, and appreciate diversity. Our schools are in need of reform.		X			
We don't need sustainability, we need reform. We need to grow the tax base in WNY.					X
Current regulations prohibit economic growth (e.g., weight limits or other restrictions on roads, limiting business/growth)					X
You have to find income in order to go green.					X
We need to major restructuring in order to plan in an environmentally sustainable way. Several ideas presented in the book, "America Beyond Capitalism", should be considered: Development of a public trust to oversee the investment of stock; Employee ownership as a means to economic and environmental stability (employee stock ownership plans, municipally-owned utilities, municipally owned real estate development); Re-structuring of corporations into self-governing employee-owned enterprises and partnerships; Investment of pension funds priorities to achieve public goals; Regional restructuring toward greater state authority and less federal authority; and Greater Community Economic Stability.					X

B

October 2012 Comment Sheet



Western New York Regional Sustainability Plan

The Western New York Regional Sustainability Planning Team is seeking your input on projects that will make our region more sustainable.

Over the last several months, the Western New York Regional Sustainability planning team has used your input to create sustainable solutions for land use, energy, transportation, infrastructure and environmental practices to improve our quality of life now, and for generations to come.

Ultimately, the Western New York Regional Sustainability Plan will:

- Plan for energy production and conservation, transportation, waste and water management, land use and livable communities, agriculture and forestry, economic development and open space
- Build upon Regional Economic Development planning efforts to integrate plans for economic prosperity with efforts to promote long-term sustainability
- Identify indicators to measure our progress, including GHG emissions and energy use, available natural resources and economic assets, liabilities and opportunities
- Describe projects that may apply for implementation funding from various funding sources including the NYSERDA Cleaner Greener Communities Implementation funding expected in 2013

The planning team invites your ideas and feedback on implementation projects that can help meet the region's goals for sustainability.

You may share your project ideas in the following ways:

- Participate in tonight's discussion
- Submit a web-based Project Identification Form at www.sustainable-ny.com/form or
- Complete and submit the attached form no later than November 8, 2012.

The project is funded by a grant from the New York State Energy Research and Development Authority as part of Governor Andrew M. Cuomo's Cleaner, Greener Communities Program. The participating counties are Allegany, Cattaraugus, Chautauqua, Erie and Niagara. The planning team is led by Allegany County, with support from Southern Tier West Regional Planning and Development Board, Ecology and Environment, Inc., and the University at Buffalo Regional Institute.

The draft Western New York Regional Sustainability Plan will soon be available at www.sustainable-ny.com



Working groups have formed around key topic areas, and have established the following goals. Implementation projects should meet at least one of these goals.

Land Use and Livable Communities

1. Increase the number of local municipalities that are developing and implementing smart growth policies.
 - a. Provide technical assistance and incentives to municipalities to develop and implement Smart Growth policies and improve local planning capacity.
 - b. Educate and provide recommendations to municipalities on the impacts, costs and benefits of different types of land uses and development patterns.
 - c. Encourage municipalities to update zoning laws and utilize other land use controls that support Smart Growth development (i.e. mixed use development).
2. Encourage and focus development within areas served by existing infrastructure.
 - a. Prioritize and promote brownfield clean-up and redevelopment as well as adaptive reuse opportunities.
3. Preserve, protect and enhance the viability of agriculture, including agricultural lands and urban agriculture.
4. Encourage the expansion of location-efficient housing and improved infrastructure/services to existing housing that increases access to employment centers and transportation options.
5. Develop a mechanism for regional land use planning assistance and collaboration.
6. Encourage, enhance, and coordinate regional park, greenway and waterfront planning to connect the public and natural resources to each other and promote economic development and recreational opportunities.

Transportation

1. Increase and improve alternatives to driving alone (transit, car/vanpool, park and ride, bicycle, walking) through interagency partnerships and cooperative efforts, especially in serving the transportation disadvantaged.
2. Improve regional fuel efficiency, especially in fleets and through strategic investment in

infrastructure and planning to increase the use of alternative fuels.

3. Prioritize transportation infrastructure projects in line with regional smart growth efforts in existing communities and corridors, especially through projects that exemplify Complete Streets principles.

Agriculture and Forestry

1. Strengthen the economic viability of agriculture and forestry enterprises.
2. Achieve more efficient uses of energy inputs and maximize utilization of agriculture and forestry by-products for energy production.
3. Increase support from government officials and the public for the protection of farmland, continued use of farmland for agricultural purposes, and strengthening the business climate for agriculture and forestry in the region.
4. Promote environmentally sustainable management systems for the agriculture and forestry sector.

Energy

1. Increase renewable energy generation in the WNY region (including solar, wind, hydropower, hydrokinetic, biomass, geothermal, and biogas sources).
2. Promote energy efficiency efforts throughout WNY in the most environmentally sound and cost effective way, promoting access to all incomes and business sizes and resulting in a real reduction of GHG emissions.
3. Upgrade the existing conventional energy arena in the WNY region in an economically and environmentally sustainable way.

Waste Management

1. Reduce the amount of municipal solid waste (MSW) that is disposed of (via landfills or incineration). Accomplish this reduction by reducing waste generation and/or increasing recycling.



- a. Educate the public, government, businesses, institutions, and municipalities regarding waste management regulations and requirements, the benefits of reduce/reuse/recycle, how to effectively reduce/reuse/recycle, and the costs associated with waste management.
 - b. Increase sustainable waste management practices in businesses in Western New York to assist them with incentivizing recycling and waste diversion, reporting waste management data, procuring contractors, regulatory compliance, and setting policy consistent with regional goals.
 - c. Increase recycling ventures in Western New York and the use of recycled materials in goods produced in Western New York. This can be accomplished by targeted market development and incentives such as tax abatement, Industrial Development Agency incentives, and low-cost power.
2. Maximize the diversion of organic wastes from disposal facilities (landfills and incinerators) and the beneficial reuse of the organic material, such as for compost. To accomplish this, the infrastructure for recycling organic material in Western New York will need to be enhanced.
 3. Increase construction and demolition (C&D) waste recycling.
 4. Increase the number of waste transport vehicles that use clean or green fuels such as compressed natural gas.
- c. Ensure consistency between the GLRI and Great Lakes Compact.
 - d. Ensure public access to regional water resources.
2. Improve regional water management systems and increase regional water use efficiency.
 - a. Increase water system efficiency, specifically consolidate water systems.
 - b. Reduce infiltration and inflow (I & I)^[1] for existing stormwater or municipal systems.
 - c. Assess financial implications of new water management strategies to ensure no one sector is overburdened.
 - d. Promote conservation of regional water resources to reduce impacts on water quality and quantity.
 - e. Reduce the number of combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs).
 3. Improve regional water quality through a focus on the identification and management of pollution sources and protection of healthy watersheds.
 - a. Address the impact of fracking on water quality.
 - b. Address non-point pollution issues.
 - c. Reduce excessive stormwater flows and runoff.
 4. Address regional water quantity concerns through a focus on flooding, stormwater/runoff, infiltration, and regional water use.
 - a. Reduce and manage impacts from flooding.
 - b. Efficiently utilize natural systems to manage stormwater/runoff.
 - c. Evaluate the link between energy use from fracking and water management.

Water Management

1. Ensure better coordination of water management with land use and conservation planning and decisions regarding where future development occurs, including continued and increased public access.
 - a. Ensure that links are created and maintained with between the WNY Sustainability Plan and local land use planning and future development and land conservation.
 - b. Incorporate the outcomes of this planning process into local comprehensive planning processes.

^[1] I & I is the clean stormwater and/or groundwater that enters the sanitary sewer system through holes, breaks, joint failures, down spouts, and other sources. Most inflow comes from stormwater and most infiltration comes from groundwater.

Appendix D Indicator Memo



Western New York Sustainability Indicators

Volume to the
WNY Sustainability Plan



presented to NYSERDA
Cleaner, Greener Communities

March 2013

FINAL

ABOUT THE WESTERN NEW YORK SUSTAINABILITY INDICATORS

The indicators developed in this report were produced as part of the Western New York Sustainability Plan, a guiding document for implementing sustainability projects and practices in the five counties of Western New York - Allegany, Cattaraugus, Chautauqua, Erie and Niagara. This program is supported by the New York State Energy Research and Development Authority (NYSERDA) Cleaner, Greener New York Program.

Development of the WNY Sustainability Indicators was part of an extensive planning process occurring over an eight-month span in 2012. That process brought together more than 100 regional stakeholders from the public, private and nonprofit sectors to participate in working groups focused around six topical areas of sustainability: Agriculture and Forestry, Energy, Land Use and Livable Communities, Transportation, Water Resources and Waste Management. These groups set out a series of goals for advancing sustainability in Western New York and identified metrics, or indicators, that measure if we are moving in the right direction toward fulfilling those goals. The indicators chosen to measure our progress towards a sustainable future are outlined in this report.

CRITERIA FOR INDICATOR INCLUSION

Indicators developed are intended to be routinely measured, conducive to goal-setting and action, and relevant to progress on regional sustainability. Using this criteria, our working group members and the planning professionals from Ecology & Environment and the University at Buffalo Regional Institute integrated local knowledge with best practice research to develop the WNY Sustainability Indicators. This knowledge base was supported by a set of suggested and required indicators provided by NYSERDA that allow for some common indicators to be measured across all ten regions of New York State.

ADDITIONAL INDICATORS

A series of additional indicators were identified by our working groups that are not fully outlined in this report. Baseline findings could not be produced for these indicators. Either data could not be obtained across all five counties or the indicator is measuring something new, such as participation in programming proposed as part of this plan. These indicators are recognized in this document and are outlined at the end of this report.

Prepared by:

SCHOOL OF ARCHITECTURE AND PLANNING



REGIONAL INSTITUTE
URBAN DESIGN PROJECT

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TABLE OF INDICATORS

AGRICULTURE & FORESTRY

Acres of Harvested Cropland.....	6
Acres of Timberland.....	7
Farms with Energy Management Plans.....	8
Right-to-Farm Communities.....	9

ENERGY

Average CO2 Emissions per kWh Generated.....	10
Electricity Generated from Renewable Sources.....	11
Energy Consumption Per Capita.....	12
Energy Savings from Energy Efficiency Projects.....	13
Greenhouse Gas Emissions Per Capita.....	14
Climate Smart Communities.....	15

LAND USE & LIVABLE COMMUNITIES

Agricultural Land Loss.....	16
Developed Land Per Capita.....	17
Housing and Transportation Affordability.....	18
Municipalities with both a Comprehensive Plan and Zoning Ordinance.....	19
New Homes Built Near Municipal Centers.....	20
Population Living Near Public Parks or Conservation Areas.....	21
Public Parks and Conservation Areas Per Capita.....	22
Walkability of Local Main Streets.....	23
Waterfront Municipalities with a Local Waterfront Revitalization Program (LWRP).....	24

TRANSPORTATION

Alternative Fueling Stations.....	25
Municipalities with Complete Streets Policies.....	26
Transit Trips Per Capita.....	27
Workers Commuting Via Alternative Modes.....	28
Vehicle Miles Traveled Per Capita.....	29

WASTE MANAGEMENT

Municipal Solid Waste (MSW) Disposed of Per Capita.....	30
Municipal Solid Waste (MSW) Recycled Per Capita.....	31
Construction and Demolition (C&D) Waste Disposed of Per Capita.....	32
Construction and Demolition (C&D) Waste Recycled Per Capita.....	33
Organic Waste Recycled Per Capita.....	34
Waste Transport Vehicles That Use Alternative Fuels.....	35

WATER MANAGEMENT

Acres of Conserved Land.....	36
Combined and Sanitary Sewer Overflows.....	37
Miles of Impaired Streams.....	38
Miles of Trout-Classified Streams.....	39
Public Shoreline Access.....	40
Water Usage Per Capita.....	41

APPENDICES

Additional Indicators Identified by Planning Process.....	42
Additional Data Notes.....	43

Acres of Harvested Cropland

406,719 Acres
of WNY land are used for
harvested cropland

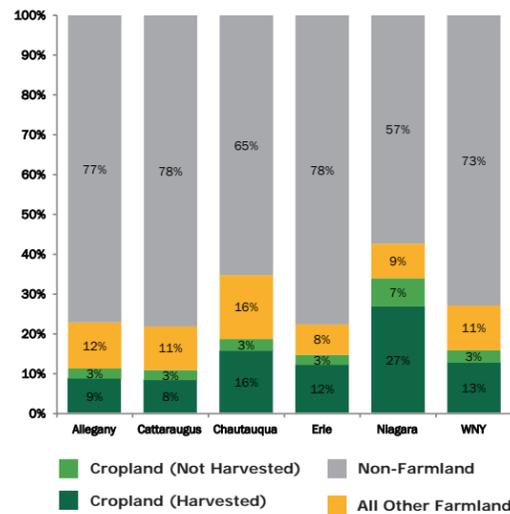
Year: 2007

NYSERDA Focus Area: N/A

Recommended by NYSERDA: No

Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the total number of acres in the five-county WNY region used for harvested cropland. Harvested cropland includes land from which crops were harvested in the census year. In addition to annually planted row crops, this land includes orchards, Christmas trees, vineyards, nurseries and greenhouses. The total acreage of it gives us an indication of how much of our land is actually being used for productive farming purposes.

Target

The region's target for acres of harvested cropland is to keep the acreage constant through 2017 from the 2007 baseline.

Data Sources

Census of Agriculture, USDA-National Agricultural Statistical Service. (2009). *Table 1. County Summary Highlights: 2007. Table 8. Farms, Land in Farms, Value of Land and Buildings, and Land Use: 2007 and 2002, N.Y.*

Indicator Calculation

Indicator is calculated and reported by the USDA-National Agricultural Statistical Service by county, and has been aggregated for the five counties in Western New York. In "a more in-depth look," the proportion of each county's land composition is compared to illustrate how much of our land is actually dedicated to harvested cropland.

Acres of Timberland

1,702,094 Acres
of WNY land are classified
as timberland

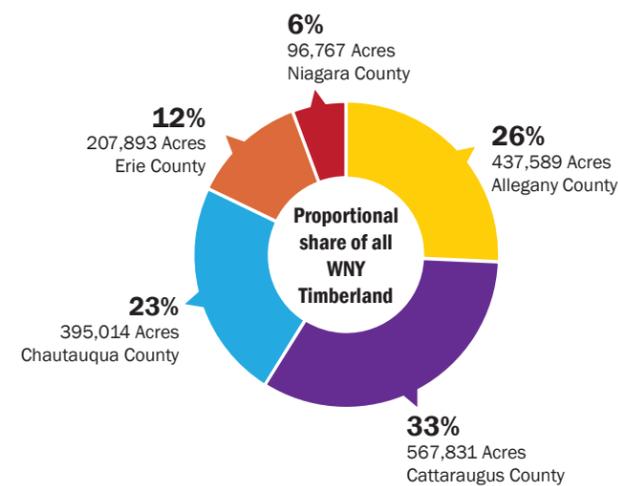
Year: 2011

NYSERDA Focus Area: N/A

Recommended by NYSERDA: No

Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the total number of acres in the five-county WNY region that is used for timberland. Timberland, as defined by the USDA Forest Service Forest Inventory Analysis (FIA), is a subset of forest land that is producing or is capable of producing industrial wood crops (at least 20 cubic feet per acre in natural stands) and is not excluded from timber utilization by statute or administrative regulation. Currently inaccessible and inoperable areas are included in this estimation.

Data Sources

USDA Forest Service, The Forest Inventory Analysis Program. (2011). *Forest Inventory Data Online.*

Indicator Calculation

The FIA program uses a combination of remote-sensing and in situ sampling techniques to derive estimates on the coverage, type and productivity of the nation's forests. The data received from the FIA presents the area of timberland in acres at the county level. Estimates given for the counties of Western New York were summed and used to derive the percentages displayed above.

Farms with Completed Energy Audits

48 Farms in WNY have recently completed energy audits

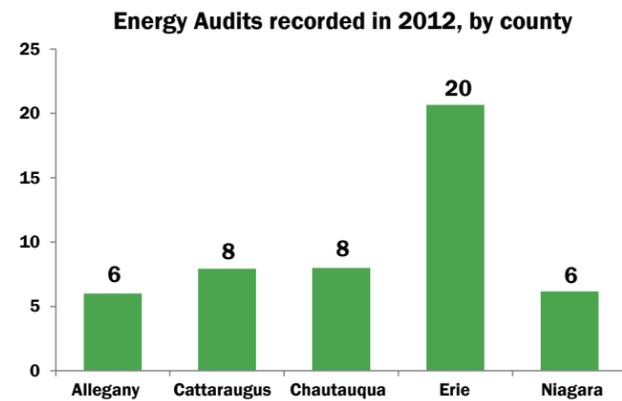
Year: 2012

NYSERDA Focus Area: N/A

Recommended by NYSERDA: No

Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the number of farms in our five-county region that have completed an energy audit under one of the following programs: NYSEG/RG&E; USDA-NRCS; NYSERDA FlexTech Farm Audit Program. Energy audits arm farmers with recommendations to reduce energy consumption on the farm by way of purchased fuels, electricity and renewable energy sources used to perform farm activities. These modifications can provide farmers with cost-effective ways to reduce operating costs and save energy.

Data Sources

USDA District Conservationists for each county; EnSave, Inc.; NYSERDA, personal communication, October 2012.

Indicator Calculation

Indicator is calculated by summing the total number of farms in WNY with recently completed energy audits.

Right-to-Farm Communities

30 communities in WNY have adopted Right-to-Farm laws; **4 out of 5 counties** have Right-to-Farm laws

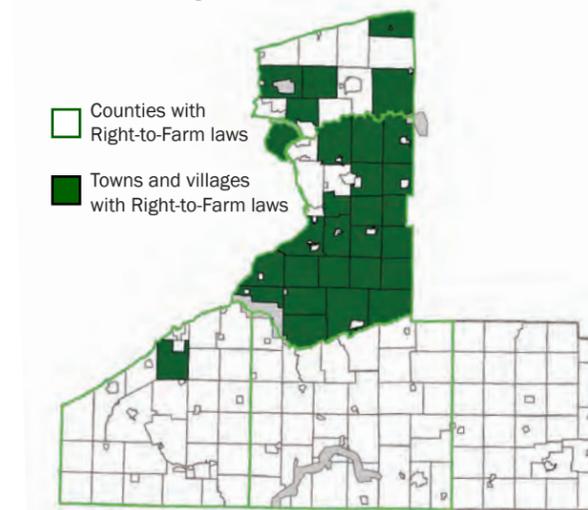
Year: 2012

NYSERDA Focus Area: N/A

Recommended by NYSERDA: No

Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator reflects the number of towns in WNY that have adopted Right-to-Farm laws. A Right-to-Farm law is designed to work with and help educate farmers, residents, and municipalities about the Right-to-Farm Act, the Act's formal conflict resolution process, and additional strategies for resolving agricultural disputes and maintaining a positive agricultural business environment. It aims to help preserve farmland in the face of encroaching development.

Data Sources

Erie County Farm Bureau; USDA-NRCS District Conservationists; County Soil and Water Districts (Cattaraugus, Allegany); and Allegany County, personal communication, October 2012.

Indicator Calculation

Indicator is calculated by summing the total number of towns with a locally adopted Right-to-Farm law and the total number of counties with Right-to-Farm laws.

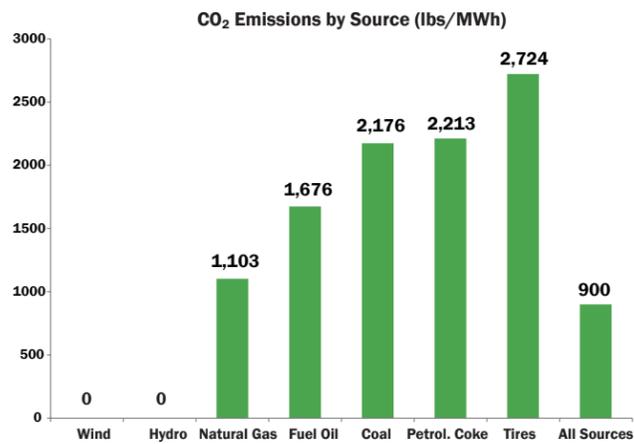
ENERGY

Average Carbon Dioxide Emissions Per MWh of Electricity Generated

On average, **899.99 lbs of CO₂** is emitted per MWh of electricity generated in WNY

Year: 2010
NYSERDA Focus Area: Energy
Recommended by NYSERDA: No
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator provides the relative emissions intensity of electricity generated in the region, presented in average pounds of carbon dioxide produced per unit (MWh) of electricity generated. This indicator differs from GHG emissions by sector as it focuses on electricity generation rather than consumption (emissions values for consumption are based on state-wide energy blends, rather than generators in the WNY region). This indicator can be used to compare the region to regional and state averages. The reduction of average GHG emissions per unit of electricity generated is a key goal of the Regional Greenhouse Gas Initiative (RGGI).

Data Sources

U.S. Energy Information Administration, Department of Energy. (2011). *Reporting programs (Form 923) for all electricity generators.*

Indicator Calculation

Calculated total annual CO₂ emissions from Electricity Generation (MWh generated x emission factors)/ Total annual MWh generated. Refer to Regional Tier II GHG Inventory for further details.

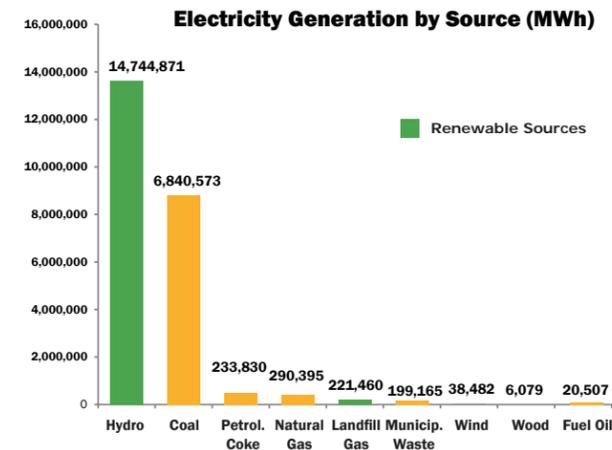
ENERGY

Electricity Generated from Renewable Sources

Renewable sources have generated **15,010,892 MWh**, or **66%** of electricity in WNY

Year: 2011
NYSERDA Focus Area: Energy
Recommended by NYSERDA: Yes, 1B
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the total electricity generated in the region and transmitted on the electrical grid using renewable sources, presented in megawatt hours and the percentage of total regional electricity generation from all sources. This indicator demonstrates how renewable sources contribute to the State's Renewable Portfolio Standard (RPS) of 30% renewable energy by 2015. Energy sources included are consistent with the RPS definition and include Solar Water Heat, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Fuel Cells, CHP/Cogeneration, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal, Ethanol, Methanol, Biodiesel and Fuel Cells using Renewable Fuels.

Target

The region's target is to increase renewable energy generation from non-hydro sources by 9%, to reach 75%, by 2025.

Data Sources

U.S. Energy Information Administration, Department of Energy. (2012). *Reporting programs (Form 923) for all electricity generators.*

Indicator Calculation

Total renewable energy generation is calculated by summing all grid-tied electricity generation from RPS-listed technologies in the 2011 base year. The percent of total generation is calculated by dividing renewable sources by total generation.

Energy Consumption Per Capita

Average energy consumption per person is **181 MMBtu** per year

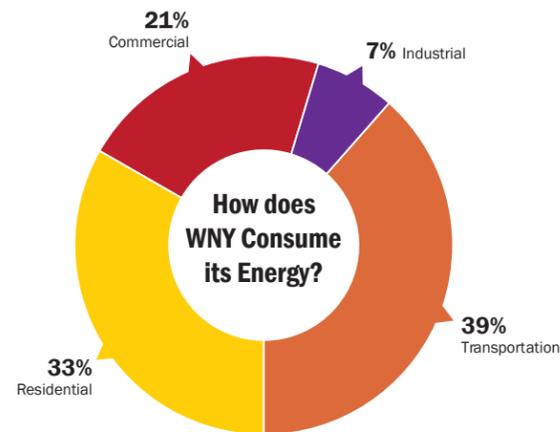
Year: 2010

NYSERDA Focus Area: Energy

Recommended by NYSERDA: Yes, #1A

Required by NYSERDA: Yes

A more in-depth look



Indicator Definition

This indicator provides a value for the amount of energy used per person in the region. The indicator includes all energy consumed in residential, commercial, industrial, and transportation applications, from all sources on-site fuel combustion, (electricity, etc.), on a per capita basis (MMBtu/person). This indicator provides a per capita snapshot of the intensity of energy consumption in the region while highlighting relative energy consumption by use.

Data Sources

Ecology and Environment, Inc. (2012). *Cleaner, Greener Communities Western New York Regional Tier II Greenhouse Gas Inventory*.

For a complete list of data sources, refer to the references in the *CGC WNY Regional Tier II GHG Inventory*.

Indicator Calculation

Per capita energy consumption by sector (residential, commercial, industrial and transportation) was calculated by summing the total energy consumed and dividing by the regional population. The final indicator was calculated by summing the each sector value.

Energy Savings Realized Through Energy Efficiency Projects

Energy efficiency projects saved **186,154 MMBtu** in WNY in 2010

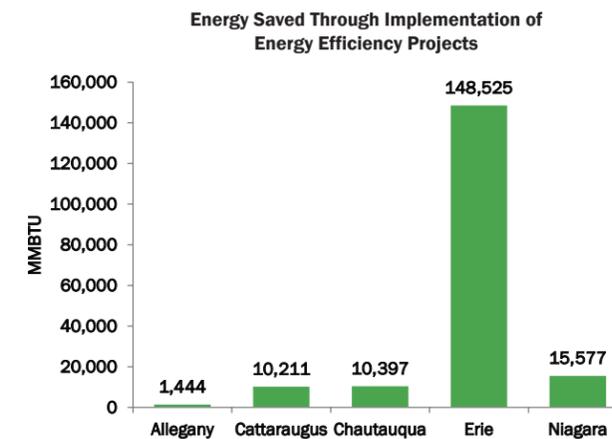
Year: 2012

NYSERDA Focus Area: Energy

Recommended by NYSERDA: No

Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the total annual reductions in energy use, in millions of British Thermal Units (MMBtu), that result from projects funded by NYSERDA to reduce electricity consumption. This indicator demonstrates how much electricity use is avoided through implementation of energy efficiency projects, which is a key priority of New York State's 2008 Energy Efficiency Portfolio Standard to reduce electricity usage by 15% by 2015. Electricity consumption is a major source of GHG emissions in the region; therefore, reductions in electricity consumption will result in GHG reductions.

Target

The region's target is to increase the implementation of NYSERDA-funded energy efficiency projects by 34%, or to 250,000 MMBtu, by 2015

Data Sources

New York State Energy Research and Development Authority. (2012).

Indicator Calculation

Total reported electricity savings (in kWh) from all projects completed during the 2010 base year; converted to MMBtu for inclusion in the GHG inventory and to allow for future comparison of fuel use reduction, rather than just electricity.

WNY's 2010 baseline greenhouse gas emissions were 17,929,016.08 MT CO₂e, or **12.81 MT CO₂e per person**

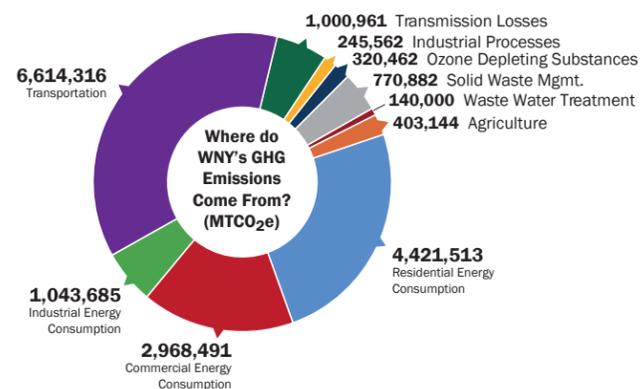
Year: 2010

NYSERDA Focus Area: Energy

Recommended by NYSERDA:
Yes, Indicator #9A

Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator presents total and per capita greenhouse gas (GHG) emissions from all sources and in all sectors (residential, commercial, industrial and transportation). The data is presented in metric tons of carbon dioxide equivalent total (MT CO₂e), and per capita (MT CO₂e/person). Carbon dioxide equivalent is a metric for other greenhouse gases that provides the amount of CO₂ with the same global warming potential. This allows methane, nitrous oxide and other GHGs to be summed based on their warming intensity. This indicator provides a snapshot of the total GHG emission in the region, on a per capita basis.

Target

The region's target is to reduce the total regional GHG emissions by 30% by 2020, from a 2010 baseline.

Data Sources

Ecology and Environment, Inc. (2012). *Cleaner, Greener Communities Western New York Regional Tier II Greenhouse Gas Inventory*.

For a complete list of data sources, refer to the references in the *CGC WNY Regional Tier II GHG Inventory*.

Indicator Calculation

GHG emissions were calculated according to the NYS Regional Tier II GHG Inventory Protocol and are provided in absolute values and per person based on the regional population.

9 communities in WNY have made the pledge to be a Climate Smart Community

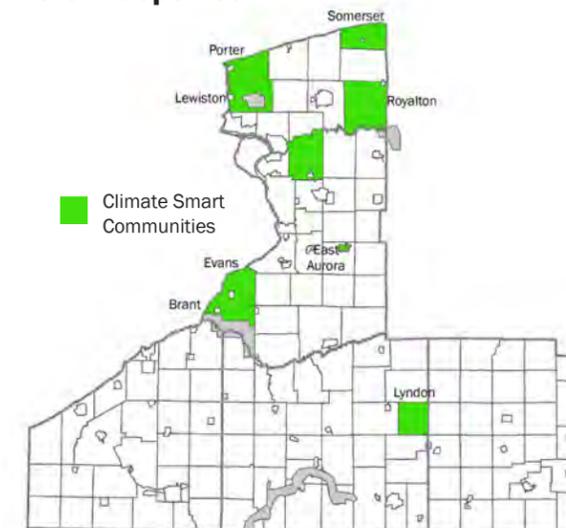
Year: 2013

NYSERDA Focus Area: Governance

Recommended by NYSERDA:
Yes, Indicator #8A

Required by NYSERDA: No

A more in depth look



Indicator Definition

This indicator reflects the number of towns that have made a pledge to become a state-recognized Climate Smart Community. This initiative signifies a community's dedication to reduce GHG emissions and adapt to climate change. To carry out the pledge, communities must develop a climate action plan and set goals for GHG emissions reductions. Climate Smart Communities benefit from making more informed decisions that encourage energy security, promote smart economic growth, protect the environment and ultimately, improve the quality of life for current and future residents.

Target

The region's target is to double the number of Climate Smart Communities (18 communities) by WNY by 2015.

Data Sources

New York State Department of Environmental Conservation. (2013). *List of Climate Smart Communities: New York State's Climate Partners*. Retrieved March, 2013 from <http://www.dec.ny.gov/energy/56876.html>

Indicator Calculation

Indicator is calculated by summing the total number of municipalities and counties within the region who have formally adopted the Climate Smart Communities Pledge.

LAND USE

Agricultural Land Loss

WNY has lost **41.5 square miles** of farmland each year since 1992

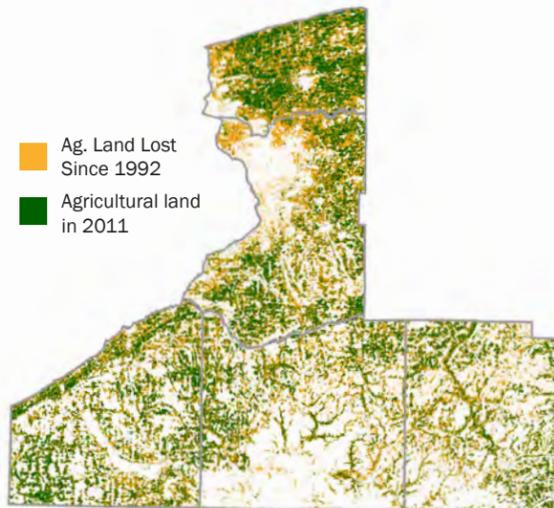
Year: 2011

NYSERDA Focus Area:
Land Use & Livable Communities

Recommended by NYSERDA: No

Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the total area of land that was once classified as “agriculture” and has since changed to another classification. Annual agricultural land loss is the average annual change from 1992 to 2011. This indicator helps us understand the rate by which our agricultural land is being converted for residential, commercial, industrial and other development purposes.

Data Sources

U.S. Geological Survey. (1997). 1992 New York Land Cover Dataset.
U.S. Department of Agriculture, National Agricultural Statistical Survey, Research and Development Division, Geospatial Information Branch, Spatial Analysis Research Section. (2011). *New York Cropland Data Layer*.

Indicator Calculation

All points classified as agricultural land by the 1992 NLCD within the Western New York region were summed and used to find the total area of farmland for that year. This process was repeated using the 2011 CDL. The difference in agricultural land area between these two years was found and used to calculate the average annual rate of farmland loss within the entire region.

LAND USE

Developed Land Per Capita

There are **0.23 acres** of developed land per person in WNY

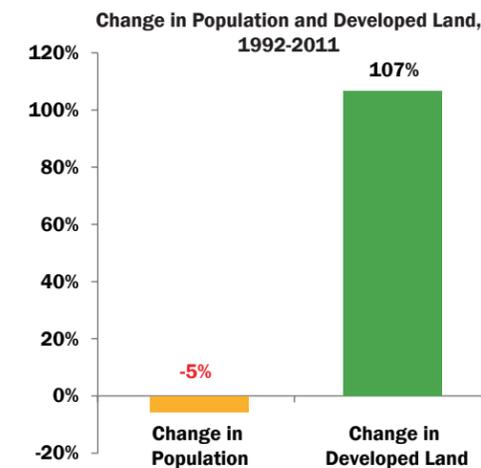
Year: 2011

NYSERDA Focus Area:
Land Use & Livable Communities

Recommended by NYSERDA:
Yes, Indicator #3A

Required by NYSERDA: Yes

A more in-depth look



Indicator Definition

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 us measure how much land we are removing from natural uses for the purpose of commercial, industrial and residential uses.

Target

The region’s target is to keep the developed land per capita constant through 2017 from the 2011 baseline.

Data Sources

United States Geological Survey. (1997). *1992 New York Land Cover Dataset*.
U.S. Department of Agriculture, National Agricultural Statistical Survey, Research and Development Division, Geospatial Information Branch, Spatial Analysis Research Section. (2011). *New York Cropland Data Layer*.
U.S. Census Bureau. (2010). *Annual Estimates of the Resident Population for Counties of N.Y.*
U.S. Census Bureau. (2000). *Annual Estimates of the Resident Population for Counties of N.Y.*

Indicator Calculation

The area of developed land was calculated from the land cover data via GIS analysis of satellite imagery. Areas classified as developed space were selected and tabulated to calculate the acres of developed land for each year presented. These figures were then divided by the regional population in 1992 and 2011 to calculate the per capita land consumption estimates for each year.

LAND USE

Housing & Transportation Affordability

A typical family in WNY spends **52%** of its income on transportation and housing

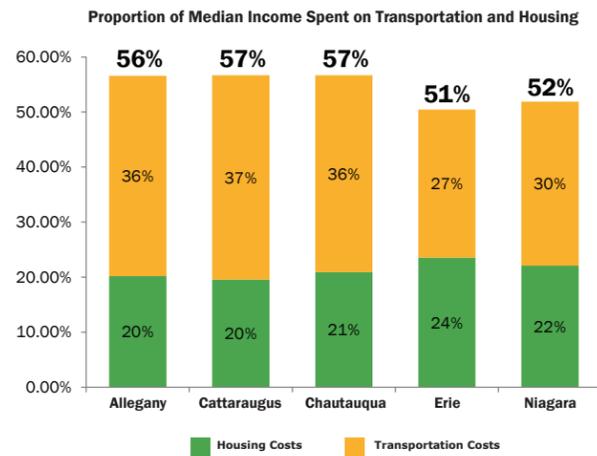
Year: 2009

NYSERDA Focus Area: Economic Development

Recommended by NYSERDA: Yes, Indicator #6A

Required by NYSERDA: Yes

A more in-depth look



Indicator Definition

This Indicator measures the proportion of income that a typical regional household would pay towards their housing and transportation costs. This indicator, and its data calculation, have been developed by the Center for Neighborhood Technology (CNT). This measure gives an indication of how much of our population lives in location-efficient neighborhoods, those with compact, mixed use and convenient access to jobs, transit or amenities. According to the CNT methodology, any percentage less than 45 percent is deemed affordable or efficient.

Target

The region's target is to reduce the proportion of median income spent on transportation and housing to 50% by 2020 and 45% by 2035.

Data Sources

Center for Neighborhood Technology (CNT). (2009). *H+T affordability index*. Retrieved October, 2012, from <http://htaindex.cnt.org>.

Indicator Calculation

H+T Affordability Index is calculated by CNT using methodology that estimates three dependent variables with 11 independent variables. A full explanation of the H+T Affordability Index can be found at <http://htaindex.cnt.org/downloads/HTMethods.2011.pdf>. For Allegany County, where data are not available, an adjusted average of nearby Cattaraugus and Steuben County was calculated, based on their similar median household income and land use patterns, and geographical proximity to Allegany County.

LAND USE

Municipalities with a Comprehensive Plan and Zoning Code

13% of municipalities in WNY have adopted or updated both a comprehensive plan and a zoning ordinance within the past 15 years

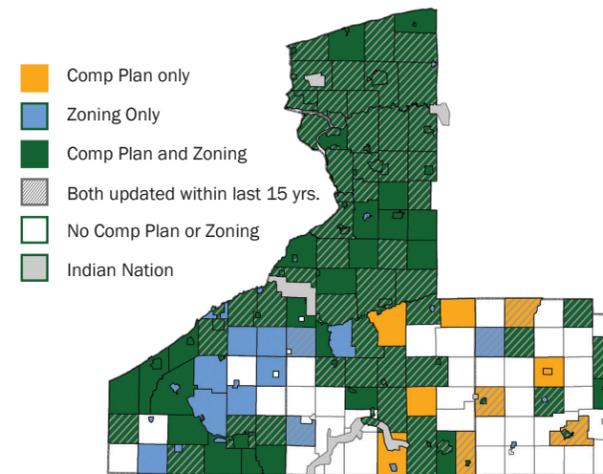
Year: 2012

NYSERDA Focus Area: N/A

Recommended by NYSERDA: No

Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator captures the percent of municipalities - cities, towns and villages - that have adopted both a comprehensive plan/master plan and a zoning ordinance since 1997. This metric gives us an indication of how equipped local communities are with key planning tools that can guide growth and development. In the future, our region may wish to qualitatively evaluate how well our zoning and comprehensive plans are designed to support smart growth, so that technical assistance and capacity building programming can be developed to respond to our local communities' planning needs.

Target

The region's target is to have 5 municipalities per year (1 per county) update their comprehensive plan and/or zoning code to incorporate smart growth principles over the next 5 years.

Data Sources

N.Y. Legislative Commission on Rural Resources. (2008). *Survey of Land Use Planning & Regulations in NYS, Appendix A: Directory of Basic Land Use Tools Used by Cities, Towns, and Villages*.

County Planning Department, personal communication, September, 2012.

Indicator Calculation

This indicator was calculated by dividing the number of municipalities (cities, towns and villages) that have adopted or updated a zoning ordinance and a comprehensive plan (24) by the overall number of municipalities in our five-county region (190).

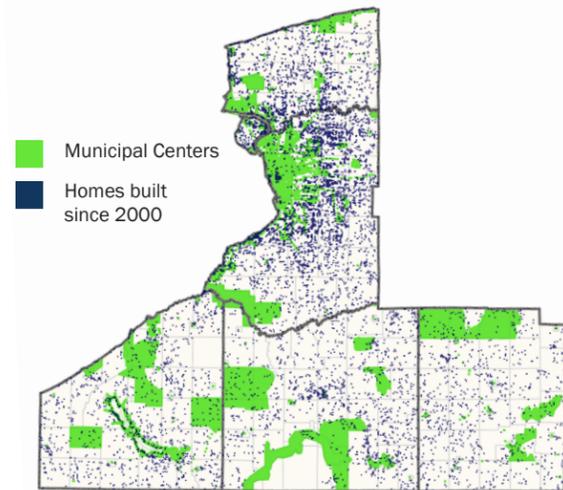
LAND USE

New Homes Built Near Municipal Centers

20% (3,831 homes) of WNY homes built since 2000 were within 1/4 mile of a municipal center

Year: 2010
NYSERDA Focus Area: N/A
Recommended by NYSERDA: No
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the number of homes that have been constructed since the year 2000 and are within a 1/4 mile radius of the downtowns, central business districts, main streets, Brownfield Opportunity Areas, Local Waterfront Revitalization Program (LWRP) areas, public transit access locations, low-income census tracts or major employment centers.

Data Sources

- N.Y. Department of Taxation and Finance, Office of Real Property Tax Services. (2011). 2010 Real Property Data.
- Niagara Frontier Transportation Authority; Southern Tier West; Allegany County. (2012). Public Transit Access Locations.
- Walk Score. (2012). Retrieved October, 2012 from www.walkscore.com.
- County planning staff, personal communication, September – October, 2012.
- N.Y. Department of State; New York State Department of Environmental Conservation. (2012). Brownfield Opportunity Area and Local Waterfront Revitalization Plan Boundaries.
- U.S. Census Bureau. (2010). *LEHD Origin-Destination Employment Statistics (LODES) Dataset Version 6.1*.
- U.S. Census Bureau. (2011). *2005-2009 American Community Survey*.

Indicator Calculation

Total number of residential parcels built since 2000 that are within 1/4 mile of a municipal center were calculated via GIS analysis. See Additional Data Notes for more detail on employment center methodology.

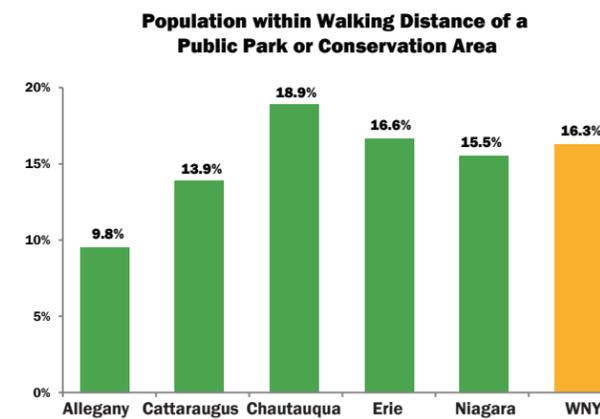
LAND USE

Population Living Near Public Parks or Conservation Areas

16% of WNY residents (227,607 people) live within a 1/4 mile of public open space

Year: 2010
NYSERDA Focus Area: Land Use & Livable Communities
Recommended by NYSERDA: No
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the total number of people residing within one-quarter mile of a publicly-owned public park, playground, athletic field or conservation area, as measured along roadways. This indicator is a stronger measurement for urban areas where open space is more scarce on personal property.

Data Sources

- Erie County Department of Environment & Planning; Niagara County Department of Economic Development; Southern Tier West. (2012). Parcel Boundary Data.
- N.Y. Office of Cyber Security. (2010). *NYS Public Land Boundaries*.
- U.S. Census Bureau. (2010). *TIGER/Line Shapefile, New York, 2010 Census Block State-based*.
- U.S. Census Bureau. (2012). *TIGER/Line Shapefile, New York, Roads*.

Indicator Calculation

The extent of public open space was obtained by selecting public open space parcels from parcel data by property class and combining this selection with additional layers of public land boundaries. The extent of all areas within 1/4 mile of this space, as measured along area roadways, was then found through a network analysis. Following this, the population density of each census block was calculated as persons per square mile. The area of each census block that fell within a 1/4 mile of public open space was determined. These areas were then multiplied by the population density of each block to estimate the number of people within 1/4 mile of public space. The sum of these estimates was then divided by the total population for each region to yield the percentage of people with open space access, as displayed in the results above.

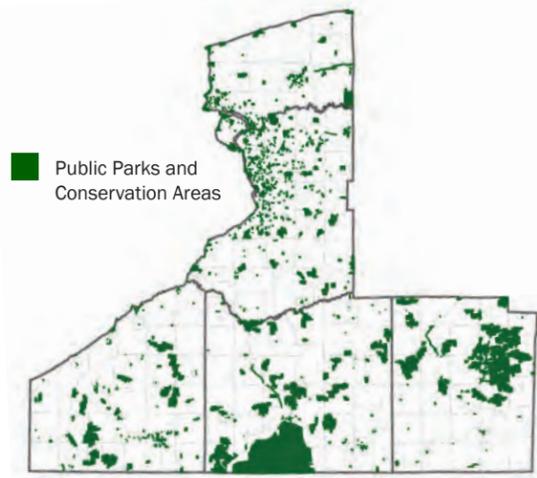
LAND USE

Public Parks and Conservation Areas Per Capita

There are **162 acres** of public parks or conservation areas for every 1,000 people living in WNY

Year: 2010
NYSERDA Focus Area: N/A
Recommended by NYSERDA: No
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures public parks or conservation areas per capita is defined as the land area (in acres) classified as public parks, greenways, bike trails or publicly-owned forest lands divided by the number of people (in thousands) residing in the western New York Region.

Data Sources

Erie County Department of Environment & Planning; Niagara County Department of Economic Development; Southern Tier West. (2012). Parcel Boundary Data.
 NYS Office of Cyber Security. (2010). *NYS Public Land Boundaries*.
 U.S. Census Bureau. (2010). *Summary File 1: New York State, Total Population by County*.

Indicator Calculation

All public park and conservation area parcels were selected according to their property class. Supplemental datasets were combined with this selection to generate a more complete estimate of the extent of public open space. The result was used to calculate the number of acres for each county, using GIS software. These figures were then divided by the population (in thousands) of each of the five counties, then for the region as a whole, to derive the estimates of acres per capita shown above.

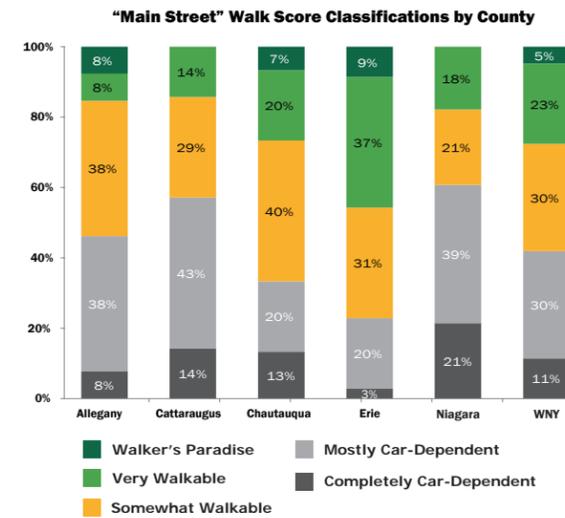
LAND USE

Walkability of Local Main Streets

58% (61) of local “main streets” have favorable walkability scores

Year: 2012
NYSERDA Focus Area: Land Use
Recommended by NYSERDA: No
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the number of WNY “Main Streets” that have a walkscore categorized as “Somewhat Walkable,” “Very Walkable,” or “Walker’s Paradise.” Main Streets are defined as traditional town and village center streets or traditional urban neighborhood retail centers. Walkability categories are defined by the website www.walkscore.com which incorporates data on amenities, road connectivity and transit access to determine how walkable a given place is.

Data Sources

Walk Score. (2012). Retrieved September, 2012 from www.walkscore.com
 County Planning Department, personal consultation with planning staff participating in the planning process, October, 2012.

Indicator Calculation

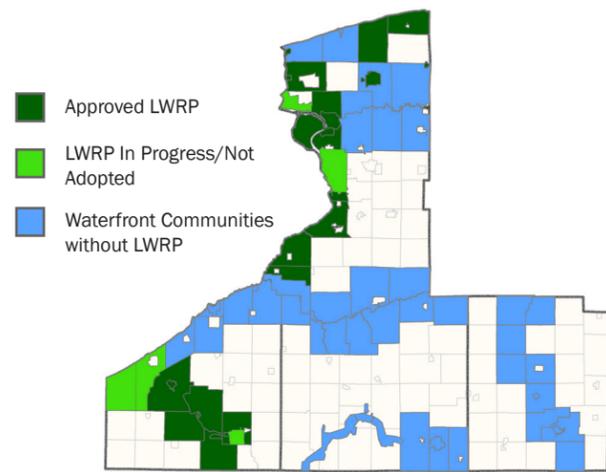
Main Streets of the region were determined through a series of quantitative and qualitative means which incorporated the input of stakeholders. The walk scores of the major intersections within these street segments, as calculated by www.walkscore.com, were averaged to yield a composite walk score for each “main street.”

Waterfront Municipalities with a Local Waterfront Revitalization Program (LWRP)

38% of waterfront municipalities in WNY have a Local Waterfront Revitalization Program

Year: 2012
NYSERDA Focus Area: N/A
Recommended by NYSERDA: No
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator assesses the percent of “waterfront communities” that have a recognized Local Waterfront Revitalization Program (LWRP) from the NYS Department of State (NYS DOS). Waterfront communities are defined as any municipality eligible to seek support through the LWRP program due to their location on the immediate areas of a coastal water body or inland waterway as defined by NYSDOS. The LWRP program provides comprehensive support and planning for critical issues regarding waterfront management and development.

Data Sources

N.Y. Department of State, office of communities and water fronts. (2012). *Approved Local Waterfront Revitalization Programs*.
 N.Y. Department of State, office of communities and water fronts. (2012). *Environmental Protection Fund Local Waterfront Revitalization Program Grants*.

Indicator Calculation

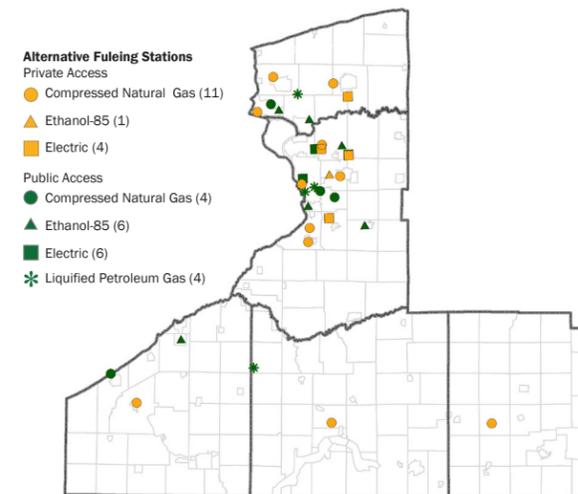
The total number of communities with an LWRP (29) was divided by the total number of WNY municipalities that are eligible to adopt an LWRP given their location on a coastal water body or inland waterway (77). LWRP municipalities counted include those that have adopted LWRP plans, those granted LWRP funds through the EPF (Environment Protection Fund), and municipalities that have completed LWRP plans but have not yet adopted them by their local legislative bodies.

Alternative Fuel Stations

There are currently **36 alternative fueling stations** in WNY

Year: 2012
NYSERDA Focus Area: Transportation
Recommended by NYSERDA: No, Alternative to Indicator #2C
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the number of fueling stations that deliver alternative fuels as specified by the Energy Policy Act of 1992. These include biodiesel, natural gas and liquid fuel derivatives of natural gas, propane, electricity, hydrogen, ethanol blends containing at least 85% ethanol, biofuels and domestically-produced coal-derived liquid fuels.

Data Sources

U.S. Department of Energy. (2012). *Alternative Fuels Data Center*.
 Information has been supplemented with working group member knowledge of alternative fueling station locations.

Indicator Calculation

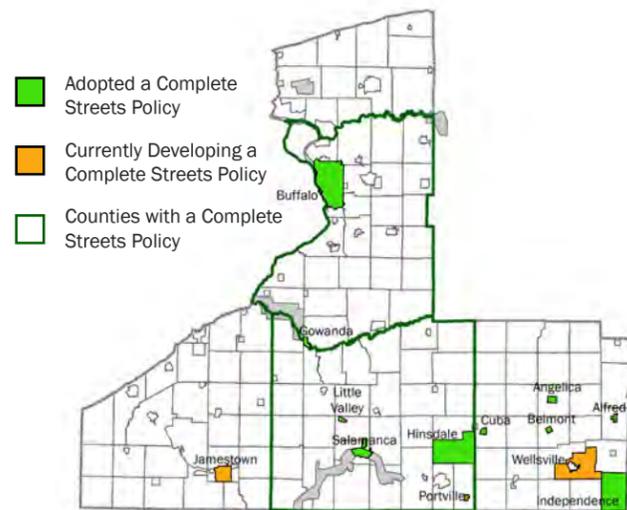
Spatial data of all alternative fuel stations in the continental U.S. was downloaded in spreadsheet format. Upon plotting these records spatially via GIS software, those which were located within the Western New York study area were extracted and used to produce the figures presented here.

Municipalities Adopting Complete Streets Policies

10 municipalities in WNY have adopted a complete streets policy

Year: 2012
NYSERDA Focus Area: Transportation
Recommended by NYSERDA: No
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator accounts for the number of municipalities that have adopted legislation calling for “complete streets,” a set of street design concepts that ensures that all the street users are safely accommodated no matter how they travel on the streets. While the presence of a complete streets policy does not necessarily mean a municipality is implementing complete streets in its road reconstruction projects, it is indicative of a municipality’s policy direction towards building streets for all modes of travel.

Data Sources

N.Y. Association of Metropolitan Planning Organizations. (2011). *The Complete Streets Fact Sheet*.

Information has been supplemented with working group member knowledge of the current status of local legislation regarding complete streets.

Indicator Calculation

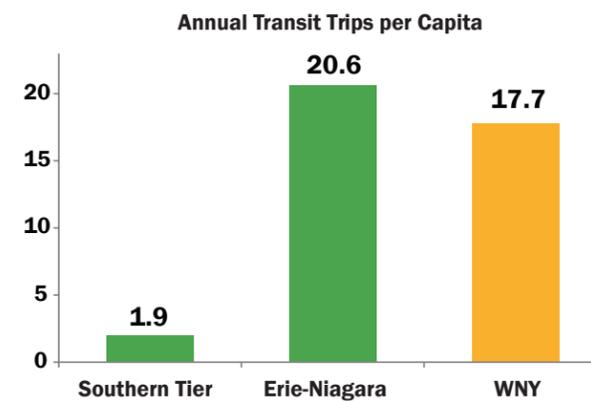
Calculation accounts for the total number of municipalities in WNY with a policy or legislative requirement calling for complete streets.

Transit Trips Per Capita

In WNY, an average of **17.7** public transit trips are taken per person, per year

Year: 2011
NYSERDA Focus Area: Transportation
Recommended by NYSERDA: Yes, Indicator #2G
Required by NYSERDA: No

A more in-depth look



Indicator Definition

Transit trips per capita is the average annual number of one-way trips provided by a transportation operator for each individual residing within its service area. The Southern Tier number reflects the combined trips of the Chautauqua Area Rural Transit System (serving all of Chautauqua County), the Student Association of SUNY-Fredonia (serving the student population), First Transit of Olean (serving Olean, NY), and Allegany Transit (serving Allegany County). The Erie-Niagara number reflects the Niagara Frontier Transportation Authority’s service to Erie and Niagara counties.

Data Sources

U.S. Census Bureau. (2010). *American Community Survey 2010 1-year estimates: total Population*.

SUNY Fredonia. (2011). Student population data. Retrieved October 2012 from <http://www.fredonia.edu/academicaffairs/facts>.

Niagara Frontier Transportation Authority; Chautauqua Area Regional Transit System; SUNY-Fredonia Student Association; First Transit and Allegany Transit. (2011). Annual ridership data.

Indicator Calculation

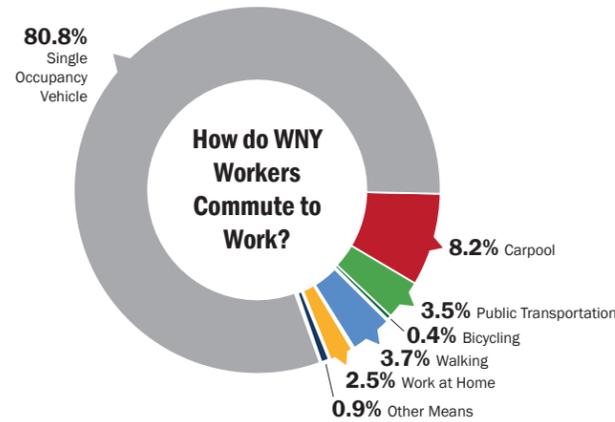
The indicator was calculated as the annual number of one-way trips given by a transportation operator divided by the total population within the service area of that provider. The WNY regional estimates were found by summing the total transit trips within the region and dividing this value by the total serviceable population within the region.

Workers Commuting Via Alternative Transportation Modes

15.8% of workers in WNY commute to work by walking, biking, public transportation or carpool

Year: 2010
NYSERDA Focus Area: Transportation
Recommended by NYSERDA: Yes, Indicator #2B
Required by NYSERDA: Yes

A more in-depth look



Indicator Definition
 This indicator measures the transportation mode typically used by commuters age 16 years and older. Increasing the rate of workers who travel via means alternate to single occupancy vehicles corresponds to fewer vehicles on the road, fewer miles traveled and lower greenhouse gas emissions.

Data Sources

U.S. Census Bureau. (2010). *American Community Survey 2010 1-year estimates: Means of transportation to work for workers in Erie, Cattaraugus, and Chautauqua County.*
 U.S. Census Bureau. (2010). *American Community Survey 2008 - 2010 3-year estimates: Means of transportation to work for workers in Niagara and Allegany County.*

Indicator Calculation

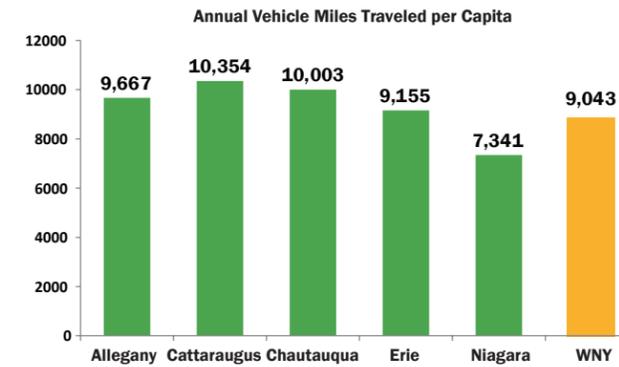
This indicator is calculated by dividing the total number of workers age 16+ who reside in the five-county WNY region and usually travel to work via carpool, bicycling, walking or public transportation by the total number of workers age 16+.

Vehicle Miles Traveled Per Capita

For each person in WNY, our vehicles travel **9,043 miles** per year

Year: 2009
NYSERDA Focus Area: Transportation
Recommended by NYSERDA: Yes, Indicator #2B
Required by NYSERDA: Yes

A more in-depth look



Indicator Definition
 This indicator measures the total number of miles all vehicles in the region travel on a daily basis, per each resident. Higher vehicle miles traveled (VMT) is indicative of greater automobile usage in the region.

Target

The region's target is to reduce vehicle miles traveled (VMTs) by 3% through 2020.

Data Sources

N.Y. Department of Transportation. (2009). Vehicle Miles Traveled data in Cattaraugus, Chautauqua and Allegany County.
 Greater Buffalo Niagara Regional Transportation Council. (2009). Vehicle Miles Traveled data in Erie and Niagara County.
 U.S. Census Bureau. (2010). *Summary File 1: New York State, Total Population by County.*

Indicator Calculation

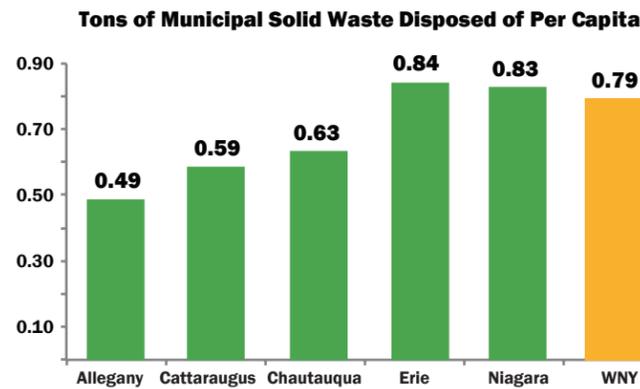
The indicator divides the total average daily vehicle miles traveled (VMT) by the total population as of the Census 2010.

Municipal Solid Waste (MSW) Disposed of Per Capita

In 2010, **0.79 tons** per person of municipal solid waste from WNY were disposed of

Year: 2010
NYSERDA Focus Area: Waste Management
Recommended by NYSERDA: No
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the amount of municipal solid waste (MSW) that is disposed of via landfill or municipal waste combustion (waste-to-energy incineration) each year, per person. MSW consist of household and commercial/institutional solid waste. It excludes industrial, separately managed construction and demolition and specialized organic wastes. This indicator represents MSW that is generated and disposed of in WNY, and does not include MSW that is imported from outside of the five-county region.

Target

The region's target is to reduce municipal solid waste (MSW) disposal of to 0.11 tons per person per year (0.6 pounds per person per day) by 2030.

Data Sources

N.Y.S. Department of Environmental Conservation. (2010). Annual Landfill Reports and Municipal Waste Combustion Reports submitted for key facilities.
 U.S. Census Bureau. (2010). *Summary File 1: New York State, Total Population by County*.

Indicator Calculation

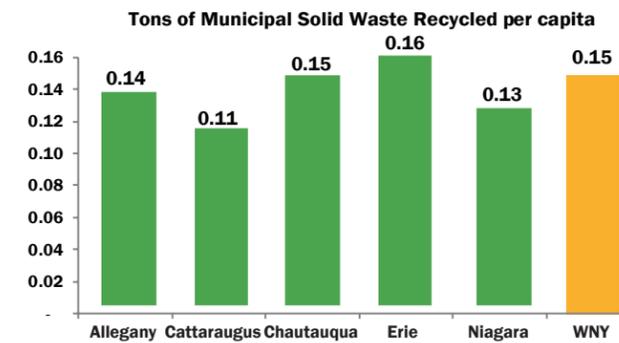
This indicator calculates the weight in tons of MSW that was disposed of via landfill or municipal waste combustion in 2010, divided by the population of our five-county region.

Municipal Solid Waste (MSW) Recycled Per Capita

In 2010, **0.15 tons** per person of municipal solid waste from WNY were recycled

Year: 2010
NYSERDA Focus Area: Waste Management
Recommended by NYSERDA: Related to Indicator #4B
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the amount of municipal solid waste (MSW) recyclables that are sent to a recycling facility each year, per person. MSW recyclables consist of conventional household and commercial/institutional recyclables like paper, cardboard, metal, glass, and plastic. They exclude industrial, separately managed construction and demolition and specialized organic recyclables. The indicator represents MSW recyclables that are generated in WNY, and does not include MSW recyclables that are imported from outside of the five-county region.

Data Sources

N.Y.S. Department of Environmental Conservation. (2010). Annual recyclable handling and recovery facility reports submitted for key facilities.
 U.S. Census Bureau. (2010). *Summary File 1: New York State, Total Population by County*.

Indicator Calculation

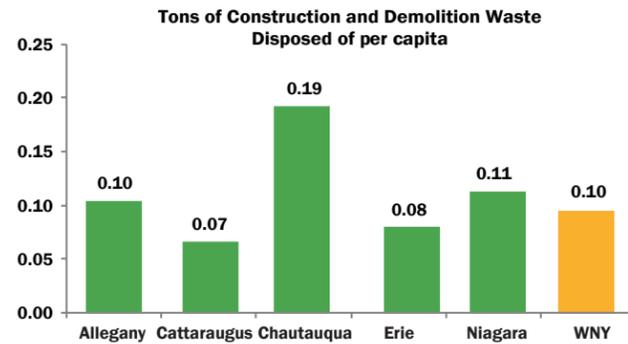
This indicator calculates the weight in tons of MSW that was recycled in 2010, divided by the population of our five-county region.

Construction and Demolition (C&D) Waste Disposed of Per Capita

In 2010, **0.10 tons** per person of construction and demolition waste was collected within the WNY region and sent to a landfill

Year: 2010
NYSERDA Focus Area: Waste Management
Recommended by NYSERDA: No
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the amount of construction and demolition (C&D) waste that is disposed of via landfill each year, per person. C&D waste consists of bulky materials like concrete, wood, metals, plate glass, asphalt and building components. The indicator represents C&D waste that is generated and disposed of in WNY, and does not include C&D waste that is imported from outside of the five-county region.

Data Sources

N.Y.S. Department of Environmental Conservation. (2010). Annual Landfill Reports submitted for Key Facilities.

U.S. Census Bureau. (2010). *Summary File 1: New York State, Total Population by County.*

Indicator Calculation

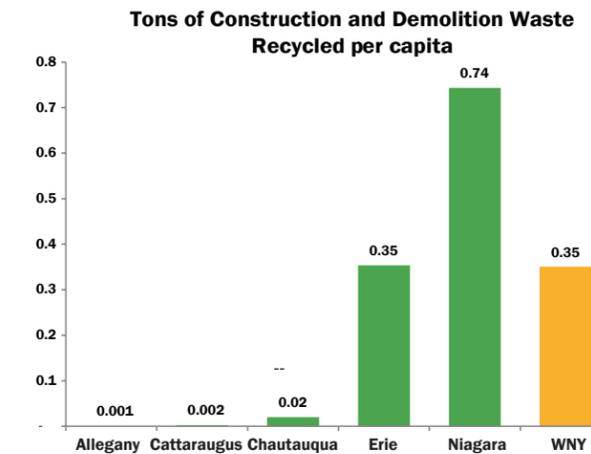
This indicator calculates the weight in tons of C&D waste that was disposed of via landfill in 2010, divided by the population of our five-county region.

Construction and Demolition (C&D) Waste Recycled Per Capita

In 2010, **0.35 tons** per person of construction and demolition waste from WNY were recycled

Year: 2010
NYSERDA Focus Area: Waste Management
Recommended by NYSERDA: Related to Indicator #4B
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the amount of construction and demolition (C&D) waste that is sent to a recycling facility each year, per person. C&D waste consists of bulky materials like concrete, wood, metals, plate glass, asphalt and building components, much of which is recyclable. The indicator represents C&D waste that is generated and segregated for recycling in WNY, and does not include C&D recyclables that are imported from outside of the five-county region.

Data Sources

N.Y.S. Department of Environmental Conservation. (2010). Annual C&D processor reports submitted for key facilities.

U.S. Census Bureau. (2010). *Summary File 1: New York State, Total Population by County.*

Indicator Calculation

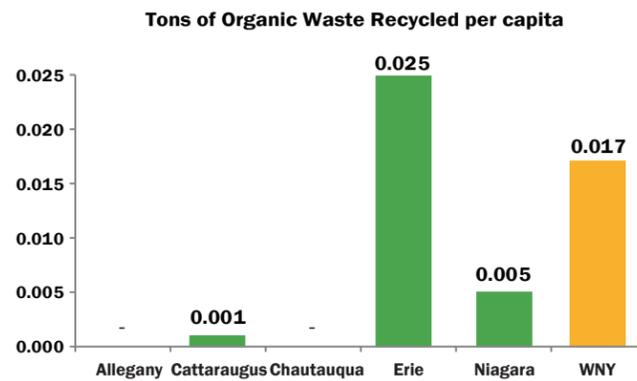
This indicator calculates the weight in tons of C&D waste that was recycled in 2010, divided by the population of our five-county region.

Organic Waste Recycled Per Capita

Year: 2010
NYSERDA Focus Area: Waste Management
Recommended by NYSERDA: Related to Indicator#4B
Required by NYSERDA: No

In 2010, **0.017 tons** per person of organic waste from WNY was recycled

A more in-depth look



Indicator Definition
 This indicator measures the total amount of organic waste that is recycled each year, per person. Organic waste includes yard waste, food residual waste, food processing waste, wood waste and biosolids (sewage treatment sludge). Organic waste can be processed and recycled as a nutrient-rich product using methods such as composting, mulching, land application, anaerobic digestion (where bacteria break the material down, often yielding a biogas that is captured and used for energy), chemical stabilization, and heat drying. The indicator currently represents organic recycling operations in WNY for which data are commonly available from the NYSDEC.

Data Sources

- N.Y.S. Department of Environmental Conservation, Division of Materials Management. (2011). *Biosolids Management in N.Y.S.*, Table 5, Part 360 Permitted Biosolids Beneficial Use Facilities.
- N.Y.S. Department of Environmental Conservation, Divisions of Materials Management. (2010). List of Compost Facilities in New York State. Table 5, Part 360 Permitted Composting Facilities.
- N.Y.S. Department of Environmental Conservation, Division of Materials Management. (2012). personal communication, October 31, 2012.
- U.S. Census Bureau. (2010). *Summary File 1: New York State, Total Population by County.*

Indicator Calculation

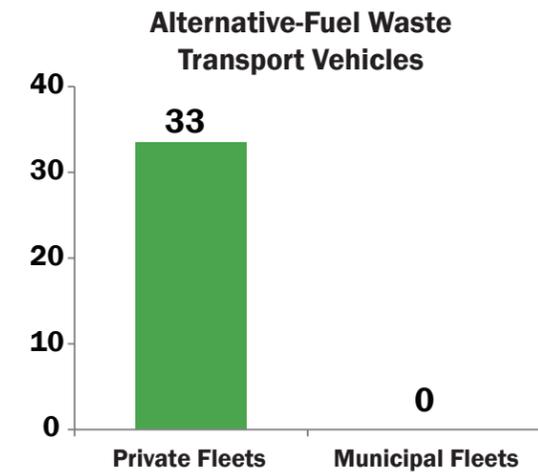
This indicator calculates the weight of organic waste that was recycled in 2010, divided by the population of our five-county region.

Waste Transport Vehicles That Use Alternative Fuels

Year: 2012
NYSERDA Focus Area: Waste Management
Recommended by NYSERDA: No
Required by NYSERDA: No

There are **33 alternative-fuel** waste transport vehicles in WNY

A more in-depth look



Indicator Definition
 This indicator measures the number of waste transport vehicles in WNY that use alternative fuel, such as compressed natural gas (CNG), ethanol or biodiesel. The indicator represents alternative-fuel vehicles used for transport of waste and recyclables, such as by waste management firms, other private-sector businesses and municipalities.

Data Sources

- Modern Disposal Corp. (2012) personal communication, September 27, 2012.
- Other waste management companies operate alternative-fuel waste transport vehicles, but the data are unavailable for this Plan.

Indicator Calculation

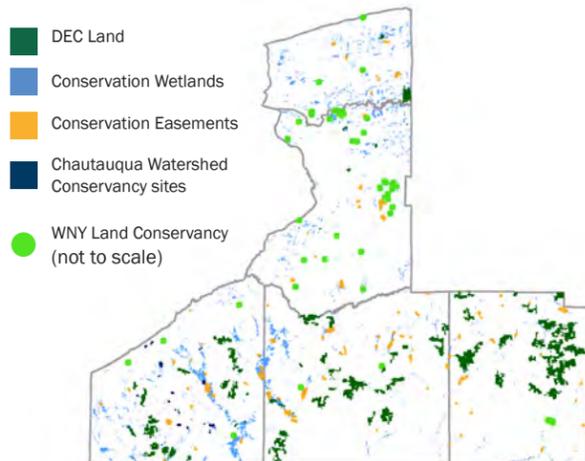
Sum of alternative-fuel vehicles used for waste transport by public and private entities in the five-county region.

Acres of Conserved Land

215,248 acres of land are conserved in WNY

Year: 2012
NYSERDA Focus Area: Water Management
Recommended by NYSERDA: No
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the amount of land (acres) within the five-county region that exists in a conserved/protected status. Included in this definition are: DEC lands, DEC wetlands, conserved lands owned by the Western New York Land Conservancy and lands identified through the National Conservation Easement Database data. Conserved land indicates how much of our land is protected from encroaching development, but it also has utility in contributing to water management and conservation goals.

Data Sources

- N.Y. Office of Cyber Security. (2010). *NYS Public Land Boundaries*.
- N.Y. Department of Environmental Conservation. (2012). *New York State Regulatory Freshwater Wetlands*.
- Western New York Land Conservancy. (2012). *List of Protected Properties*.
- The Conservation Registry. (2012). *National Conservation Easement Database*.

Indicator Calculation

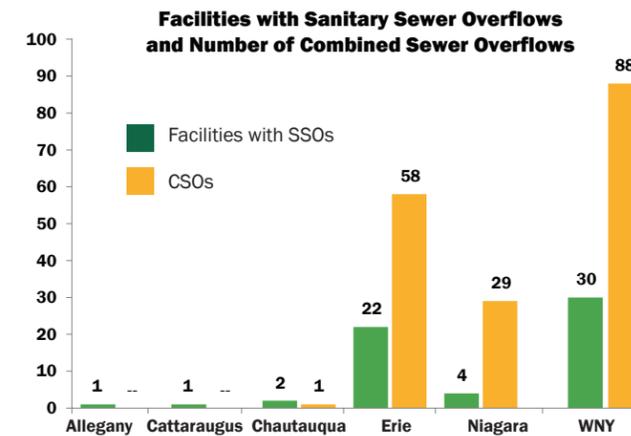
GIS analysis was used to sum the acreage of DEC lands, DEC wetlands, WNY Land Conservancy lands, and NCED lands across all five counties.

Combined Sewer Overflows and Sanitary Sewer Overflows

WNY has **88** combined sewer overflows (CSOs) and **29** facilities that generate sanitary sewer overflows (SSOs)

Year: 2012
NYSERDA Focus Area: Water Management
Recommended by NYSERDA: Yes, Indicator #7A
Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the number of combined sewer overflows (CSOs) which are a product of combined sewer systems. These systems simultaneously collect both municipal wastewater and storm water runoff in the same pipeline. CSOs are those discharge points which release excess untreated wastewater at times when an elevated amount of snow melt or storm water runoff causes the intake capacity of the system to be exceeded. Sanitary sewer overflows (SSOs) are spills, discharges, diversions or overflows of partially-treated or entirely untreated wastewater from a sanitary sewer system. SSOs may be caused a number of system errors, inefficiencies or defects.

Target

The region's target is to reduce the total number of CSOs by 40% by 2032, from a 2012 baseline.

Data Sources

- N.Y.S. Department of Environmental Conservation. (2012a). *Strategy Implementation Report for Combined Sewer Overflows*.
- N.Y.S. Department of Environmental Conservation. (2012b). *Storm Sewer Overflow (SSO) Tracking Sheet*.

Indicator Calculation

All wastewater treatment facilities which produce CSOs or SSOs in the state of New York are required to submit a permit through the Department of Environmental Conservation's (DEC) State Pollution Discharge Elimination System (SPDES). SPDES data, which specifies the type of discharge, as reported to the DEC was tabulated to produce the figures displayed in this report.

Miles of Impaired Streams

781 miles of WNY's streams are classified as impaired

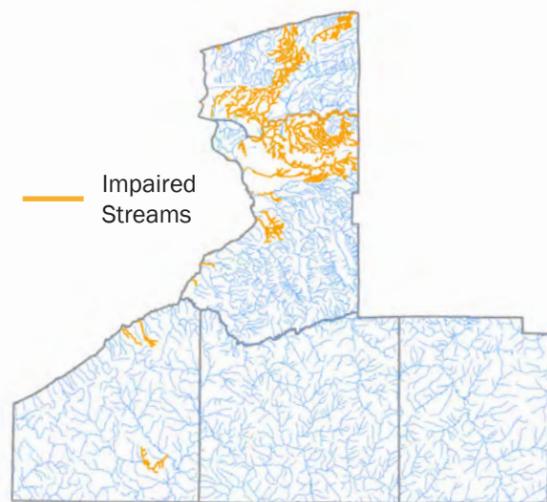
Year: 2010

NYSERDA Focus Area: Water Management

Recommended by NYSERDA: No

Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the miles of streams within the five-county region which are listed as impaired by the New York State Department of Environmental Conservation. The Federal Clean Water Act requires states to assess and report on the quality of waters in their state. Section 303(d) of the Clean Water Act requires states to specifically identify impaired waters which are waters that do not fully support the designated uses as established by the state's water quality standards.

Target

The region's target is to reduce the total miles of impaired streams by 20% (156 miles) to 625 miles by 2035.

Data Sources

N.Y.S. Department of Environmental Conservation. (2012). *Waterbody Inventory/ Priority Waterbodies List in NYS*.

Indicator Calculation

GIS analysis was used to sum the total miles of impaired streams across all five counties.

Miles of Trout-Classified Streams

1,352 miles of streams in WNY are trout-classified

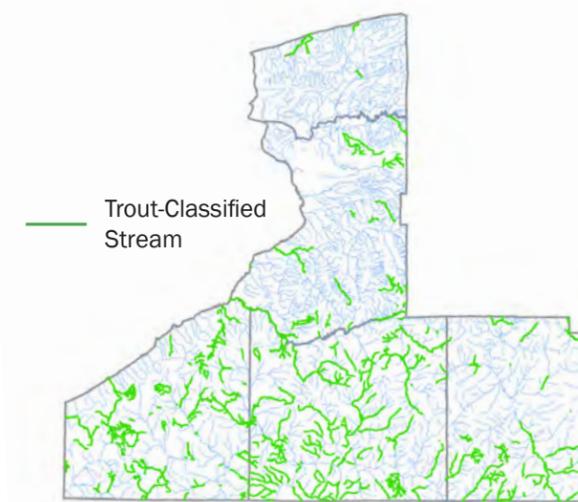
Year: 2010

NYSERDA Focus Area: Water Management

Recommended by NYSERDA: No

Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the miles of streams within the five-county area that are designated as trout waters. Trout waters are waters that provide habitat in which trout can survive and grow within a normal range on a year-round basis, or on a year-round basis except during periods of time when all of the trout inhabiting such waters could and would temporarily retreat into and survive in other waters. Trout waters are typically indicative of higher or better water quality because trout are a more sensitive aquatic biota.

Data Sources

N.Y.S. Department of Environmental Conservation. (2010). *NYS Water Quality Classifications Data Set*.

Indicator Calculation

GIS analysis was used to sum the total miles of trout waters (trout-classified streams) across all five counties.

Linear Miles of Shoreline with Public Access

107 of the 492 miles (22%) of shoreline along major regional water bodies are publicly-owned

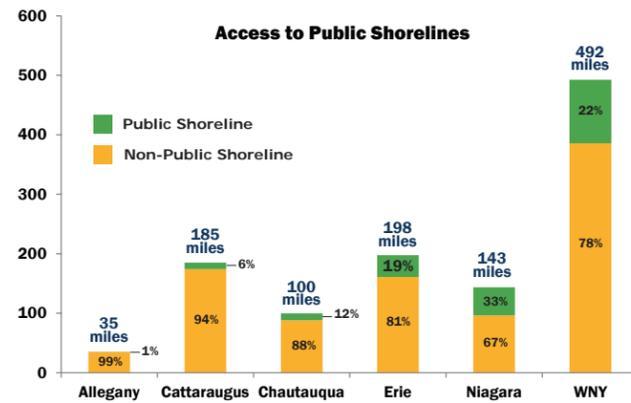
Year: 2010 and 2012

NYSERDA Focus Area: Water Management

Recommended by NYSERDA: No

Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the length of shoreline along major waterways (or, those appearing on the New York Environmental Protection Fund's list of coastal waterbodies and designated inland waterways, in addition to the Erie Canal) within parcels that are listed as publicly owned, according to the most recent parcel data of each of the five counties in the study area.

Data Sources

Erie County Department of Environment & Planning; Niagara County Department of Economic Development; Southern Tier West. (2012). Parcel Boundary Data.

N.Y.S. Department of Environmental Conservation. (2012). *List of Coastal Waterbodies and Designated Inland Waterways*.

U.S. Geological Survey. (2012). *National Hydrography Dataset*.

Indicator Calculation

Using GIS software, all publicly-owned parcels were selected by property class. Those public lands which intersected any major waterbody were then extracted and used to generate spatial data comprising the complete length of publicly-accessible shoreline areas along each major waterbody in the study area. The length of public shoreline, as well as the total length of major shorelines, was calculated using GIS software for each county within the region.

Water Usage Per Capita

WNY's residents and businesses use **1,116 gallons** per day, per person

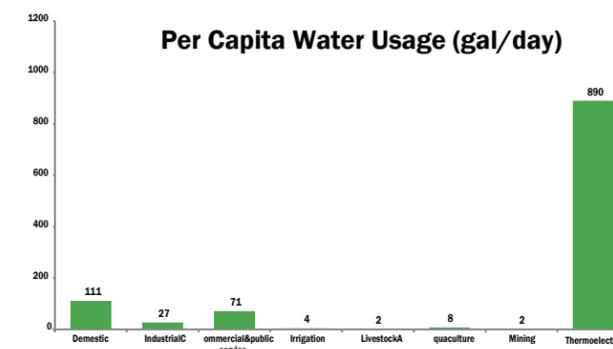
Year: 2005

NYSERDA Focus Area: N/A

Recommended by NYSERDA: Yes, Indicator #5A

Required by NYSERDA: No

A more in-depth look



Indicator Definition

This indicator measures the total volume of water used in our region in a given year per person. Included in this estimate is water used for public supply, domestic, irrigation, livestock, aquaculture, industrial, mining and thermoelectric power water use.

Data Sources

U.S. Geological Survey. (2005). *Estimated Use of Water in the United States County-Level Data*.

Indicator Calculation

The indicator is calculated as an estimate of water consumed by sector, which is calculated in Mgal/d (Million gallons per day), by dividing total amount of water usage of each sector by equivalent level of population.

ADDITIONAL INDICATORS

In addition to the indicators summarized in this report, several of the working group members proposed a series of indicators that currently do not have a baseline due to a lack of data availability. For these indicators, the working groups suggest regional stakeholders begin to collect this data in the future. These indicators are as follows:

LAND USE & LIVABLE COMMUNITIES

Smart Growth Technical Assistance Offerings. Our Land Use & Livable Communities working group felt strongly about including an indicator that measures the participation rate of local actors in sessions of technical assistance on smart growth principles. However, at the time of this report, the working group was unable to agree upon a comprehensive definition or data source for tracking this indicator.

New Development Occurring within and outside of existing sewer districts. The Working Group has aggregated sewer district data for each of the five counties and has identified a methodology for tracking this indicator in the future; however, a baseline for this indicator will not be able to be tracked until 2013.

WASTE MANAGEMENT

Number of businesses participating in new Sustainable Business Roundtable. The Waste working group has proposed creation of a Sustainable Business Roundtable to build capacity among regional businesses in the use of sustainable practices. Upon establishment of this program, the working group recommends this metric be adopted as an indicator and measured over time to gauge the growth of participation.

Number of municipalities and non-business institutions (e.g., schools) participating in a new Sustainable Practices program. Similar to the Sustainable Business Roundtable, this is a new program proposed by the Waste working group. Upon activation of this program, it is recommended that it be adopted as an indicator and participation rates measured over time for the program.

WATER MANAGEMENT

Acreage of Reduced Impervious Surface. The Water Management working group felt strongly about the inclusion of an indicator that would illustrate progress toward sustainability, specifically the working group's goal that focuses on regional water quality. However, a tracking mechanism currently does not exist for this indicator.

Annual Cost to Maintain Infrastructure. The Water Management working group also felt strongly about the inclusion of an indicator that would measure aging and under-functioning equipment/infrastructure that contributes to water quality degradation. This indicator would be measured and reported on an annual basis.

Number of Projects Implemented with Green Infrastructure. Green infrastructure was a topic strongly emphasized by the working group throughout the planning process. However, the members expressed a concern for the difficulty in collecting data to track the implementation of such practices. The working group discussed potential ways to track this data in the future, including the documentation/tracking of the number of projects implemented/constructed with green infrastructure elements, and tracking Green Innovation Grant Program project awards. The working group discussed the implementation of a tracking system for Municipal Separate Storm Sewer Systems (MS4) communities in Erie and Niagara Counties, as these are the only two counties with MS4 communities. This tracking system would include fields for entering either gallons per year of designed capacity for green infrastructure or acreage of developed sites with green infrastructure. Although there are no MS4 communities in the southern region, the three southern counties should be encouraged to follow the MS4 guidelines and plan accordingly.

Per Gallon Cost of Water Supply and Treatment as Compared to the National Average. The working group discussed the value of using an indicator like this one which would help to promote more sustainable local water use by providing a focus on assessing the efficiency of existing systems coupled with overall water usage. A baseline for this indicator was not available at the time of this report, but the inclusion of this indicator in the future was recommended.

Water Consumption. The working group felt strongly that water consumption be included as an indicator of how much water is not being returned to the system. This indicator should focus on major water users, such as food and beverage processors. The working group identified potential data sources for future consideration, namely obtaining summaries from municipal water providers which highlight major water users.

Number of Flood Events. The working group felt that the inclusion of an indicator like this one would speak to how efficient or inefficient existing infrastructure is. The working group was unable to identify a source for this data.

In addition to the indicators discussed above regarding lack of data availability, there are two partial indicators that the Water Management working group would like to consider for future use. These two indicators had limited data, data that did not cover all five counties of the region, and for that reason, they were not carried forward for analysis in the plan.

Number of Beach Closings/umber of Days during the Summer Season where E. coli standards were exceeded. This is an indicator that the Water Management working group had discussed including to measure progress toward the following goal: "Improve regional water quality through a focus on the identification and management of pollution sources and protection of healthy watersheds." Due to the fact that the number of beach closings may not be an accurate indicator for water quality as some beach closings are the result of lighting, insufficient life guards, and other issues, the number of days that E. coli standards are exceeded was deemed to be a more accurate indicator of water quality. The working group recommends that this be an indicator for future inclusion.

Number of Counties/Local Governments with Codes/Comprehensive Plans that Incorporate Sustainable Water Management Principles. This is an indicator that the Water Management working group had discussed including to measure progress toward the following goal: "Ensure better coordination of water management with land use, conservation planning, and decisions regarding where future development occurs, including continued and increased public access to water resources." However, the primary data source available at the time of the plan's development was a list of MS4 communities in Erie and Niagara Counties that have passed the following laws: Stormwater Management and Erosion and Sediment Control Law and a law to Prohibit Illicit Discharges, Activities and Connections to Separate Storm Sewer System. No similar ordinances exist in Chautauqua County and Allegany County, as there are no MS4 communities. Chautauqua County is currently working on a model erosion control ordinance or code amendments. The working group recommends that this be a potential indicator be included in the future, once a methodology to obtain the necessary data sets is identified to allow for tracking.

Data Notes

Housing & Transportation Affordability

The H+T Affordability Index is calculated and collected by the Center for Neighborhood Technology (CNT), which is accessible at (<http://htaindex.cnt.org>). The H+T Index is constructed at the census block group level, primarily using data from the ACS 5-Year estimates. Because it mostly covers metropolitan and micropolitan areas, data for some rural areas are not available through this website due to data insufficiency.

H+T index data was unavailable for Allegany County. Therefore, the index for Allegany County was calculated as an adjusted average of nearby Cattaraugus and Steuben counties, which have infrastructure, environmental and socioeconomic characteristics similar to that of Allegany County. The household median income for Cattaraugus County, Steuben County, and Allegany County were \$43,867, \$41,302, and \$42,466. Based on each county's H+T affordability index, the weighted average H+T affordability index of WNY was calculated by multiplying the percentage of the population in each county by the each county's index, and summing the results across all counties in the project area. Census 2010 data was used for the population data and ACS 5-years data (2006-2010) is used to get median housing income for 5 counties.

New Homes Built Near Municipal Centers

To calculate these indicators, the geographic extent of municipal centers needed to be determined. According to

New York Environmental Conservation Law 6-0103, the term “Municipal Centers” includes, but is not limited to, the following areas, “central business districts, main streets, downtown areas, brownfield opportunity areas, downtown areas of local waterfront revitalization program areas, transit-oriented development, environmental justice areas, and hardship areas.” (Source, New York Environmental Conservation Law. Article 6, § 6-0103. (2010))

As regional employment centers fit this definition of a municipal center, an independent analysis was conducted to ascertain these boundaries in order to incorporate them in this calculation. First, Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES) data (2010), which provides the total number of jobs within each census block, was downloaded from the US Census Bureau (available at onthemap.ces.census.gov) and joined to a geospatial layer of 2010 Census blocks in Western New York. The area of each census block was then computed and used to calculate the employment density of each block (measured in jobs per acre).

The locations of environmental justice areas and hardship areas are determined by socioeconomic characteristics. Here, hardship areas are defined by the Environmental Justice and Permitting of the NYS Department of Environmental Conservation’s [DEC] (2003) designation of a low-income community. These are census block groups that have at least 23.59% of their population living in poverty. According to the NYS DEC, Environmental Justice Areas are those block groups which meet the following criteria: (a) 51.1% or more of the urban population are members of minority groups, (b) 33.8% or more of the rural population are members of minority groups and (c) 23.59% of the total population is living below the poverty level (NYS DEC, Environmental Justice Policy CP-29, 2003). These areas were found by investigating tabular data on socioeconomic variables from the American Community Survey (2005-2009). The block groups which met the criteria listed above were then joined to spatial files of block group boundaries (2000) and extracted to yield a geospatial layer of both Environmental Justice Areas and Hardship Areas.

All additional steps of this analysis demanded that data be independently examined for two distinct regions, (1) the metropolitan Erie-Niagara region and (2) the rural Southern Tier (Chautauqua, Cattaraugus and Allegany counties). Due to the variance in employment and population levels between these two areas, this distinction was thought to be necessary in order to generate an accurate number of locally-appropriate major employment centers. The mean employment density of all blocks containing jobs was calculated independently for both regions. Blocks which had an employment density above the average for their region were selected and aggregated so that adjoining blocks with an employment density higher than the regional mean were merged into contiguous areas.

Next, the mean employment density and total number of jobs within each cluster of blocks was recalculated. These statistics were then used to determine cut-off values and finalize the selection of regional major employment centers. These threshold values were established by consulting prevailing methods on the delineation of regional employment centers, (Sources: (1) Giuliano, G.; Redfearn, C.; Agarwal, A.; Li, C.; Zhuang, D. (2005): “Not all sprawl: Evolution of employment concentrations in Los Angeles, 1980-2000.” In: Proceedings of the ERSA Conference, Amsterdam, Netherlands. (2) Giuliano, G., and Small, K. (1991). “Subcenters in the Los Angeles region.” *Regional Science and Urban Economics*, 21(2), 163–182.) investigating the data and applying localized knowledge to the potential results. The determination was made to define regional employment centers as blocks, or block clusters, that (1) contained a minimum 0.25% of all the jobs within their region and (2) had an employment density greater than 10 jobs per acre. All blocks or block clusters which met these criteria were extracted and used as regional employment centers.

Using GIS software, the boundaries of major employment centers were merged with all other types of municipal centers to produce a single layer of all municipal centers in the five-county region. A quarter-mile buffer was then applied to this area. Using real property data, all residential parcels built after the year 2000 were exported. The number of these parcels within the quarter-mile buffer of municipal centers was found using a spatial selection tool. This figure was divided by the total number of residential parcels built after 2000 to yield the results shown.

Population Living Near Open Space

To complete the network analysis required to delineate areas within ¼ mile of public open space, a point file of access points to public lands was needed. This was generated by first converting the polygon file of public land boundaries to point features and then selecting from these those points which were intersected by a roadway. Further examination and revision of the result of this operation was required to derive an accurate and complete

file of access points to public lands. Once complete, these points were used as facilities to calculate ¼ mile service areas from these sites using the Network Analyst extension of ArcGIS software. Due to excessive processing requirements, this operation was conducted for each county individually and then merged to produce the file of all areas within ¼ mile of open space that was used to calculate this indicator.

Walkability of Local Main Streets

Initially, the “Main Street(s)” of each municipality was hypothesized based on a methodology that involved the website “Walk Score” (www.walkscore.com), Google Maps Street View and Geographic Information Systems. The first step of this preliminary process was to enter each municipality into the Walk Score website, which by default selects the place in the municipality identified as either the center of town, or the place with the highest concentration of “walkable” amenities (i.e. coffee shops, grocers, etc.). Next, the location identified by Walk Score was visually inspected using Google Maps Street View to determine if the area resembled NYS’s definition of a Main Street - “established mixed-use (commercial, civic and residential) “Main Street” or downtown retail district that is pedestrian-oriented and comprised of traditional mixed-use buildings.” (Source, New York State Housing Trust Fund Corporation, Office of Community Renewal. (2012). *New York Main Street Program Guide*.) The municipality was also scanned to determine if there were additional or alternate areas that resembled the above definition. Following this, representatives from each respective county in WNY were consulted. The initial “Main Street” locations were reviewed by these personnel; suggested additions or amendments made by these representatives were incorporated into this list, so long as they maintained the definition of Main Street as provided by NYS Department of Homes and Community Renewal

Once the locations of all Main Streets throughout the five county study area were confirmed, the finalized list was compiled and mapped using GIS software. With this list, a composite Walk Score of each “Main Street” segment was calculated by finding the “Walk Score” (using www.walkscore.com) for a set of intersections within each “Main Street” section, and then using these scores to calculate an average “Walk Score” for each “Main Street”. The following factors were used in determining which intersections to use in this calculation: (1) the intersections nearest to the endpoints of each Main Street segment, (2) all major, or high-trafficked intersections between these endpoints, as determined by the analyst’s a priori knowledge of the region and (3) supplemental intersections to ensure that the collection of individual Walk Scores are uniformly located throughout the length of the entire “Main Street” segment. In the majority of Main Streets, especially those located in towns and villages, typically between one and three intersections were used to compute the average “Walk Score”. For “Main Streets” of more substantial length, typically located in cities, a greater number of intersections, usually over four and no more than 16 (Main St, Buffalo), were used to calculate the average Walk Score for each Main Street.

Walk Score normalizes all walkability scores on a 0-100 scale. Scores ranging from 0-24 are almost completely car-dependent, scores from 25-49 signify a location where only a few amenities can be reached on foot (“mostly car-dependent”), scores from 50-69 indicate a somewhat walkable location, scores from 70-89 correlate with areas where most errands are accessible by walking (“very walkable”), while scores of 90 or above (“walker’s paradise”) indicate an area where all daily errands could be accomplished on foot.

Alternative Fuel Stations

The Alternative Fuels Data Center (AFDC) of the U.S. Department of Energy collaborates with the National Renewable Energy Laboratory and other entities to maintain updated information on the location and number of alternative fueling sites across the U.S. In its reports, the AFDC tabulates each individual electric charging station as its own alternative fuel station. However, in calculating this indicator, each electric charging facility location, regardless of the actual number of charging stations at a location, was only counted once. All other alternative fuel facilities are counted as one station, as done by the AFDC.

Construction and Demolition (C&D) Waste Disposed Per Capita

To quantify the total amount of Construction and Demolition (C&D) disposed in our 5 counties, landfill annual reports in 2010 are used here. The landfill Annual Reports, 2010, are provided by New York State Department of Environmental Conservation, which is available at <ftp://ftp.dec.state.ny.us/dshm/SWMF/Landfill/Landfill%20Annual%20Reports/Landfill%20Annual%20Reports%20-%202010/R9/>.

Western New York is part of the DEC's Region 9 comprised of Allegany, Cattaraugus, Chautauqua, Erie, Niagara, and Wyoming County. Thus, reports from facilities located in Wyoming County were excluded under R9 for the indicator here. Under the landfill annual report in 2010, information on the "section 6 - B Quantity disposed by facility's service area" of each facility is used to quantify the amount of C&D that is disposed of via landfill.

The C&D waste comes from the service areas outside of WNY is not included here, C&D only comes from inside of WNY is accounted for the quantification. Data comes as amount of C&D waste in tons by service area. All the amounts C&D wastes reported by facility from landfill are summed up by facility, then, the total amount of C&D waste generated from WNY is divided by total number of population from Census 2010 within area.

Construction and Demolition (C&D) Waste Recycled Per Capita

To quantify the total amount of C&D waste recycled in our 5 counties, C&D processor annual reports in 2010 provided by New York State Department of Environmental Conservation are used here, which is available at <ftp://ftp.dec.state.ny.us/dshm/SWMF/CD%20Processor/CD%20Processor%20Annual%20Reports/CD%20Processor%20Annual%20Reports%20-%202010/R9/>.

Western New York is belonging to R9 (Region 9) representing Allegany, Cattaraugus, Chautauqua, Erie, Niagara, and Wyoming County. Thus, reports from facilities located in Wyoming County were excluded under R9 for the indicator here. Under the report, basically, information under the "section 4 - Material Recovered for Reuse/Recycling" of each facility is used to quantify the amount of C&D that is recycled instead of sent to a landfill or incinerator. All the recyclable C&D waste received by C&D processor in WNY was generated from WNY, hence, the quantity of C&D waste recovered in WNY comes from received recyclable C&D waste only generated from WNY. All the amounts C&D wastes recycled reported by C&D processor facility are summed up, and the total amount of C&D waste recycled from WNY is divided by total number of population from Census 2010 within area. Also, proportion of C&D waste received from each county among total C&D waste received, given from "section 2 - B Quantity Received by Facility's Service Area", is applied to the total amount of materials recovered of each facility, given from section 4, to specify the service area of C&D waste recycled.

Municipal Solid Waste (MSW) Disposed Per Capita

To quantify the total amount of MSW disposed in our 5 counties, landfill annual reports and waste combustion facility annual reports are used here. The landfill Annual Reports and the waste combustion facility annual report in 2010 are provided by New York State Department of Environmental Conservation, which is available at <ftp://ftp.dec.state.ny.us/dshm/SWMF/Landfill/Landfill%20Annual%20Reports/Landfill%20Annual%20Reports%20-%202010/R9/>, and <ftp://ftp.dec.state.ny.us/dshm/SWMF/MWC/MWC%20Annual%20Reports/MWC%20Annual%20Reports%20-%202010/R9/>.

Western New York is part of the DEC's Region 9 comprised of Allegany, Cattaraugus, Chautauqua, Erie, Niagara, and Wyoming County. Thus, reports from facilities located in Wyoming County were excluded under R9 for the indicator here. Under the landfill annual report in 2010, information on the "section 6 - B Quantity disposed by facility's service area" of each facility is used to quantify the amount of MSW that is disposed of via landfill. Also, under the waste combustion facility annual report, MSW information on the "C. Facility's service area under section 2 - Quantity of Solid waste received" of each facility is collected to quantify the amount of MSW that is combusted.

The Municipal Solid Waste comes from the service areas outside of WNY is not included here, MSW only comes from inside of WNY is accounted for the quantification. Data comes as amount of MSW in tons by service area. All the amounts of MSW reported by facility from landfill and incinerator are summed up by facility, then, the total amount of MSW generated from WNY is divided by total number of population from Census 2010 within area.

Municipal Solid Waste (MSW) Recycled Per Capita

Basically, the Recyclable handling and Recovery Facility Annual Reports in 2010 provided by New York State Department of Environmental Conservation are used to calculate the amount of MSW recycled as a main source, which is available at <ftp://ftp.dec.state.ny.us/dshm/SWMF/RHRF/MRF%20Annual%20Reports%20-%202010/R9/>.

Western New York is part of the DEC's Region 9 comprised of Allegany, Cattaraugus, Chautauqua, Erie, Niagara, and

Wyoming County. Thus, reports from facilities located in Wyoming County were excluded under R9 for the indicator here. FCR Ontario facility located in Canada is included here because that facility is receiving significant amount of recyclable materials from our region despite of its location, outside of WNY. In Under the report, information from the "Section 2 - Quantity of Recyclable Material Received by facility's service area" is used to quantify the amount of MSW that is recycled instead of sent to a landfill or incinerator with an assumption that received recyclable materials would be recycled once the facility received the recyclable materials.

While the quantity of recyclable material received should be collected from Section 2, some reports updated by facility are missing in section 2, leading to unavailability of collecting recyclable material received by service area. For those facilities' reports: Container Recovery of Western NY, Max Brock Co Inc., CID Refuse Service Inc., and GLR recycling solutions, information on "Section 3 - A. Quantity of Recyclable Material Recovered" are used to calculate the quantity of recyclable material received instead of using section 2. While section 3 is for information about destination where recovered materials sent out, the location of destination is not matched with equivalent planning unit under section 3 for these 4 facilities. Thus, information under the category of NYS planning unit on section 3 is considered as a service area here, based on the assumption that they reported the service areas under section 3. Besides of these 4 facilities, both of information for section 2 NYS planning unit under section 3 is not available for the report updated by Great Lakes Paper Fibres Corp. But, we assumed total recyclable materials are received from WNY considered the facility's characteristic in local. In addition, proportion of each county's population among total is applied to quantify the amount of MSW recycled by county for three facilities: Max Brock Co Inc.; Great Lakes Paper Fibres Corp.; and Covanta Niagara, where it doesn't have information about service area at county level.

Also, some of transfer station and combustion facility are handling recyclable materials besides of Recyclable handling and Recovery Facilities, which is available at <ftp://ftp.dec.state.ny.us/dshm/SWMF/Transfer%20Station/Transfer%20Annual%20Reports/Transfer%20Annual%20Reports%20-%202010/R9/15T24%20Depew%20TS.ts%20r9%202010.pdf>, and <ftp://ftp.dec.state.ny.us/dshm/SWMF/MWC/MWC%20Annual%20Reports/MWC%20Annual%20Reports%20-%202010/R9/>. We accounted the quantity of MSW recycled in those facilities for the indicator as well.

Under transfer station annual report, information on the "section 4 - A Quantity of metal received by facility's area" is used to quantify the amount of recyclable materials received. For Covanta Niagara combustion facility, information on the "section 3 - A Quantity of metal recovered" is used. Because information about service area for metal received is not available from report and the facility's character collecting materials from various places, even from out of state, the percentage of mixed MSW this facility received from our 5-county region of total MSW amount is applied to the amount of metal they recovered to calculate the quantity of metal received.

All the amounts of recyclable materials received by facility from Recyclable handling and Recovery Facility, transfer station, and combustion facility, are summed up by facility, then, the total amount of recyclable materials received from WNY is divided by total number of population from Census 2010 within area.

Organic Waste Recycled Per Capita

There are several sources of organic material for recycling, including biosolids, yard waste, and food residual waste. Beneficial use options include direct land application, composting, chemical stabilization, and heat drying. Those organic materials are recycled for beneficial use which includes direct land application, composting, chemical stabilization, and heat drying. Total population data from Census 2010 is used.

The quantity of Biosolids recycled by facility in WNY was obtained from Table 5. Part 360 Permitted Biosolids Beneficial Use Facilities from Biosolids management report in New York State in 2010. Also, the quantity of yard waste recycled in WNY was obtained from a list of composting facilities in NYS provided by NYSDEC webpage. The material management department in NYSDEC provided us reported data in 2010 for 4 facilities recycling organic wastes: Orchard Park, Good Earth Organics, Lardon Construction, and Town of West Seneca, other than data we got from main two sources: Biosolids management report and a list of composting facilities in NY.

All the quantity of biosolids recycled by facility comes in tons from the report of Biosolids management in New York State, 2010. But, the estimated quantity of composting facilities from NYDEC needs to be converted into tons in unit, because the unit for composting facilities came in cubic yard. Thus, conversion rate of yard trimmings, 1 cubic yard

equals to 350 pounds, given by EPA, was applied here to convert unit from cubic yard into tons.

Acres of Conserved Land

There are some locations in the region that are preserved by more than one conservation program. In order to avoid double-counting these locations, separate spatial layers of DEC lands, conservation easements and conserved wetlands were merged using GIS prior to calculating the area of conserved land. However, as a GIS boundary file of land conserved under the WNY Land Conservancy (WNYLC) could not be obtained, the size (in acres) of each property as given by the WNYLC was simply added to the estimate of conserved land area found through the GIS analysis described above. However, some sites registered under the WNYLC may also be included in another category of conserved land; such areas would be double-counted in this calculation and would result in a slight overestimation of the area of conserved land in the region.

Public Shoreline Access

Major waterbodies used to calculate this indicator were defined by the Department of Environmental Conservation's List of Coastal Waterbodies and Designated Inland Waterways. However, for the purposes of this calculation one water body, the Erie Canal, was added to this list due to its historical and cultural significance.

Appendix E Tier II GHG Inventory Report

GHG Inventory Report

November 2012

Prepared for:

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Table of Contents

Section	Page
1	Introduction 1-1
2	GH Inventory Development Process.....2-1
2.1	Development of a NYGHG Protocol 2-1
2.2	Regional GHG Inventory Purpose and Boundaries 2-2
2.2.1	Regional GHG Inventory Boundaries and Parameters 2-2
2.2.2	GHG Emission Source Sectors 2-3
2.2.3	GHG Emission Types and Quantification..... 2-4
3	WNY GHG Inventory Data Collection, Calculation Methods, and Results3-1
3.1	Electricity Generation and Consumption 3-1
3.2	Direct Stationary Energy Consumption 3-5
3.3	Transportation 3-7
3.3.1	On-Road Transportation..... 3-8
3.3.2	Air Transportation 3-8
3.3.3	Commercial Marine..... 3-9
3.3.4	Rail 3-9
3.3.5	Off-Road Equipment and Vehicles 3-10
3.4	Industrial Process Sources..... 3-10
3.5	Energy Transmission Losses 3-11
3.6	Solid Waste and Wastewater Management..... 3-11
3.7	Agriculture 3-12
3.7.1	N ₂ O Emissions from Agricultural Soils 3-12
3.7.2	Manure Management..... 3-13
3.7.3	Enteric Fermentation 3-13
3.8	Forestry..... 3-13
3.8.1	Carbon Sequestration by Forests 3-13
3.8.2	Urban Trees..... 3-14
4	References.....4-1

Table of Contents (cont.)

Attachments	Page
A WNY GHG Inventory Reporting Template	A-1
B Acronyms and Definitions	B-1
C Emission and Conversion Factors.....	C-1



List of Tables



Table		Page
1	eGRID2012 CO ₂ Emission Factors for New York State	3-4



List of Figures



Figure		Page
1	Western New York CO ₂ e Emissions Baseline Year 2010.....	1-2
2	Western New York 2010 Grid-tied Electricity Generation	3-2
3	WNY 2010 Grid-tied Electricity Generation GHG Emissions.....	3-3
4	2010 Average Western New York CO ₂ Emissions from Electricity Generation by Fuel Type	3-4
5	WNY 2010 Electricity Consumption by Sector.....	3-5
6	WNY 2010 GHG Emissions from Direct Stationary Energy Usage in WNY by Type	3-6
7	WNY 2010 Transportation GHG Emissions	3-7

1

Introduction

As part of the NYSERDA Cleaner, Greener Communities (CGC) Program, each region in New York State was required, under the terms of its NYSERDA grant, to complete a GHG inventory to provide a baseline indication of emissions sources for the region. Each region would then be able to use the GHG inventory results to identify priorities for developing sustainability goals and actions.

NYSERDA established the GHG Inventory Protocol Working Group (NYGHG Protocol Group) to develop a New York Tier II Regional GHG Inventory Protocol (NYGHG Protocol). While a formal GHG Protocol document has not yet been established, the NYGHG Protocol Group created a reporting template in Microsoft Excel to provide a summary of the agreed-upon GHG inventory calculation methods and to report the resulting GHG inventory for each region. The completed Western New York (WNY) reporting template was submitted to NYSERDA in October and is provided as Attachment A.

This document provides additional specific details and summaries of the GHG inventory data and calculation methodologies required by NYSERDA. In addition, this report includes data and calculations that were provided to working groups to support and inform the sustainability planning process.

The results of the Tier II GHG inventory for WNY are summarized below in Figure 1. The total GHG emissions for 2010 in WNY were estimated at 17.5 million metric tons (MT) of carbon dioxide equivalents (CO₂e).

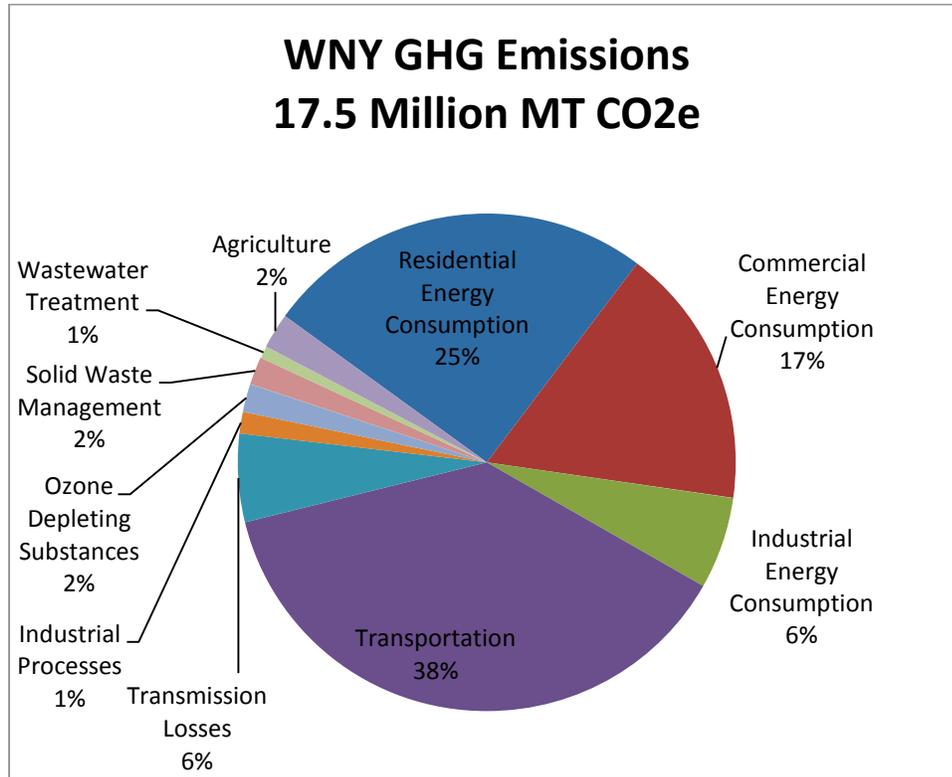


Figure 1 Western New York CO₂e Emissions Baseline Year 2010

2

GH Inventory Development Process

2.1 Development of a NYGHG Protocol

NYSERDA established the GHG Inventory Protocol Working Group (New York GHG [NYGHG] Protocol Group) to establish a uniform method for the development of the regional GHG inventories. This group was assigned to develop a New York Tier II Regional GHG Inventory Protocol (NYGHG Protocol) for the NYSERDA CGC and NYSDEC Climate Smart Community (CGC) programs, led and facilitated by Mr. Jim Yienger of Climate Action Associates and Ms. Peggy Foran of The Climate Registry. The NYGHG Working Group is made up of members from other regional teams in the state and representatives of New York State agencies such as the Department of Transportation (NYSDOT), the Department of Environmental Conservation (NYSDEC), and NYSERDA.

The NYGHG Protocol Group began meeting in March 2012 to review existing data, procedures, and methods used by federal, state, and non-governmental organizations (NGOs) such as The Climate Registry and the International Council for Local Environmental Initiatives (ICLEI). Other specific methods reviewed and used as references include the EPA's Draft Regional GHG Inventory Guidelines (EPA 2010), ICLEI's C40 Global Protocol for Community-Scale GHG Emissions (ICLEI 2010), and the EPA's GHG Mandatory Reporting Rule (MRR) regulations (74 *Federal Register (FR)* 209).

The purpose of the NYGHG Protocol Group was to establish a Tier II regional GHG inventory protocol that would ensure consistency across the state while also preserving the priority of GHG emission source assessment of sectors critical and important to the various regions. This NYGHG Protocol Group collaborated for seven months on the NYGHG Protocol. While a formal GHG Protocol document has not yet been established, The NYGHG Protocol Group created a reporting template in Microsoft Excel that provides a summary of the agreed upon GHG Inventory calculation methods and GHG Inventory results for the region. This template was finalized and distributed to the regions on September 17, 2012.

NYSERDA provided the regions with a state-wide, preliminary Tier I GHG inventory in April 2012, estimating regional emissions based on allocation of state-level emissions (TRC 2012). This inventory was limited in that it provided only energy estimates, used a variety of years for source data, and used only population

or employment numbers to allocate energy use. This inventory did provide an approximate estimate of the allocation of energy use, and key reference sources.

To meet the project schedule and to provide useful information to the working groups, the WNY GHG Inventory was developed at the same time as the NYS Regional GHG Inventory Protocol. Therefore, the WNY regional planning team relied upon the discussions and references of the Protocol Group to collect data and assemble a Tier II GHG inventory, which uses specific regional data to the extent possible.

2.2 Regional GHG Inventory Purpose and Boundaries

The Tier II Regional GHG Inventory for WNY provides specific information for state, county and local decision makers to use in prioritizing state-wide as well as local efforts to reduce GHG emissions. While a Tier I, or “top down” inventory uses only allocation and averages to estimate regional emissions, a Tier II analysis uses a “bottom up” approach, using local utility usage or other specific regional data to create the inventory. Specific Tier II data was used when data were available, prioritizing efforts to collect information on large GHG emission sources or sources where specific data provided important information to the WNY Sustainability Plan Working Groups. Data sources for each sector are defined in the discussion of each sector in this document.

A regional GHG inventory is a collection of data summarizing the sources of GHG within and specific to a region, quantifying the GHG emissions that result from these sources. While state and national level GHG emissions have been estimated, quantification of GHG emissions on a regional level in New York State has not yet been accomplished. Valuable lessons were learned by the NYGHG Protocol Group through the NYGHG Protocol development process. Most importantly, energy use, transportation priorities, and data availability vary significantly across the state, and this effort provides key information to manage this variety. To be useful, this data needs to be collected and analyzed in a consistent, transparent, and replicable fashion.

2.2.1 Regional GHG Inventory Boundaries and Parameters

GHG inventory boundaries refer to geographic boundaries, time boundaries, and functional boundaries. The boundaries established for the WNY GHG inventory include the following:

- **Geographic Boundary:** Activities analyzed occur within the WNY region, in the counties of Allegany, Cattaraugus, Chautauqua, Erie, and Niagara.
- **Time Boundary:** Activities analyzed occur within the time frame of one year, providing an annual total comparable to other standard GHG inventories. The NYGHG Protocol established 2010 as the baseline year for this effort, to coincide with the U.S. Census. This also provides the most recent year where most data is available. For some sectors, 2010 data are not available, and in these cases the most recent data are used.

- **Functional Boundary:** The extent of GHG emission impacts is global, and therefore quantification of impacts from objects and activities can extend back to the extraction of raw materials and forward to the final disposal, resulting in a full life-cycle analysis. Establishing the functional boundary of this project is more difficult than establishing the other boundaries. In most cases, the geographic boundaries of the region were used to delineate the functional boundaries. For example, in the transportation analysis, vehicle miles traveled (VMT) on regional roads are considered, rather than trip number and length. Functional boundaries for each sector are defined in the discussion of each sector in this document.

In addition to boundaries, other GHG inventory parameters include source sector divisions and emission types to be included.

2.2.2 GHG Emission Source Sectors

The inventory includes an evaluation of the following source sectors:

- Energy
- Electricity generation
- Electricity consumption
- Direct consumption of fuel (natural gas, stationary fuel oil, bottled gas, and wood and biomass.
- Transmission losses
- Industrial uses and processes
- Transportation
- On-road transportation
- Rail, aviation, and commercial marine vessels
- Off-road, (or non-road) equipment and vehicles (for construction, landscaping, recreation, etc.)
- Waste and wastewater
- Agriculture
- Animal management (manure management, enteric fermentation)
- Agricultural management (fertilizer use, nitrogen-fixing crops)

- Forest carbon and urban trees

2.2.3 GHG Emission Types and Quantification

This inventory evaluates the impact carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), as well as hydrochlorofluorocarbon (HCFC) and chlorofluorocarbon (CFC), and sulfur hexafluoride (SF₆) that are primarily released as fugitive emissions. These six GHGs are internationally recognized as the predominant man-made greenhouse gases contributors and are also specified as such by EPA's MRR program (74 *FR* 209).

Different GHGs also have different capacities to trap heat in the atmosphere, i.e., global warming potential (GWP). For example, CH₄ has 21 times the impact on global warming compared with CO₂, and N₂O has 310 times the impact (74 *FR* 209). In order to compare and sum the impacts of different gases, all six defined emissions are quantified in terms of CO₂ impacts or CO₂e, calculated by multiplying emissions by their respective GWP.

As is customary for GHG inventory reporting, all emissions are reported in metric tons (MT) of carbon dioxide equivalent (MTCO₂e). To account for the difference in magnitude, total regional emissions are reported as million MTCO₂e, while per-capita emissions are reported as MTCO₂e.

3

WNY GHG Inventory Data Collection, Calculation Methods, and Results

3.1 Electricity Generation and Consumption

Electricity is categorized and tabulated in two separate ways in the GHG inventory: *generation* and *consumption*. *Generation* refers to the electricity created at power plants in the region, and the direct GHG emissions are calculated based on the specific type of fuel used. *Consumption* refers to electricity used in the region. These emissions are considered indirect and are calculated from sales data provided by utility companies and upstate NY average emission factors provided by the EPA's Emissions and Generation Resource Integrated Database (eGRID) (EPA 2012). The difference between generation and consumption, allowing for the transmission and distribution losses from regional consumption, represents electricity that is exported and therefore consumed outside the region.

Electricity generation was analyzed by fuel type. The 2010 data on the fuel type and volume and electricity generated and provided to the grid for all electricity-generating facilities in the region were collected from Department of Energy (DOE) Energy Information Administration (EIA) reporting programs (Form 923)(USEIA2011). GHG emission factors for each fuel type from the 2009 EPA GHG Mandatory Reporting Rule (MRR) Calculation Methodology Requirements were used to calculate GHG emissions (74 *FR* 209), using emission factors prescribed by this regulation (40 CFR 98). The assumptions related to the impacts of biogenic sources, e.g., wood and biomass, landfill gas, and waste-to-energy sources, were consistent with the requirements of the MRR methodology.

The boundaries established for this GHG inventory include the consumption of energy by the population, not generation, and therefore these data are not included in the region's total for energy or GHG emissions. However, the NYGHG Protocol Group acknowledged that the accuracy of the generation data, as well as its annual compilation, provided an excellent opportunity to assess the specific GHG emission impacts from generation with the regions and ultimately throughout the state. Figure 2 indicates regional electricity generation in megawatt-hours (MWh) by fuel type.

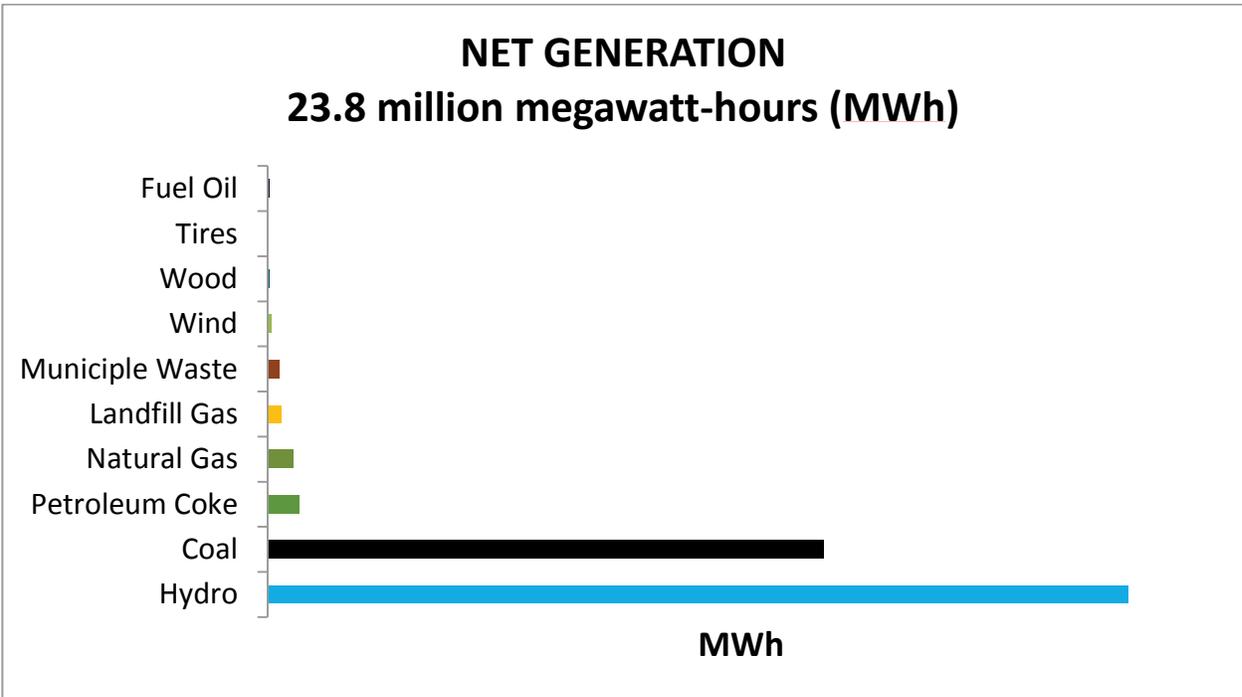


Figure 2 Western New York 2010 Grid-tied Electricity Generation

The WNY region generated 23.8 million MWh in 2010, producing 9.8 MT CO₂e. Most of this energy, more than 13.6 million MWh, was generated without direct GHG emissions at the Robert Moses hydro-electric plant in Niagara County. This renewable source, in addition to energy generation from wind, biomass, landfill gas, and waste-to-energy sources, results in a regional renewable energy percentage of 58% for 2010. This is one of the WNY energy sustainability indicators.

As renewable energy results in almost zero emissions, most GHG emissions from electricity generation in the region is from the use of coal. Figure 3 shows the GHG emissions from WNY grid-tied electricity generation.

3 WNY GHG Inventory Data Collection, Calculation Methods, and Results

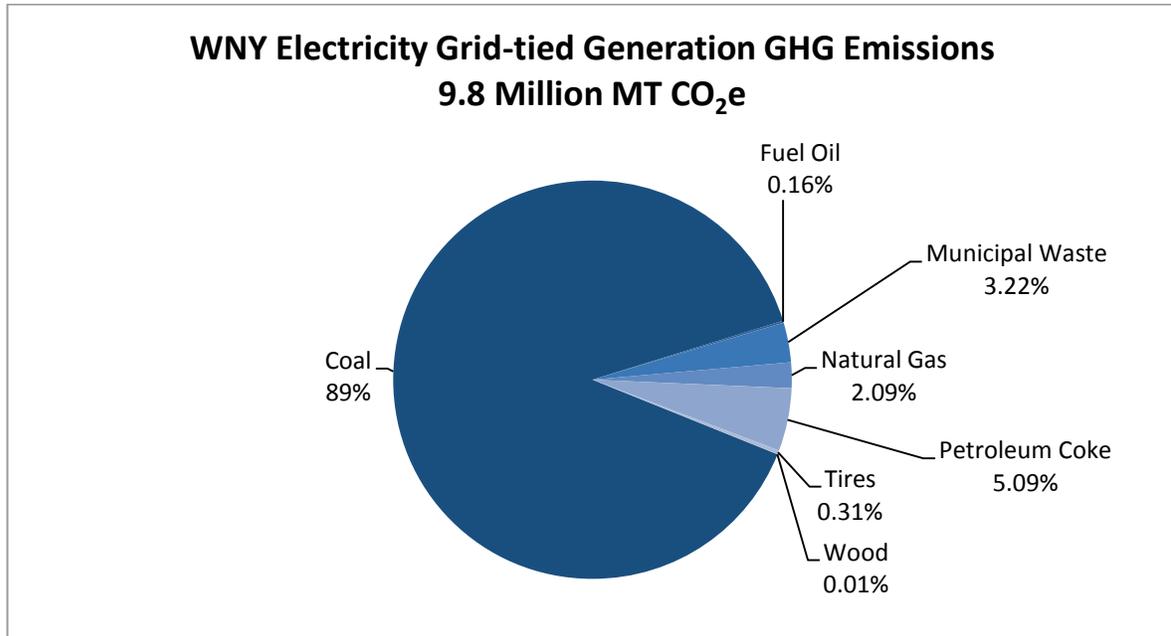


Figure 3 WNY 2010 Grid-tied Electricity Generation GHG Emissions

The WNY CGC Sustainability Plan Energy Working Group also identified an indicator of the average CO₂/MWh, specific to the 2010 energy usage type and volume for the region. This average provides a snapshot of the GHG impacts from electricity generation within the region and can be compared with the consumption based eGRID emission factors established by the EPA. While the EPA factors are calculated for application to end use consumption and do not include efficiency, transmission, or distribution losses, the comparison of the regional generation average with the eGRID average demonstrates how the region’s generating facility emissions compare with the state average. Figure 4 illustrates the average CO₂ emissions based on the different fuel types used for electricity generation in WNY in 2010, resulting in an average of 900 CO₂ lbs/ MWh.

3 WNY GHG Inventory Data Collection, Calculation Methods, and Results

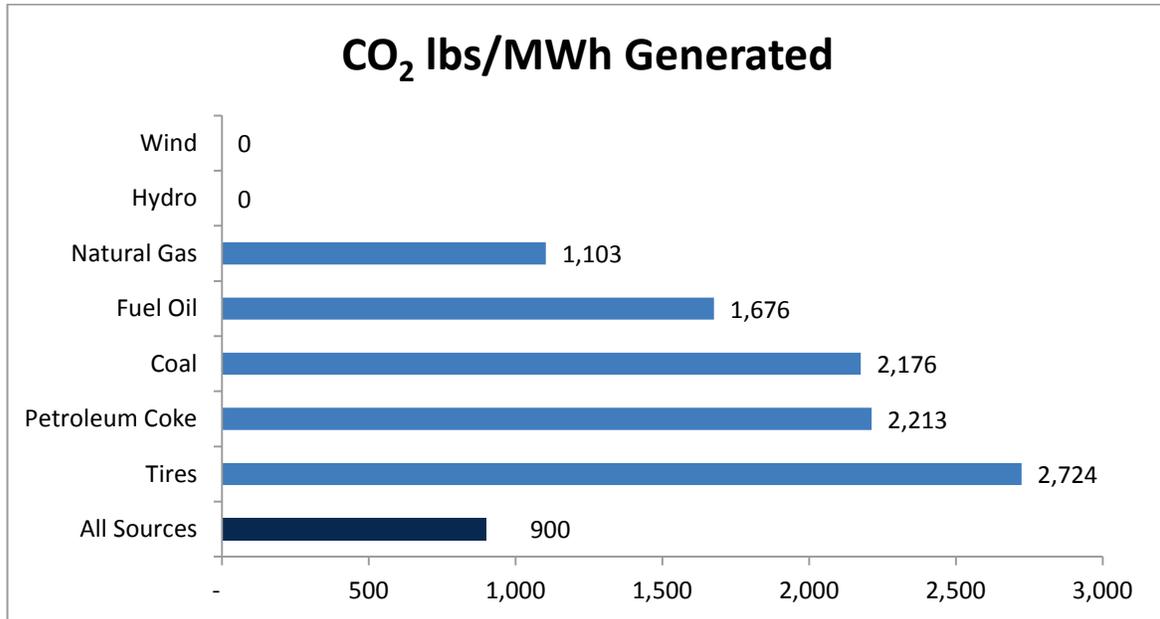


Figure 4 2010 Average Western New York CO₂ Emissions from Electricity Generation by Fuel Type

Electricity consumption in the region is based on utility sales data and categorized by residential, commercial, and industrial usage. Electricity sales data were collected from New York State Electric and Gas (NYSEG), National Grid, and five municipal electricity suppliers, by county. Electricity usage within Rochester Gas and Electric (RGE) territories was not provided but was estimated to make up about 1% of the regional total and quantified based on average usage data provided and the territory’s population (U.S. 2010 Census 2012). GHG emissions are calculated based on eGRID2012 emission factors for consumption in upstate NY (NYUP). Table 1 shows eGRID2012 CO₂ emission factors for New York State (EPA 2012).

Table 1 eGRID2012 CO₂ Emission Factors for New York State

	CO ₂ lbs/MWh
eGRID2012 NYUP (All Upstate NY)	497.92
eGRID2012 NYCW (NYC/Westchester)	610.67
eGRID2012, NYLI (Long Island)	1347.99

In the WNY region, 9.0 million MWh of electricity were consumed. Using eGRID’s emission factors, 2 million MT CO_{2e} is attributed to the region’s use of electricity. This represents 11% of the regional GHG emissions total. Sixty percent of the electricity generated in WNY was exported to other regions of the state. Figure 5 shows the percentage of electricity consumption by sector.

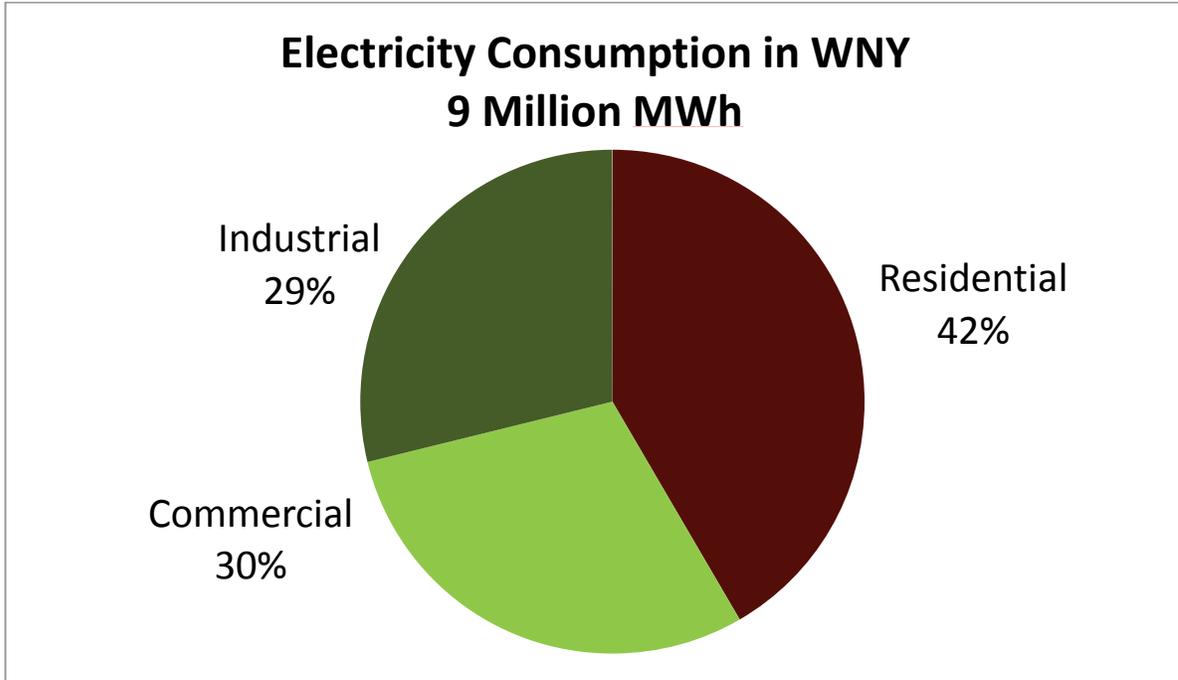


Figure 5 WNY 2010 Electricity Consumption by Sector

3.2 Direct Stationary Energy Consumption

Direct stationary energy consumption includes the use of natural gas, distillate and residual fuel oil (but not gasoline), propane and liquid natural gas (LNG), and wood or bio-mass, primarily for heating buildings and water. This energy use in residential, commercial, and industrial facilities amounted to 6.4 million MT CO_{2e}, or 36% of WNY regional GHG emissions. Figure 6 summarizes GHG emissions from direct stationary energy use in the region by type of energy (excluding direct emissions from electricity generation, which is summarized above).

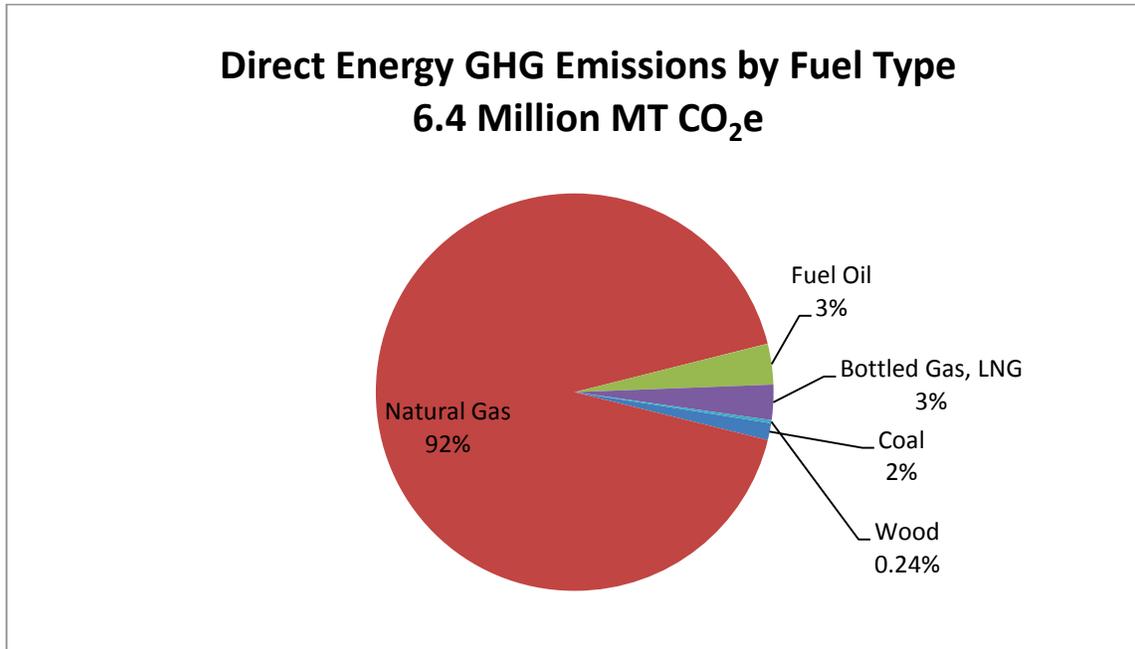


Figure 6 WNY 2010 GHG Emissions from Direct Stationary Energy Usage in WNY by Type*

*excluding electricity generation

Because accurate and complete Tier II Direct energy use data are not available for the region, direct consumption of stationary fuels are calculated using a Tier I, or “top down approach, with energy data collected from 2010 state-wide fuel use data from the EIA State Energy Data System (SEDS)(USEIA 2012) and 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. While this method provides consistency between the regions and best represents the total regional energy use for 2010, it may not accurately represent actual energy usage from specific or individual residential, commercial, and industrial sources in the region.

Residential energy use is allocated using 2010 heating degree days (HDD), the % of household energy use by type as defined by the three-year average of the American Community Survey (ACS), and the number and size of houses as reported in the 2010 U.S. Census) (U.S. Census 2012). The three-year average was used in WNY, instead of the five- year average recommended by the Protocol group, because it more closely matched 2010 Census data on the number of houses in the region.

Commercial energy use is allocated using 2010 HDD, the % of energy use by type as defined by the residential sector, the number of employees by business type as reported by the New York State Data Center, and the average energy per worker, per square foot space for each type of business reported by the EIA Commercial Building Energy Consumption Survey.

3 WNY GHG Inventory Data Collection, Calculation Methods, and Results

Industrial energy use is not based on an allocation method. Reported energy use is collected from NYS Department of Environmental Conservation (NYSDEC) Title V Air Quality Permitting information.(NYSDEC, 2012b) For all usage sectors, GHG Emission Factors for each fuel type are calculated using 2009 EPA GHG Mandatory Reporting Rule (MRR) emission factors and calculation methodology requirements.

3.3 Transportation

Energy consumption from the operation of vehicles and mobile sources includes a broad range of uses. All mobile sources produced 6.6 million MT CO₂e, or 37% of regional GHG emissions (see Figure 7). On-road vehicle travel represents the majority of transportation emissions, while emissions from aircraft, rail, and marine vessels represent a small percentage of this category. Off road, or non-road mobile sources such as construction equipment, landscaping equipment, and recreational vehicles (including boats and snowmobiles) are considered as well. On-road and rail sources fuel consumption was estimated and then GHG emission factors and GWP were used in accordance with the EPA’s GHG MRR (74 FR 209) to quantify GHG emissions in CO₂e. For aircraft, commercial vessels, and off-road vehicles and equipment, CO₂ emissions are estimated based on reported CO₂ data or calculated using emission modeling. CH₄ and N₂O are estimated based on a ratio to CO₂, and emissions are standardized to a CO₂e basis by multiplying the emissions by the applicable GWP.

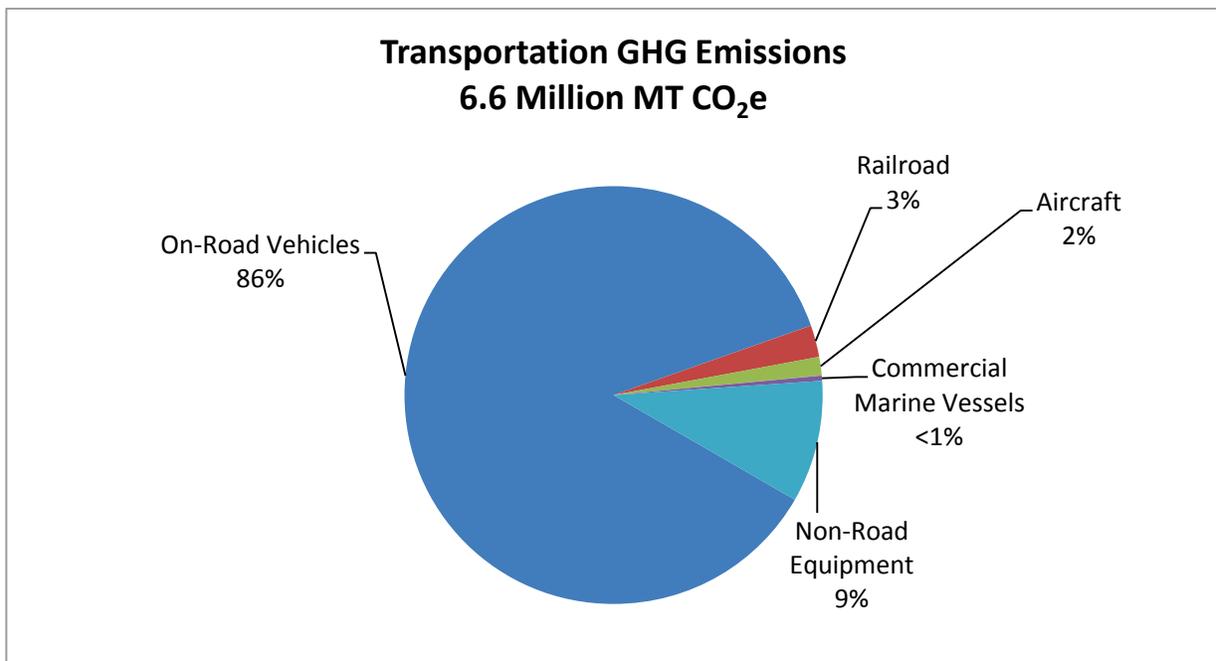


Figure 7 WNY 2010 Transportation GHG Emissions

3 WNY GHG Inventory Data Collection, Calculation Methods, and Results

3.3.1 On-Road Transportation

On-road transportation includes motor vehicle travel on roads. On-road vehicles include passenger cars, light duty trucks (e.g., mini-vans, pick-up trucks), heavy duty trucks, buses, and motorcycles. The combustion of fuel in motor vehicles generates emissions of CO₂, CH₄ and N₂O. For the purposes of this inventory, it was assumed that all vehicles use either E-10 gasoline or diesel. E-10 gasoline is a blend of gasoline that contains 10% ethanol. GHG emissions from on-road vehicles were calculated based on an estimate of all vehicle miles traveled within the geographic region, regardless of origin or destination. On-road transportation produced 5.6 million MTCO₂e, or 31% of regional GHG emissions.

On-road vehicle travel distance was based on New York State Department of Transportation (NYSDOT)-modeled VMT data that has been prepared for all New York State counties (NYSDOT 2009). The county-level VMT data are estimates of travel by all vehicles in each county. The data are based on model year 2009 and are summarized by functional roadway classes (e.g., interstates, local roads, major arteries) and area types (e.g., urban, rural). This overall VMT was then separated into VMTs by the different vehicle classes (and fuel types) by using vehicle mix data for each NYSDOT region from the NYSDOT's Environmental Science Bureau. The vehicle classes were then consolidated into more general vehicle types. Fuel consumption was calculated by multiplying the VMT of each vehicle type by an applicable fuel consumption rate (fuel economy) for the vehicle type. Fuel economy values were based on national average values reported by the U.S. Department of Transportation (USDOT) Federal Highway Administration for 2010 (USDOT 2010).

In order to estimate annual GHG emissions, annual E-10 gasoline and diesel fuel consumption for each vehicle type was multiplied by emission factors for CO₂, CH₄ and N₂O for each fuel type listed in federal regulations for mandatory reporting for GHGs (74 *FR* 209). The emissions of each individual GHG were standardized to a CO₂e basis by multiplying the emissions by the applicable GWP as listed in 40 CFR 98.

3.3.2 Air Transportation

Air transportation includes airplanes and helicopters that operate from airports. (Very small airfields were not included in this inventory.) The combustion of fuel in aircraft generates emissions of CO₂, CH₄ and N₂O. For the purposes of this inventory, it was assumed that all aircraft use kerosene-type jet fuel. Air transportation produced 0.1 million MTCO₂e, or less than 1% of regional GHG emissions.

The calculation of fuel consumption and CO₂ emissions from aircraft at each airport in the region was completed using the Emission and Dispersion Modeling System (EDMS) Version 5.1.3. EDMS is a combined emissions and dispersion model used for assessing air quality at civilian airports and military air bases (EDMS 2011). The model was developed by the Federal Aviation Administration (FAA) in cooperation with the United States Air Force (USAF). The model includes a database of fuel use rates and CO₂ emission rates of a wide range of spe-

3 WNY GHG Inventory Data Collection, Calculation Methods, and Results

cific aircraft types. The emissions and fuel use are calculated for each individual aircraft operation at or near the airport for both takeoff (taxi out, takeoff, climb out) and landing (approach, taxi in). An EDMS run was completed for each airport in the region. The outputs from each run included overall annual fuel consumption and CO₂ emissions for aircraft operations (i.e., takeoffs/ landings) for the airport.

Aircraft emission data is difficult to quantify and allocate, since so much of these emissions take place beyond the geographic regional boundaries. Members of the NYGHG Protocol Group had produced Aircraft emission estimates for their regions using a variety of methods, and there was no consensus how to determine the functional boundaries. As such, it was decided that aircraft emissions would be reported in the GHG inventory, but not included in the “Roll Up” total to be reported to NYSERDA.

For this analysis, the functional boundaries has been defined as recommended by the FAA for aircraft operations. While total emissions have been reported to NYSERDA without these emissions, they have been included in the “Rolled up” totals discussed throughout the WNY GHG Inventory and Sustainability Plan, because the WNY regional planning team determined this was appropriate for the WNY GHG Inventory.

3.3.3 Commercial Marine

Commercial marine transportation includes large commercial vessels with operational activities in waterways in each county in the region. The combustion of fuel in marine vessels generates emissions of CO₂, CH₄ and N₂O. For the purposes of this inventory, it was assumed that commercial marine vessels use residual fuel oil or diesel. The CO₂ emissions were calculated examining the emissions of oxides of nitrogen (NO_x) and sulfur dioxide (SO₂) from commercial vessels as reported for each county in EPA’s 2008 National Emission Inventory (NEI)(EPA 2008). CO₂ emissions were estimated using a ratio of CO₂ emissions to SO₂ emissions for each fuel type. In order to estimate annual CH₄ and N₂O emissions, fuel consumption for commercial marine vessels was multiplied by emission factors for CH₄ and N₂O for the applicable fuel type as listed in federal regulations for mandatory reporting for GHGs (40 CFR 98). Commercial marine transportation produced 0.04 million MTCO₂e, or less than 0.5% of regional GHG emissions.

3.3.4 Rail

Similar to the on road analysis, the functional boundaries of Rail transportation data for the region are limited to the geographic boundaries of the region, and therefore the GHG emissions represent the railroads and rail traffic that occurs within each county of the region. The combustion of fuel in railroad locomotive engines generates emissions of CO₂, CH₄ and N₂O. For the purposes of this inventory, it was assumed that railroad engines use primarily diesel, with the exception of the City of Buffalo subway, which uses electricity. The primary source of fuel consumption data for railroad systems was a 2002 New York State Locomo-

3 WNY GHG Inventory Data Collection, Calculation Methods, and Results

tive Survey conducted by NYSERDA (NYSERDA 2007). The survey includes county-level fuel consumption estimates for large long-distance railroad systems and system-wide fuel consumption estimates for smaller railroad systems. As needed, fuel consumption was separated into individual counties by reviewing NYSDOT railroad system maps (NYSDOT 2011) and assuming equal railroad use over the lines. Rail transportation produced 0.2 million MTCO₂e, or 1% of regional GHG emissions.

3.3.5 Off-Road Equipment and Vehicles

Off-road mobile transportation includes mobile agricultural, commercial, construction, mining, industrial, lawn/garden, logging, marine pleasure craft, and/or recreational equipment. The combustion of fuel in mobile off-road equipment generates emissions of CO₂, CH₄ and N₂O. For the purposes of this inventory, it was assumed that all equipment uses either gasoline, diesel, compressed natural gas (CNG), or liquefied petroleum gas (LPG) (LPG is often in the form of propane). Off-road activities produced 0.7 million MTCO₂e, or 3.7% of regional GHG emissions.

NYSDEC provided estimates of CO₂ emissions for all off-road mobile equipment categories for each county, based on output from NONROAD model runs conducted by NYSDEC using 2007 data and the 2005 version of NONROAD for state-wide air quality inventory (NYSDEC 2012c). NONROAD is an EPA emission model used to calculate past, present, and future emission inventories for all off-road mobile equipment categories except commercial marine, locomotives, and aircraft (EPA 2005). In order to estimate annual CH₄ and N₂O emissions, fuel consumption for commercial marine vessels was multiplied by emission factors for CH₄ and N₂O for the applicable fuel type as listed in federal regulations for mandatory reporting for GHGs (40 CFR 98).

3.4 Industrial Process Sources

Emissions resulting from industrial processes or fugitive system emissions are considered separately from building and facility emissions. These emissions include emissions from industries such as metal processing and pulp and paper production as well as the fugitive refrigerants and lubricants SF₆, HCFC, and CFC. Industrial process emissions are limited to the emissions from large process sources and reported as required by the EPA MMR, which is available from the EPA's Greenhouse Gas Reporting Program (GHGRP) (EPA 2012c). As determined by the Protocol Group, smaller sources are not included. The sources that are reported in WNY are the iron, steel, and ferroalloy industries, which produce 0.25 million MT CO₂e, or 1.4% of regional emissions.

Estimates of fugitive emissions of ozone-depleting substances (or ozone-depleting replacements) such as HCFCs and CFCs were calculated using the EPA 2009 Draft Guidance method (EPA 2010). These emissions are estimated from the national per/capita emissions for all WNY counties, based on county population. This covers fugitive emissions from lubricant uses and heating and cooling

3 WNY GHG Inventory Data Collection, Calculation Methods, and Results

equipment, including building and mobile refrigeration uses. These emissions total 0.32 million MT CO₂e, or 1.8% of regional emissions.

SF₆ emissions are estimated by apportion the 2010 national SF₆ emission inventory total for the state (EPA 2012c) on a county-based ratio of EIA-reported total state electricity consumption (USEIA 2012) to electricity consumption in each county; 0.03 million MT CO₂e are attributed to SF₆ emissions, which is less than 1% of regional emissions.

3.5 Energy Transmission Losses

GHG emissions are also attributed to losses in energy resulting from transmission, either through the loss of power through the generation of heat by electricity or from direct emission losses of natural gas. To estimate electricity transmission losses, the method recommended by EPA's eGRID is used (USEPA 2012s): the average eastern grid loss rate of 5.82% is applied to regional electricity consumption; 0.12 million MT CO₂e is estimated to result from the electricity transmission losses, which is less than 1% of regional emissions.

Losses from natural gas systems represent a larger percentage of regional emissions than electricity losses. Natural gas is primarily methane, which has a GWP 21 times that of CO₂. In addition, natural gas is the most used fuel in WNY. The Protocol Group determined that emissions will be estimated using the statewide average of 1.8% as documented by National Grid in 2010 PSC Reporting. When considering all natural gas used for residential, commercial, and industrial facilities and for electricity generation, 0.85 million MT of CO₂e result from natural gas transmission losses, or 5% of GHG emissions in the WNY region.

3.6 Solid Waste and Wastewater Management

Unlike energy use emissions, which are mostly CO₂, emissions from waste and wastewater management consist primarily of CH₄ and N₂O, resulting from the breakdown of organic materials. Most waste-related methane emissions are controlled by methane capture for energy production or flaring. GHG emissions are attributed to the region based on the amount of waste generated during 2010. Waste and wastewater produce only a small amount of GHG emissions in our region (1.8% and 0.8%, respectively).

Waste emissions were estimated in two different ways for the GHG Inventory. Direct emissions from Waste facilities, or Scope 1 emissions, have been reported but are not included in the roll up of total regional emissions. Most landfill methane, more than 70%, is captured and used to generate electricity in the region's five landfills or the single waste-to-energy facility in the region, reducing the climate impacts of the methane by preventing its release into the atmosphere and replacing other GHG-emitting fuels used for electricity generation. Because of the high GWP of methane emissions, landfills in WNY are considered large GHG emitters, in accordance with the EPA MRR, and therefore GHG emission reporting is available from the GHGRP (EPA 2012c). Total emissions as reported for all waste facilities in 2010 EPA MRR GHG reporting data, except for the Allegany

3 WNY GHG Inventory Data Collection, Calculation Methods, and Results

County landfill, which did not report. Emissions are calculated based on average per waste tonnage at the Hyland landfill, also in Allegany. The total emissions from waste facilities in 2010 are 0.77 million MT CO₂e.

The Protocol Group determined that it is necessary to allocate waste-related emissions based on waste generation, instead of waste received data from facilities. Therefore, an indirect, or Scope 3, estimation of methane emissions is calculated, using annual regional waste generation and a First-Order Decay (FOD) Model to estimate all emissions that would result from the waste generated. Waste generation data were obtained for 2010 from the NYSDEC and compiled by NYSERDA for the Protocol Group to provide this allocation (NYSERDA 2012), and emissions were estimated using the California Air Resource Board (CARB) FOD Model (CARB 2011) and assuming an average methane capture of 75% (from flaring or energy recovery).

Wastewater emissions are calculated using the EPA State Inventory Tool, Wastewater module, using NYS defaults (EPA 2012d) and the 2010 population from the 2010 U.S. Census (U.S. Census 2012). The total emissions estimated from wastewater processing in 2010 are 0.14 million MT CO₂e.

3.7 Agriculture

The three major agricultural sources of GHGs are emissions of N₂O from soils, which are the result of applying nitrogen fertilizers; emissions of CH₄ and N₂O from manure management; and CH₄ emissions from livestock digesting their feed, known as *enteric fermentation*. The CH₄ used to estimate agricultural GHGs are described in the EPA's Draft Regional Greenhouse Gas Inventory Guidance (EPA 2010). The CO₂e of these CH₄ emissions are calculated by multiplying the amount of CH₄ times its global warming factor of 21 (40 CFR 98). Similarly, CO₂ equivalents of N₂O emissions are calculated by multiplying the amount of N₂O times its global warming factor of 310 (40 CFR 98). Two percent of total regional GHG emissions are from agricultural Sources.

3.7.1 N₂O Emissions from Agricultural Soils

The EPA method multiplies the estimated total amount of inorganic and organic fertilizer applied to farmland in the region by a factor of 1%, which is the amount of N₂O that is given off per unit of nitrogen in the fertilizers. The amount of nitrogen applied in inorganic fertilizer was estimated by the EPA's estimate of fertilizer purchased in New York State (EPA 2010) and assumes that virtually all fertilizer purchased in the state is applied to cropland. An average amount of fertilizer per acre of cropland was calculated by dividing the total fertilizer purchased by the total cropland in the state (USDA 2009). That average was multiplied by the acres of cropland in each county of the region, according to the 2007 Census of Agriculture (USDA 2009). The organic fertilizer applied was assumed to be limited to bio-solids from New York State facilities approved for land application (NYSDEC 2012) and was assumed to have a nitrogen content of 5% (NCSU n.d.; Kelley et.al. 1984). Although manures are used as organic fertilizers, EPA guidance accounts for GHG emissions from manure in separate calculations. The total

3 WNY GHG Inventory Data Collection, Calculation Methods, and Results

emissions estimated from the application of fertilizer in the region in were 0.025 million MT CO₂e.

3.7.2 Manure Management

The manure of cattle, swine, poultry, sheep, goats, and horses generates emissions of both CH₄ and N₂O. Estimated CH₄ emissions are based on the number of each type of farm animal and a manure management factor for each animal type. The manure management factor varies with the typical weight (or mass) of the animal, the amount of volatile solids typically contained in that animal's manure, and the quantity of CH₄ that can be produced from the volatile solids of that animal's manure. Estimated N₂O emissions are based on the number and typical mass of each type of animal, the amount of N excreted by each animal type, and an emission factor based on how the manure is stored before applying to fields. Data from 2007 from the USDA is the most recent data available for animal populations in the region (USDA 2009). The total emissions estimated from manure management in the region are 0.06 million MT CO₂e.

3.7.3 Enteric Fermentation

Agricultural animals, especially ruminants (i.e., cattle), generate CH₄ through the digestion of feed through a process of fermentation in their digestive tracts. The CH₄ produced by enteric fermentation is estimated based on the population of agricultural animals—provided by the USDA (USDA 2009)—multiplied by an emission factor for each animal type. The total emissions estimated from enteric fermentation in the region are 0.32 million MT CO₂e.

3.8 Forestry

Forests in rural areas and even in some urban areas can represent a major carbon sink, as the vegetation absorbs CO₂ and stores the carbon within its fibers. The release of this stored carbon through removal resulting from harvest or development results in the generation of emissions, from the burning or decay of the materials, and also from the loss of the regular intake of CO₂ from that vegetation. While this source of emissions and sinks is a complex and difficult sector to estimate accurately, the GHG inventory provides an assessment of current carbon sink values of existing rural and urban forests within the region. Research into the amount of carbon stored in trees and forests has been used to estimate the total CO₂e stored in the region's forests and also the annual amount of GHG emissions absorbed by urban trees. In addition, urban trees can provide an important carbon sink in the region.

3.8.1 Carbon Sequestration by Forests

Forests uptake CO₂ through photosynthesis and store the carbon in the branches, stems and roots. The amount of CO₂ stored by forests is calculated by multiplying the acres of each type of forest in the region (defined by the dominant species or group of species) (USFS 2010) times a factor representing the quantity of carbon stored per acre of each type of forest (called the carbon stock factor) (NCASI 2012). The carbon stock factor depends on the species of trees and the typical quantities of woody material of those forest types and can vary over time and

3 WNY GHG Inventory Data Collection, Calculation Methods, and Results

from one area to another. The carbon stock factor is determined for each county and is updated frequently (every few years) as conditions vary. While forests are responsible for large annual sinks, this is not a data point that is easily estimated, or even logically applicable to the discussion of man-made carbon covered by this inventory, although, removing a forest for development can have the impact of releasing the stored carbon in the existing forest. Since this change is difficult to track, and more difficult to assess accurately, the region's total carbon storage has been estimated to provide information for discussion about the value of this resource rather than to provide a questionable annual impact. It is estimated that 306 million MT CO₂e is sequestered in WNY regional forests.

3.8.2 Urban Trees

Urban trees uptake CO₂ as they mature and can be a significant sink of CO₂ at the regional level. Since urban trees are not widely diverse or complex, compared with forest ecosystems, they provide an easier point of quantification than forest eco-systems, based on an average age, type, and density of tree cover. The amount of CO₂ sequestered by urban trees can be estimated as a function of the size of urban areas and the percentage of that area with tree cover (data provided by Greenfield 2012). The EPA's national average net sequestration rate for urban trees of 222.80 metric tons of CO₂ per square kilometer was used for this inventory (EPA 2010). While this method provides an annual number, it is also included in this inventory not to provide part of the total impact quantification but for discussion, information, and comparison. Urban trees sequester 0.3 million MT CO₂e of GHG emissions annually in WNY.

4

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A

**WNY GHG Inventory Reporting
Template**

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.xls".

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 have 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 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. It is 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 these 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 white cell is optional.

Reporting Region	Western New York
------------------	------------------

REDC Emissions Summary CO2e Roll Up Numbers (MTCDE)	
REDC in Total	17,371,093.37

Note: Due to overlapping regional data, and because county totals hide specific differences between counties, county level totals are not appropriate. County level data are available in each sector, where comparison is more useful and informative.

REDC Emissions By Source and Sector
Year: 2010

REDC / County Name: **Western New York**

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	Rollled Up?	Metric	Unit	Value
Built Environment	Residential Energy Consumption								
WNY Electricity Consumption	Electricity / Steam		849,100			Yes	Consumption	MMBTU	12,764,923
WNY Direct Residential Fuel Consumption	Natural Gas	3,294,931				Yes	Consumption	MMBTU	62,084,167
WNY Direct Residential Fuel Consumption	Propane / LPG	142,281				Yes	Consumption	MMBTU	2,250,242
WNY Direct Residential Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	123,834				Yes	Consumption	MMBTU	1,668,724
WNY Direct Residential Fuel Consumption	Wood	11,367			540118.322	Yes	Consumption	MMBTU	5,758,191
	Commercial Energy Consumption								
WNY Electricity Consumption	Electricity / Steam		603,564			Yes	Consumption	MMBTU	9,073,653
WNY Commercial Direct Fuel Consumption	Natural Gas	2,234,774				Yes	Consumption	MMBTU	42,108,350
WNY Commercial Direct Fuel Consumption	Propane / LPG	40,209				Yes	Consumption	MMBTU	635,928
WNY Commercial Direct Fuel Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	86,370				Yes	Consumption	MMBTU	1,163,875
WNY Commercial Direct Fuel Consumption	Residual Fuel Oil (#4 and #6)	-				Yes	Consumption	MMBTU	-
WNY Commercial Direct Fuel Consumption	Coal	870				Yes	Consumption	MMBTU	8,461
WNY Commercial Direct Fuel Consumption	Wood	2,704			128502.075	Yes	Consumption	MMBTU	1,369,958
	Industrial Energy Consumption								
WNY Electricity Consumption	Electricity / Steam		588,735			Yes	Consumption	MMBTU	8,850,729
WNY Industrial Title V Consumption	Natural Gas	363,856				Yes	Consumption	MMBTU	6,855,891
WNY Industrial Title V Consumption	Propane / LPG	352				Yes	Consumption	MMBTU	5,570
WNY Industrial Title V Consumption	Distillate Fuel Oil (#1, #2, Kerosene)	486				Yes	Consumption	MMBTU	6,558
WNY Industrial Title V Consumption	Residual Fuel Oil (#4 and #6)	1,383				Yes	Consumption	MMBTU	18,360
WNY Industrial Title V Consumption	Coal	87,443				Yes	Consumption	MMBTU	928,986
WNY Industrial Title V Consumption	Wood	1,430			67962.9776	Yes	Consumption	MMBTU	724,552
	Energy Generation and Supply								
WNY Elec Generation GHG Analysis	Coal	8,752,950				No	Consumption	MMBTU	91,058,962
WNY Elec Generation GHG Analysis	Natural Gas	205,268				No	Consumption	MMBTU	3,867,725
WNY Elec Generation GHG Analysis	Distillate Fuel Oil (#1, #2 and #4)	15,843				No	Consumption	MMBTU	213,496
WNY Elec Generation GHG Analysis	Residual Fuel Oil (#4 and #6)	-				No	Consumption	MMBTU	-
WNY Elec Generation GHG Analysis	Wood / Biomass	1,360			64628.2	No	Consumption	MMBTU	689,000
WNY Elec Generation GHG Analysis	MSW	317,075			519310.772	No	MSW Combusted	MMBTU	10,158,733
WNY Elec Generation GHG Analysis	Other	531,005							5,222,374
WNY Electricity Consumption	Electricity T/D Losses		118,809			Yes	Losses	MMBTU	1,786,118
WNY Elec Generation GHG Analysis and WNY Direct Fuel Consumption	Natural Gas T/D Losses	854,825				Yes	Losses	MMBTU	
WNY Electricity Consumption	Use of SF6 in the Utility Industry	27,326				Yes	Consumption	MMBTU	
	Industrial Processes								
Not Reported	Cement Production					Yes			
WNY Industrial Sources	Iron and Steel Production	30,527				Yes			
WNY Industrial Sources	Ferroalloy Production	215,035				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			
Not Reported	Glass Production					Yes			
Not Reported	Chemical Manufacturing					Yes			
	Product Use (Ozone Depleting Substances)								
WNY Industrial Sources	All Refrigerants- except SF6	320,462				Yes			

DRAFT Reporting Template CGC. Emissions in MTCDE						Related GHG Metrics / Activity Data			
		Scope 1	Scope 2	Scope 3	Biogenic	Rolled Up?	Metric	Unit	Value
Transportation Energy	On-road								
WNY Emission Summary - Onroad	Motor Gasoline (E-10)	4,606,263			334,311	Yes	Consumption	MMBTU	70,246,453
WNY Emission Summary - Onroad	Diesel	1,019,081				Yes	Consumption	MMBTU	13,732,581
Not Reported	Ethanol (E-85)					No	Consumption	MMBTU	
Not Reported	Biodiesel					No	Consumption	MMBTU	
Not Reported	Electricity Consumption					No	Consumption	MMBTU	
WNY Emission Summary - Rail	Diesel	176,640				Yes	Consumption	MMBTU	2,380,310
WNY Emission Summary - Rail	Electricity Consumption		1,745			Yes	Consumption	MMBTU	26,240
WNY Emission Summary -Com Marine	Marine								
WNY Emission Summary -Com Marine	Gasoline					Yes	Consumption	MMBTU	
WNY Emission Summary -Com Marine	Distillate Fuels	22,768				Yes	Consumption	MMBTU	306,814
WNY Emission Summary -Com Marine	Residual Fuels	14,586				Yes	Consumption	MMBTU	193,574
WNY Emission Summary-Aircraft	All Fuels (Jet and Aviation Gasoline)	102,387				No	Consumption	MMBTU	1,434,669
WNY Emission Summary-Nonroad	All Fuels (Diesel and Gasoline)	670,845				Yes	Consumption	MMBTU	9,431,031
Waste Management	Solid Waste Management								
WNY Waste	Landfill Methane and Combustion	770,882		315,347	194,944,282	Yes - ONLY Scope 3	MSW+CD Generated	Tonnes	1,745,986
Not Reported	MSW incineration (non grid connected)					Yes	MSW+CD Processed	Tonnes	1,745,986
WNY Waste water	Sewage Treatment								
WNY Waste water	Central WWTPs and Septic Systems	140,000				Yes	MSW incinerated in Bounda	Tonnes	
Agriculture	Livestock								
GHG_WNY_Agriculture	Enteric Fermentation	318,167				Yes			
GHG_WNY_Agriculture	Manure management	59,707				Yes			
GHG_WNY_Agriculture	Crop Production and Soil Management								
Not Reported	Use of Fertilizer	25,269				Yes			
Not Reported	Crop Residue Incineration					No			
Land Use and Forestry									
GHG_WNY_Forest	Urban Forest Annual Reserve	294,515				No			
GHG_WNY_Forest	Forest Carbon Reserve (TOTAL)	306,053,327				No			
Grand Totals	Gross Totals	14,893,793	2,161,954	315,347	1,849,777				17,371,093
	Total with Aircraft (as reported in WNY Sustainability Plan)	14,996,180	2,161,954	315,347	1,849,777				17,473,481
	Net Totals								

Note: Red text represents text added to original template to provide additional information or clarification

Protocol Compliance Report		Adherence	
Summary of Protocol Decisions for Required Tier II Source (Green Box Sources) "Rec" - recommended, "Alt" means acceptable alternative		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(from S. Westphal, July 2012), and municipal utilities, RGE consumption estimated.
(Rec) - Utility Supplied Data, (Alt 1) - extrapolation from partial set, (Alt 2) EIA allocation based HDD and Housing Unit Size	X		As stated
(Rec) Allocated EIA SEDS residential state consumption to counties based on Home Heating Fuel, HDD, and Housing Unit Size			As stated
(Rec) Allocated EIA SEDS residential state consumption to counties based on Home Heating Fuel, HDD, and Housing Unit Size			As stated
(Rec) Allocated EIA SEDS residential state consumption to counties based on Home Heating Fuel, HDD, and Housing Unit Size			As stated
(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(from S. Westphal, July 2012), and municipal utilities, RGE consumption estimated.
(Rec) - Utility Supplied Data, (Alt 1) - extrapolation from partial set, (Alt 2) EIA allocation based on Fuel Oil Recommended method.	X		As stated
(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		As stated
(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		As stated
(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		As stated
(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		As stated
(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		As stated
(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(from S. Westphal, July 2012), and municipal utilities, RGE consumption estimated.
(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) - 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
(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.		X	Based on conversations with P Groth and J Yeinger, used national 2010 emission inventory total
(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
		X	Nothing to report
		X	As stated
		X	Added to Template, category established by EPA MRR Reporting
		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
		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		As stated

Protocol Compliance Report	
Summary of Protocol Decisions for Required Tier II Source (Green Box Sources) "Rec" - recommended, "Alt" means acceptable alternative	Adherence
(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 As stated
(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 As stated
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 As stated
Passenger and Commuter (Rec) Use direct provider electricity consumption data allocated spatially to location of routes (Alt) None identified.	X As stated: Buffalo subway line only operates in Erie County
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 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/cneaff/solar/renewables/page/mswaste/msw_report.html . All CH4 and N2O shall be reported under required Scope 1	X Not reported, no non-grid incinerators reported in DEC data. Waste to energy combustion emission included with reported Scope 1 waste methane and in Electricity generation, neither of which are included in roll up totals
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 As stated
(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 Based on conversations with P. Groth and J. Yeinger, used State Inventory Tool and regional population, allocated to county by population X As stated
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 As stated X None reported X As stated
	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 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 **Western New York**

Color Code



REQUIRED for the Roll Up Report, though some data may be zero, N/A, or considered too 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	849,100	844,971	568	3,561			
	Natural Gas	3,294,931	3,291,703	1,304	1,925			
	Propane / LPG	142,281	141,720	142	419			
	Distillate Fuel Oil (#1, #2, Kerosene)	123,834	123,419	105	310			
	Wood	11,367	-	3,870	7,497			
	Commercial Energy Consumption							
	Electricity / Steam	603,564	600,628	404	2,532			
	Natural Gas	2,234,774	2,232,585	884	1,305			
	Propane / LPG	40,209	40,051	40	118			
	Distillate Fuel Oil (#1, #2, Kerosene)	86,370	86,080	73	216			
	Residual Fuel Oil (#4 and #6)	-	-	-	-			
	Coal	870	863	2	4			
	Wood	2,704	-	921	1,784			
	Industrial Energy Consumption							
	Electricity / Steam	588,735	585,872	394	2,469			
	Natural Gas	363,856	363,499	144	213			
	Propane / LPG	352	351	0	1			
	Distillate Fuel Oil (#1, #2, Kerosene)	486	484	0	1			
	Residual Fuel Oil (#4 and #6)	1,383	1,379	1	3			
	Coal	87,443	86,767	215	461			
	Wood	1,430	-	487	943			
	Energy Generation and Supply							
	Electricity T/D Losses	118,809	118,232	79	498			
	Natural Gas T/D Losses	854,825	-	854,825	-			
	Use of SF6 in the Utility Industry	27,326	-	-	-			27,326
	Industrial Processes							
	Cement Production							
	Iron and Steel Production	30,527						
	Ferroalloy Production	215,035						
	Aluminum Production							
	Paper and Pulp							
Limestone Use								
Soda Ash Use								
Semi-Conductor Manufacturing								
Chemical Manufacturing								
Product Use (ODS Substitutes)								
All Refrigerants- except utility SF6	320,462						320,462	
Transportation Energy	On-road ALL (Total reflects subtraction of ethanol)	5,625,344	5,939,680	14,879	5,096			
	Motor Gasoline (E-10)							
	Diesel							
	Ethanol							
	Biodiesel							
	Rail							
	Diesel	176,640	176,048	443	150			
	Electricity Consumption	1,745	1,737	7	1			
	Marine							
	Gasoline							
	Distillate	22,768	22,692	57	19			
	Residual Fuel Oil	14,586	14,537	36	12			
	Off-road Mobile							
All Fuels (Diesel and Gasoline)	670,845	668,521	1,735	589				
Waste Management	Solid Waste Management							
	Landfill Methane and Combustion	770,882	291,921	469,233	9,728			
	MSW incineration (non grid connected)							
	Sewage Treatment							
Central WWTPs and Septic Systems Total reflects round	140,000		90,000	40,000				
Agriculture	Livestock							
	Enteric Fermentation	318,167		318,167				
	Manure management	59,707		49,700	10,007			
	Crop Production and Soil Management							
	Use of Fertilizer	25,269			25,269			
Crop Residue Incineration								
Grand Totals	17,826,629	15,633,740	1,808,715	115,134	-	320,462	27,326	

Note: Red text represents text added to original template to provide additional information or clarification

Electricity Consumption GHG Emissions

County	# Households ²	Population ²	MWh	MMBTU ³	CO2e (Metric Tons) ¹			
					CO2	CH4	N2O	Total
New York State⁴	7,317,755	19,378,102	144,624,000					
Western New York	577,999	1,399,677	8,994,521	30,689,304	2,031,471	1,366	8,563	2,041,399
Allegany	18,208	48,946	304,702	1,039,644	68,819	46	290	69,155
Cattaraugus	32,263	80,317	581,640	1,984,557	131,367	88	554	132,009
Chautauqua	54,244	134,905	1,109,763	3,786,512	250,647	169	1,056	251,872
Erie	383,164	919,040	5,744,816	19,601,313	1,297,504	872	5,469	1,303,845
Niagara	90,120	216,469	1,253,599	4,277,279	283,133	190	1,193	284,517

Sector	Population	MWh	MMBTU ³	CO2e (Metric Tons) ¹			
				CO2	CH4	N2O	Total
Western New York	1,399,677	8,994,521	30,689,304	2,031,471	1,366	8,563	2,041,399
Residential		3,741,185	12,764,923	844,971	568	3,561	849,100
Commercial ⁵		2,659,336	9,073,653	600,628	404	2,532	603,564
Industrial		2,594,000	8,850,729	585,872	394	2,469	588,735

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 commercial and government sectors

Grid Losses from Electricity Consumption GHG Emissions

County	MWh	MMBTU ²	CO2e (Metric Tons) ¹			
			CO2	CH4	N2O	Total
Western New York	523,481	1,786,118	118,232	79	498	118,809
Allegany	17,734	60,507	4,005	3	17	4,025
Cattaraugus	33,851	115,501	7,646	5	32	7,683
Chautauqua	64,588	220,375	14,588	10	61	14,659
Erie	334,348	1,140,796	75,515	51	318	75,884
Niagara	72,959	248,938	16,478	11	69	16,559

1. CO2e calculated based on regional electricity consumption emissions and eGRID 2012 reported Eastern Grid loss rate of 5.82%
2. 1 MWh = 3.412 MMBtu

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
Western New York	8,994,521	27,326
Allegany	304,702	926
Cattaraugus	581,640	1,767
Chautauqua	1,109,763	3,372
Erie	5,744,816	17,453
Niagara	1,253,599	3,809

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.html>

Supporting data and calculations are provided in the following E&E Excel Workbook:

File Name:

WNY Electricity Consumption10_10.xlsx

Date:

10/10/2012

Electricity Generation GHG Emissions

	Total Fuel Consumption ¹	Units	Total Fuel Consumption (MMBTU)	MWh Generated	CO ₂ e (Metric Tons) ¹				
					Non-biogenic CO ₂	CH ₄	N ₂ O	Non biogenic Total	Biogenic Total ³
New York State²				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					
Western New York: Total			111,210,290	23,854,692	9,738,191	27,385	57,926	9,823,502	583,939
Western New York: Renewable Energy				13,706,474	-	463	897	1,360	
Coal	4,382,282	short tons	91,058,962	8,800,283	8,686,750	21,035	45,165	8,752,950	-
Distillate Fuel Oil (#1, 2, or 4)	36,736	barrels	213,496	20,771	15,790	13	40	15,843	-
Landfill Gas ³	5,041,371	mcf	2,604,386	216,898	-	175	509	684	135,610
Municipal Waste ³	140,083	short tons	7,554,347	178,974	301,479	5,077	9,836	316,391	383,700
Natural Gas	3,262,446	mcf	3,867,725	409,733	205,067	81	120	205,268	-
Petroleum Coke	174,091	short tons	4,874,548	497,354	499,202	307	907	500,416	0
Tires	13,424	short tons	347,826	24,204	29,903	234	453	30,589	0
Hydro ⁴	0	0	0	13,624,496	0	0	0	0	0
Wood ³	45,118	short tons	689,000	33,092	0	463	897	1,360	64,628
Wind ⁴	0	0	0	48,886	0	0	0	0	0

Notes

- 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 Mandatory 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>
- New York State Totals from EIA New York <http://www.eia.gov/electricity/state/newyork/>
- CO₂ from Wood products, landfill gas and 56%** of municipal waste generators 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
- Renewable sources highlighted in green

GHG Emissions from Natural Gas Electricity Generation Transmission and Distribution Losses¹

	% T&D Loss	Total Natural Gas (mcf)	CH ₄ Losses in mcf	CH ₄ Losses in kg	Non biogenic Total CO ₂ e
Natural Gas T&D Losses	1.8%	3,262,446	58,724	2,630,836	25,060

Notes

- 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:

WNY Elec Generation GHG Analysis10_5.xlsx

Date:

10/5/2012

Residential Building Emissions from Stationary Combustion

	# Households ²	mmBTU ²	CO ₂ e (Metric Tons) ¹				Biogenic Total ³
			CO ₂	CH ₄	N ₂ O	Total	
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	
Western New York	578,435	71,766,589	3,557,379	5,421	10,153	3,572,954	-
Natural Gas	473,172	62,084,167	3,291,703	1,304	1,925	3,294,931	
Bottled, Tank, or LP g	20,623	2,250,242	141,720	142	419	142,281	
Fuel Oil, Kerosene, et	20,758	1,668,724	123,419	105	310	123,834	
Wood	15,787	5,758,191	-	3,870	7,497	11,367	540,118
Coal	1,826	5,265	537	1	3	541	
Allegany	18,208	2,894,933	96,554	836	1,629	99,019	
Natural Gas	9,241	1,383,304	73,343	29	43	73,415	
Bottled, Tank, or LI	1,642	201,335	12,680	13	37	12,730	
Fuel Oil, Kerosene,	1,568	139,194	10,295	9	26	10,329	
Wood	2,985	1,168,786	-	785	1,522	2,307	109,632
Coal	767	2,315	236	1	1	238	
Cattaraugus	32,263	4,664,774	178,585	1,096	2,146	181,827	
Natural Gas	16,490	2,449,367	129,865	51	76	129,993	
Bottled, Tank, or LI	3,975	483,778	30,468	30	90	30,589	
Fuel Oil, Kerosene,	2,781	244,983	18,119	15	46	18,180	
Wood	3,822	1,485,351	-	998	1,934	2,932	139,326
Coal	432	1,295	132	0	1	133	
Chautauqua	54,244	6,771,198	307,202	882	1,691	309,775	
Natural Gas	37,970	5,153,297	273,228	108	160	273,496	
Bottled, Tank, or LI	3,975	379,571	23,905	24	71	24,000	
Fuel Oil, Kerosene,	1,685	135,579	10,027	9	25	10,061	
Wood	3,105	1,102,341	-	741	1,435	2,176	103,400
Coal	150	410	42	0	0	42	
Erie	383,164	46,334,366	2,398,539	1,982	3,500	2,404,021	
Natural Gas	338,960	43,569,382	2,310,049	915	1,351	2,312,314	
Bottled, Tank, or LI	6,631	698,365	43,983	44	130	44,157	
Fuel Oil, Kerosene,	7,876	600,330	44,400	38	112	44,550	
Wood	4,358	1,465,244	-	985	1,908	2,892	137,440
Coal	404	1,046	107	0	1	107	
Niagara	90,556	11,101,318	576,499	626	1,187	578,312	
Natural Gas	70,512	9,528,818	505,218	200	295	505,713	
Bottled, Tank, or LI	4,400	487,193	30,683	31	91	30,805	
Fuel Oil, Kerosene,	6,847	548,639	40,577	35	102	40,714	
Wood	1,517	536,469	-	361	698	1,059	50,321
Coal	73	199	20	0	0	20	

Notes:

1. CO₂e calculated based on allocation of EIA 2010 Residential Energy use in New York*, using fuel type emission factors from EPA's Mandatory 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 Residential Natural Gas Use Transmission and Distribution Losses¹

	% T&D Loss	Total Natural Gas (mcf)	CH ₄ Losses in mcf	CH ₄ Losses in kg	Total CO ₂ e
Natural Gas T&D Losses	1.8%	60,393,159	1,087,077	48,701,043	463,899

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:

WNY Residential Direct Energy Sources 10_05_12.xlsx

Date:

10/5/2012

Commercial Energy Use Emissions

	CO2e (Metric Tons) ¹							Biogenic Total ³
	Workers ²	Sq Footage ²	mmBTU ¹	CO ₂	CH ₄	N ₂ O	Total	
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	
Wood³	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	
Western New York	480,346	473,434,963	45,286,573	2,359,579	1,920	3,428	2,364,927	
Natural Gas	433,997	427,356,435	42,108,350	2,232,585	884	1,305	2,234,774	
Bottled, Tank, or LP gas	16,032	15,961,816	635,928	40,051	40	118	40,209	
Fuel Oil, Kerosene, etc.	16,632	16,527,309	1,163,875	86,080	73	216	86,370	
Wood³	12,338	12,260,284	1,369,958	-	921	1,784	2,704	128,502
Coal	1,348	1,329,119	8,461	863	2	4	870	
Allegany	9,508	9,226,652	871,536	37,555	154	299	38,008	
Natural Gas	5,423	5,262,311	561,816	29,787	12	17	29,817	
Bottled, Tank, or LP gas	963	934,825	39,633	2,496	2	7	2,506	
Fuel Oil, Kerosene, etc.	920	893,008	67,307	4,978	4	13	4,995	
Wood³	1,751	1,699,632	199,901	-	134	260	395	18,751
Coal	450	436,875	2,878	294	1	1	296	
Cattaraugus	21,201	21,232,011	2,000,416	92,452	281	549	93,282	
Natural Gas	12,712	12,730,690	1,359,156	72,062	29	42	72,133	
Bottled, Tank, or LP gas	3,064	3,068,992	130,115	8,195	8	24	8,227	
Fuel Oil, Kerosene, etc.	2,144	2,147,382	161,850	11,970	10	30	12,011	
Wood³	2,947	2,951,129	347,095	-	233	452	685	32,557
Coal	333	333,818	2,199	224	1	1	226	
Chautauqua	33,707	34,535,815	3,216,318	160,100	238	447	160,786	
Natural Gas	27,629	28,308,320	2,779,040	147,345	58	86	147,489	
Bottled, Tank, or LP gas	2,484	2,544,921	99,213	6,248	6	18	6,273	
Fuel Oil, Kerosene, etc.	1,226	1,256,021	87,049	6,438	5	16	6,460	
Wood³	2,259	2,314,760	250,339	-	168	326	494	23,482
Coal	109	111,792	677	69	0	0	70	
Erie	362,801	354,409,509	34,185,542	1,801,773	1,055	1,777	1,804,605	
Natural Gas	343,287	335,346,034	32,921,059	1,745,475	691	1,021	1,747,186	
Bottled, Tank, or LP gas	6,716	6,560,637	255,765	16,108	16	48	16,172	
Fuel Oil, Kerosene, etc.	7,977	7,792,508	540,064	39,943	34	100	40,078	
Wood³	4,413	4,311,047	466,236	-	313	607	920	43,733
Coal	409	399,282	2,419	247	1	1	249	
Niagara				267,699	192	356	268,247	
Natural Gas	44,947	45,709,079	4,487,279	237,916	94	139	238,149	
Bottled, Tank, or LP gas	2,805	2,852,441	111,202	7,003	7	21	7,031	
Fuel Oil, Kerosene, etc.	4,364	4,438,390	307,605	22,750	19	57	22,827	
Wood³	967	983,715	106,388	-	71	139	210	9,979
Coal	47	47,352	287	29	0	0	29	

Notes:

1. CO2e calculated based on allocation of EIA 2010 Commercial Energy use in New York*, using fuel type emission factors from EPA's Mandatory 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 divisions 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

GHG Emissions from Commercial Natural Gas Use Transmission and Distribution Losses¹

	% T&D Loss	Total Natural Gas (mcf)	CH4 Losses in mcf	CH4 Losses in kg	Non biogenic Total CO2e
Natural Gas T&D Losses	1.8%	40,961,430	737,306	33,031,297	314,638

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:

WNY Commercial Energy Emissions 10_05_12.xlsx

Date:

10/5/2012

Industrial Energy Use Emissions

	mmBTU ²	CO ₂ e (Metric Tons) ¹				Biogenic Total ³
		CO ₂	CH ₄	N ₂ O	Total	
New York State²	172,806,620	11,206,132	18,240	37,853	11,262,224	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	
<i>Heating Oil #1</i>	1,103,236	80,812	70	205	81,087	
<i>Heating Oil #2</i>	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	
<i>Heating Oil #4</i>	1,300,971	97,625	82	242	97,949	
<i>Heating Oil #6</i>	13,264,821	996,188	836	2,467	999,491	
Coal	12,699,950	1,193,241	2,934	6,299	1,202,474	
<i>Bituminous Coal</i>	11,911,597	1,112,543	2,752	5,908	1,121,203	
<i>Anthracite Coal</i>	169,701	17,571	39	84	17,694	
<i>Coke</i>	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						
Western New York	9,493,820	541,111	1,064	2,088	544,262	67,963
Natural Gas	6,855,891	363,499	144	213	363,856	
LPG	5,570	351	0	1	352	
Distillate Fuel Oil (#1, #2, Kerosen)	6,558	484	0	1	486	
<i>Heating Oil #1</i>	893	65	0	0	66	
<i>Heating Oil #2</i>	5,665	419	0	1	420	
Residual Fuel Oil (#4 and #6)	18,360	1,379	1	3	1,383	
<i>Heating Oil #4</i>	-	-	-	-	-	
<i>Heating Oil #6</i>	18,360	1,379	1	3	1,383	
Coal	928,986	86,767	215	461	87,443	
<i>Bituminous Coal</i>	928,986	86,767	215	461	87,443	
<i>Anthracite Coal</i>	-	-	-	-	-	
<i>Coke</i>	-	-	-	-	-	
Wood ³	724,552	-	487	943	1,430	67,963
MSW	-	-	-	-	-	
Solid Other						
Liquid Other						
Allegany	355,860	18,868	7	11	18,886	
Natural Gas	355,860	18,868	7	11	18,886	
LPG	-	-	-	-	-	
Distillate Fuel Oil (#1, #2, Kerosen)	-	-	-	-	-	
<i>Heating Oil #1</i>	-	-	-	-	-	
<i>Heating Oil #2</i>	-	-	-	-	-	
Residual Fuel Oil (#4 and #6)	-	-	-	-	-	
<i>Heating Oil #4</i>	-	-	-	-	-	
<i>Heating Oil #6</i>	-	-	-	-	-	
Coal	-	-	-	-	-	
<i>Bituminous Coal</i>	-	-	-	-	-	
<i>Anthracite Coal</i>	-	-	-	-	-	
<i>Coke</i>	-	-	-	-	-	
Wood ³	-	-	-	-	-	
MSW	-	-	-	-	-	
Solid Other						
Liquid Other						

Industrial Energy Use Emissions

	CO2e (Metric Tons) ¹					Biogenic Total ³
	mmBTU ²	CO ₂	CH ₄	N ₂ O	Total	
Cattaraugus	-	-	-	-	-	
Natural Gas	-	-	-	-	-	
LPG	-	-	-	-	-	
Distillate Fuel Oil (#1, #2, Kerosen	-	-	-	-	-	
<i>Heating Oil #1</i>	-	-	-	-	-	
<i>Heating Oil #2</i>	-	-	-	-	-	
Residual Fuel Oil (#4 and #6)	-	-	-	-	-	
<i>Heating Oil #4</i>	-	-	-	-	-	
<i>Heating Oil #6</i>	-	-	-	-	-	
Coal	-	-	-	-	-	
<i>Bituminous Coal</i>	-	-	-	-	-	
<i>Anthracite Coal</i>	-	-	-	-	-	
Coke	-	-	-	-	-	
Wood ³	-	-	-	-	-	
MSW	-	-	-	-	-	
Solid Other	-	-	-	-	-	
Liquid Other	-	-	-	-	-	
Chautauqua	666,999	35,364	14	21	35,399	
Natural Gas	666,999	35,364	14	21	35,399	
LPG	-	-	-	-	-	
Distillate Fuel Oil (#1, #2, Kerosen	-	-	-	-	-	
<i>Heating Oil #1</i>	-	-	-	-	-	
<i>Heating Oil #2</i>	-	-	-	-	-	
Residual Fuel Oil (#4 and #6)	-	-	-	-	-	
<i>Heating Oil #4</i>	-	-	-	-	-	
<i>Heating Oil #6</i>	-	-	-	-	-	
Coal	-	-	-	-	-	
<i>Bituminous Coal</i>	-	-	-	-	-	
<i>Anthracite Coal</i>	-	-	-	-	-	
Coke	-	-	-	-	-	
Wood ³	-	-	-	-	-	
MSW	-	-	-	-	-	
Solid Other	-	-	-	-	-	
Liquid Other	-	-	-	-	-	
Erie	5,111,892	272,022	109	166	272,298	
Natural Gas	5,064,501	268,520	106	157	268,783	
LPG	4,033	254	0	1	255	
Distillate Fuel Oil (#1, #2, Kerosen	3,319	245	0	1	246	
<i>Heating Oil #1</i>	-	-	-	-	-	
<i>Heating Oil #2</i>	3,319	245	0	1	246	
Residual Fuel Oil (#4 and #6)	18,360	1,379	1	3	1,383	
<i>Heating Oil #4</i>	-	-	-	-	-	
<i>Heating Oil #6</i>	18,360	1,379	1	3	1,383	
Coal	-	-	-	-	-	
<i>Bituminous Coal</i>	-	-	-	-	-	
<i>Anthracite Coal</i>	-	-	-	-	-	
Coke	-	-	-	-	-	
Wood ³	-	-	-	-	-	
MSW	-	-	-	-	-	
Solid Other	-	-	-	-	-	
Liquid Other	-	-	-	-	-	

Industrial Energy Use Emissions

	mmBTU ²	CO ₂ e (Metric Tons) ¹				Biogenic Total ³
		CO ₂	CH ₄	N ₂ O	Total	
Niagara	3,359,069	214,857	933	1,890	217,680	
Natural Gas	768,531	40,748	16	24	40,787	
LPG	1,537	97	0	0	97	
Distillate Fuel Oil (#1, #2, Kerosen	3,239	239	0	1	240	
<i>Heating Oil #1</i>	893	65	0	0	66	
<i>Heating Oil #2</i>	2,346	173	0	0	174	
Residual Fuel Oil (#4 and #6)	-	-	-	-	-	
<i>Heating Oil #4</i>	-	-	-	-	-	
<i>Heating Oil #6</i>	-	-	-	-	-	
Coal	928,986	86,767	215	461	87,443	
<i>Bituminous Coal</i>	928,986	86,767	215	461	87,443	
<i>Anthracite Coal</i>	-	-	-	-	-	
<i>Coke</i>	-	-	-	-	-	
Wood ³	724,552	-	487	943	1,430	67,963
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 Mandatory 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 Industrial Natural Gas Electricity Transmission and Distribution Losses

	% T&D Loss	Total Natural Gas	CH ₄ Losses	CH ₄ Losses in	Total CO ₂ e
		(mcf)	in mcf	lbs	
Natural Gas T&D Losses	1.8%	6,669,155	120,045	5,378,007	51,228

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 10-05-12.xlsx

Date:

10/5/2012

Industrial GHG Emissions

2010 Emissions reported as part of EPA MRR Program

Region	Source	Process	CO2e (Metric Tons)						Total CO2e
			Emissions by Type ¹						
			CO2	CH4	N2O	CF4	C2F6	CHF3	
New York State									
Western New York								245,562	
Allegany	None								
Cattaraugus	None								
Chautauqua	None								
Erie	TONAWANDA COKE CORP	Iron and Steel Production	X	X	X			30,527	
Niagara	GLOBE METALLURGICAL INC	Ferroalloy Production	X	X	X			215,035	

Notes:

1. Emissions from industrial uses and general combustion are not reported separately by type, only total CO2e is reported separately.

Ozone Depleting Substance Substitution Emissions

Region	Population	HFC Emissions
		Total CO2e (Metric Tons)
New York State	19,378,102	4,436,697
Western New York	1,399,677	320,462
Allegany	48,946	11,206
Cattaraugus	80,317	18,389
Chautauqua	134,905	30,887
Erie	919,040	210,418
Niagara	216,469	49,561

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:

WNY Industrial Sources.xlsx

Date:

9/19/2012

Greenhouse Gas Emission Inventory Summary
Transportation: On-Road Vehicles
Western New York Region

County	Annual Vehicle Miles Travelled ¹ (VMT)	Annual GHG Emissions ² (metric tons CO ₂ e/yr)			
		CO ₂	N ₂ O	CH ₄	Total
Allegany	473,172,759	259,213	650	222	260,085
Cattaraugus	831,628,790	427,116	1,070	366	428,553
Chautauqua	1,349,425,814	679,793	1,703	583	682,079
Erie	8,413,993,904	3,859,682	9,668	3,312	3,872,662
Niagara	1,589,000,488	713,875	1,788	613	716,276
Western NY Total	12,657,221,755	5,939,680	14,879	5,096	5,959,655

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	Western NY Annual GHG Emissions ² (metric tons CO ₂ e/yr)
Non-Biogenic	Gasoline ¹	4,606,263
	Diesel	1,019,081
	Total	5,625,344
Biogenic	Ethanol ¹	334,311
TOTAL		5,959,655

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	Western NY Annual Energy Consumption ¹ (MMBtu/yr)
Gasoline (E-10)	70,246,453
Diesel	13,732,581
Total	83,979,034

Notes:

1. Annual energy consumption is based on projected fuel consumption calculated from NYSDOT VMT data and national fleet fuel economy data.

Supporting data and calculations are provided in the following E&E Excel Workbook:

File Name:

WNY Transportation - Onroad - 2012_09_27.xlsx

Date:

9/28/2012

**GHG Emission Summary
Transportation: Railroads
Western New York Region**

County	Annual Diesel Consumption ¹ (gal/yr)	Direct GHG Emissions from Diesel Train Engine Systems ² (metric tons CO ₂ e/yr)			
		CO ₂	N ₂ O	CH ₄	Total
Allegany	304,073	3,104	8	3	3,114
Cattaraugus	790,597	8,069	20	7	8,096
Chautauqua	5,456,317	55,690	140	47	55,877
Erie	8,491,613	86,669	218	74	86,961
Niagara	2,206,022	22,516	57	19	22,592
Western NY Total	17,248,622	176,048	443	150	176,640

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 ₂ e/yr)			
		CO ₂	N ₂ O	CH ₄	Total
Allegany	-	0	0	0	0
Cattaraugus	-	0	0	0	0
Chautauqua	-	0	0	0	0
Erie	7,689,640	1,737	7	1	1,745
Niagara	-	0	0	0	0
Western NY Total	7,689,640	1,737	7	1	1,745

Notes:

1. Electrical consumption based on data for rail line use in 2010 and factor for electrical consumption of each rail car.
2. GHG emissions calculated by applying emission factors from eGrid to electrical consumption.

County	GHG Emissions from All Train Systems (metric tons CO ₂ e/yr)			
	CO ₂	N ₂ O	CH ₄	Total
Allegany	3,104	8	3	3,114
Cattaraugus	8,069	20	7	8,096
Chautauqua	55,690	140	47	55,877
Erie	88,406	225	75	88,707
Niagara	22,516	57	19	22,592
Western NY Total	177,784	450	151	178,386

Power/Fuel Type	Western NY Annual Energy Consumption ^{1,2} (MMBtu/yr)
Diesel	2,380,310
Electric	26,240
Total	2,406,549

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:

WNY Transportation - Rail - 2012_09_27.xlsx

Date:

9/28/2012

GHG Emission Summary
Transportation: Commercial Marine Vessels
Western New York Region

Fuel Type	County	Annual Fuel Consumption ¹ (gal/yr)	GHG Emissions ^{2,3} (metric tons CO ₂ e/yr)			
			CO ₂	N ₂ O	CH ₄	Total
Diesel	Allegany	-	-	-	-	-
	Cattaraugus	-	-	-	-	-
	Chautauqua	-	-	-	-	-
	Erie	2,223,288	22,692	57	19	22,768
	Niagara	-	-	-	-	-
	Western NY Total	2,223,288	22,692	57	19	22,768
Residual Fuel Oil	Allegany	-	-	-	-	-
	Cattaraugus	-	-	-	-	-
	Chautauqua	95,232	1,073	2.7	0.9	1,076
	Erie	-	-	-	-	-
	Niagara	1,195,262	13,465	33	11	13,509
	Western NY Total	1,290,494	14,537	36	12	14,586
All Fuel Types	Allegany	-	-	-	-	-
	Cattaraugus	-	-	-	-	-
	Chautauqua	95,232	1,073	2.7	0.9	1,076
	Erie	2,223,288	22,692	57	19	22,768
	Niagara	1,195,262	13,465	33	11	13,509
	Western NY Total	3,513,782	37,229	93	32	37,354

Notes:

1. Fuel consumption estimated by dividing annual CO₂ emissions by corresponding fuel heat value and emission-factor-energy.
2. CO₂ emissions calculated by multiplying EPA estimated annual SO₂ emission rate by ratio of CO₂ to SO₂ emissions for applicable fuel.
3. N₂O and CH₄ emissions estimated using using EPA emission factors and fuel consumption estimates.

Fuel Type	Western NY Annual Energy Consumption ¹ (MMBtu/yr)
Diesel	306,814
Residual Fuel Oil	193,574
Total	500,388

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:

WNY Transportation - Com Marine - 2012_09_17.xlsx

Date:

9/28/2012

**Greenhouse Gas Emission Inventory Summary
 Transportation: Aircraft
 Western New York Region**

County	Annual Jet Fuel Consumption ¹ (gal/yr)	GHG Emissions ^{2,3} (metric tons CO ₂ e/yr)			
		CO ₂	N ₂ O	CH ₄	Total
Allegany	20,374	195	0.5	0.2	196
Cattaraugus	57,178	549	1	0.5	551
Chautauqua	161,675	1,550	4	1	1,555
Erie	9,244,399	88,755	232	79	89,066
Niagara	1,143,556	10,981	29	10	11,019
Western NY Total	10,627,181	102,030	267	90	102,387

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. CO₂ 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.
3. N₂O and CH₄ emissions estimated using using EPA emission factors and jet fuel consumption estimates.

Fuel Type	Western NY Annual Energy Consumption (MMBtu/yr)
Kerosene Type Jet Fuel	1,434,669

Notes:

1. Annual energy consumption is based on projected fuel consumption as estimated using FAA's EDMS model.

Supporting data and calculations are provided in the following E&E Excel Workbook:

File Name:

WNY Transportation - Aircraft - 2012_09_27.xlsx

Date:

9/28/2012

GHG Emissions Summary
Transportation: Non-Road Equipment
Western New York Region

County	GHG Emissions ^{1,2} (metric tons CO ₂ e/yr)			
	CO ₂	N ₂ O	CH ₄	Total
Allegany	28,191	73	25	28,289
Cattaraugus	51,071	132	45	51,248
Chautauqua	96,954	252	86	97,292
Erie	383,782	995	338	385,115
Niagara	108,523	282	96	108,901
Western NY Total	668,521	1,735	589	670,845

Notes:

- CO₂ emissions based on NYSDEC runs of the NONROAD emission model for the state emission inventory for Year 2007.
- N₂O and CH₄ emissions based the use of EPA emission factors for N₂O and CH₄ based on fuel combustion. Fuel consumption estimated with reserve application of CO₂ emission factors (for fuel) to CO₂ emissions.

Fuel Type	Western NY Annual Fuel Consumption ¹		Western NY GHG Emissions ^{2,3} (metric tons CO ₂ e/yr)			
	(scf/yr)	(gal/yr)	CO ₂	N ₂ O	CH ₄	Total
CNG	119,062,320	-	6,489	4	3	6,496
Diesel	-	35,993,628	367,368	924	313	368,605
Gasoline	-	23,463,332	205,949	546	185	206,680
LPG	-	15,310,843	88,713	262	89	89,064
TOTAL	-	-	668,521	1,735	589	670,845

Notes:

- Fuel consumption estimated with reserve application of CO₂ emission factors (for fuel) to CO₂ emissions.
- CO₂ emissions based on NYSDEC runs of the NONROAD emission model for the state emission inventory for Year 2007.
- N₂O and CH₄ emissions based the use of EPA emission factors for N₂O and CH₄ based on fuel combustion.

Fuel Type	Western NY Annual Energy Consumption (MMBtu/yr)
CNG	122,396
Diesel	4,967,121
Gasoline	2,932,916
LPG	1,408,598
Total	9,431,031

Notes:

- Annual energy consumption is based on projected fuel consumption calculated from NYSDEC CO₂ emission estimates.

Supporting data and calculations are provided in the following E&E Excel Workbook:

File Name:

WNY Transportation - Nonroad - 2012_09_27.xlsx

Date:

9/28/2012

Waste Disposal Emissions

	Regional average Municipal Solid Waste (MSW) per capita (short tons)	Total MSW (Short tons) ³	CO ₂ e (Metric Tons), 2010 ^{1,2}					
			Population	Nonbiogenic CO ₂	CH ₄	N ₂ O	Total non biogenic	CO ₂ biogenic ⁴
New York State								
Western New York Direct Emissions ¹	1.25	1,745,986	1,399,677	291,921	469,233	9,728	770,882	470,160
Western New York Indirect Emissions ²		981,893	1,399,677	-	315,347	-	315,347	194,944
Allegany		32,471.8	48,946	0	10,429	0	10,429	6,447
Cattaraugus		52,375.5	80,317	0	16,821	0	16,821	10,399
Chautauqua		93,334.9	134,905	0	29,976	0	29,976	18,531
Erie		664,033.3	919,040	0	213,262	0	213,262	131,837
Niagara		139,677.2	216,469	0	44,859	0	44,859	27,731

Notes

1. Total emissions as reported for all waste facilities in 2010 EPA MRR GHG Reporting Data, except Allegany County Landfill, which did not report, and emissions are calculated based on average per waste tonnage of Hyland Landfill.
2. Indirect emissions calculated based on tons of waste generated by each county using CARB FOD Model
3. Waste data provided by NYSERDA to NYS Protocol Working Group, 20122010_DEC_Landfill_and_WTE_data.xlsx, summary of DEC reported data
4. Biogenic emissions include emissions from electric generation from landfill gas and portion of Waste-to-energy combustion (as reported in EPA MRR GHG Reporting Data or calculated using CARB Model)

Supporting data and calculations are provided in the following E&E Excel Workbook:

File Name:

WNY Waste 12_5 FOD Method.xlsx

Date:

12/5/2012

Wastewater Treatment Facility Emissions

	Wastewater volume flow (MGD) ¹	Number of Plants ¹	Population ²	CO ₂ e (Metric Tons) ²			
				CO ₂	CH ₄	N ₂ O	Total CO ₂ e ³
New York State²	3,693.65	610	19,378,102	-	1,310,000	580,000	1,900,000
Western New York²	436.91	80	1,399,677	-	90,000	40,000	140,000
Allegany ⁴	5.316	8	48,946		1,095	487	1,703
Cattaraugus ⁴	12.091	14	80,317		2,491	1,107	3,874
Chautauqua ⁴	31.880	14	134,905		6,567	2,919	10,215
Erie ⁴	284.232	33	919,040		58,550	26,022	91,077
Niagara ⁴	103.390	11	216,469		21,298	9,466	33,130

¹Descriptive Data of Municipal Wastewater Treatment Plants in New York State, NYSDEC, January 2004

²State and WNY Totals calculated using the EPA State Inventory Tool, Wastewater module, for Munciple waterwater only, using NYS defaults, 2010 population from 2010 US Census.

³State and WNY totals reported as calculated by using the EPA State Inventory Tool--may not be exact sum of other rows due to rounding.

⁴County totals calculated based on ratio of 2004 WNY wastewater volumes and EPA State Inventory Tool results for WNY. 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:

WNY Waste_water9_19.xlsx

Date:

9/19/2012

Manure Management Emissions

	Population (# of animals) ¹	Number of Animal Farms ¹	CO ₂ e (Metric Tons) ²			
			CO ₂	CH ₄	N ₂ O	Total CO ₂ e
New York State						
Western New York	251,535	6,875	49,700	10,007	59,707	
Allegany	78,361	1,155	7,059	1,361	8,420	
Cattaraugus	43,664	1,660	10,845	2,206	13,051	
Chautauqua	57,481	1,923	14,137	2,873	17,010	
Erie	44,473	1,368	10,596	2,154	12,750	
Niagara	27,556	769	7,063	1,413	8,476	

Notes

1. The animal and farm number data is from 2007 USDA Agricultural Census.

2.CO₂e 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 Greenhouse Gas Inventories .

Enteric Fermentation Emissions

	Population (# of animals) ¹	Number of Animal Farms ¹	CO ₂ e (Metric Tons) ²			
			CO ₂	CH ₄	N ₂ O	Total CO ₂ e
New York State						
Western New York	251,535	6,875	318,167	318,167		
Allegany	78,361	1,155	52,306	52,306		
Cattaraugus	43,664	1,660	67,976	67,976		
Chautauqua	57,481	1,923	88,586	88,586		
Erie	44,473	1,368	64,053	64,053		
Niagara	27,556	769	45,245	45,245		

Notes

1. The animal and farm number data is from 2007 USDA Agricultural Census.

2.CO₂e calculation is based on the animal number and the factors from 2010 USEPA Draft Regional Greenhouse Gas Inventory Guidance.

Agricultural Soils

	Cropland Harvested (acres) ¹	CO ₂ e (Metric Tons) ²			
		CO ₂	CH ₄	N ₂ O	Total CO ₂ e
New York State					
Western New York	318,167	25,269	25,269		
Allegany	52,306	3,591	3,591		
Cattaraugus	67,976	4,384	4,384		
Chautauqua	88,586	6,640	6,640		
Erie	64,053	5,057	5,057		
Niagara	45,245	5,596	5,596		

Notes

1. The cropland harvested acres data is from 2007 US Agricultural Census. Assumed most of fertilizer are used on harvested cropland.

2.CO₂e calculation is from organic fertilizer N₂O emission with data sources from NYSDEC7/23/2012 and synthetic fertilizer N₂O emission with data sources from 2007 US Agricultural Census and EPA Commercial Fertilizer Purchased (http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/dataset_commercial.cfm).

Supporting data and calculations are provided in the following E&E Excel Workbook:

File Name:

WNY_Agriculture_092012.xlsx

Date:

9/20/12

Carbon Sequestration in Forests

	Forest Land (Acres) ¹	Forest Land (km ²)	Total Carbon Sequestration (metric tons C) ²	Total Carbon Sequestration (metric tons CO ₂)
New York State				
Western New York	1,671,114	6,763	83,393,277	306,053,327
Allegany	426,702	1,727	20,949,498	76,884,656
Cattaraugus	586,287	2,373	29,923,557	109,819,455
Chautauqua	372,835	1,509	19,190,218	70,428,101
Erie	199,265	806	9,683,552	35,538,634
Niagara	86,025	348	3,646,452	13,382,481

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 CO ₂)
New York State				
Western New York	1,210	-	80,249	294,515
Allegany	14	34%	1,019	3,738
Cattaraugus	56	31%	3,801	13,949
Chautauqua	116	33%	8,556	31,401
Erie	820	30%	54,700	200,747
Niagara	205	27%	12,174	44,680

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:

WNY_Forest_092012.xlsx

Date:

9/20/12

B

Acronyms and Definitions



B Acronyms and Definitions

ACS	American Community Survey. A survey collected and reported by the U.S. Census Bureau that estimates household energy usage, size, and type.
CGC	Cleaner, Greener Community (a New York State program)
Direct Emissions	Emissions generated from the immediate action, such as the burning of fuel for heat or transportation. These are also referred to as “Scope 1” Emissions.
EDMS	Emission and Dispersion Modeling System (EDMS), Version 5.1.3. EDMS is a combined emissions and dispersion model used for assessing air quality at civilian airports and military air bases (EDMS 2011). The model was developed by the Federal Aviation Administration (FAA).
eGRID	EPA’s Emissions and Generation Resource Integrated Database, which calculates average emission factors for estimating GHG emissions from electricity consumption within defined regions. The latest emission factors were released in 2012 and used 2009 electricity data.
enteric fermentation emissions	Methane emitted when food is digested by animals.
Distilled and residual fuel oil	Fuel oil is refined to various standards and properties, with 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.
GHG	greenhouse gas. 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) <ul style="list-style-type: none"> • Methane (CH₄) • Nitrous oxide (N₂O) • Perfluorocarbons (PFCs) • Hydrofluorocarbons (HFCs) • Sulfur hexafluoride (SF₆)
GWP	Global Warming Potential. Different GHGs also have different capacities to trap heat in the atmosphere. Other emissions are converted to carbon dioxide equivalents (CO ₂ e) by using their global warming potential (GWP). For example, methane has a GWP of 21 because it has 21 times more impact than CO ₂ . In order to compare and sum the impacts of different gases, emissions are quantified in terms of CO ₂ impacts, or CO ₂ equivalents, calculated by multiplying emissions by their respective GWP.
ICLEI	International Council for Local Environmental Initiatives
Indirect Emissions	Emissions attributed to an action that does not occur at the same time or place as the action, such as electricity use or waste generation. Average emission factors are used to calcu-

B Acronyms and Definitions

	late indirect emissions because additional factors can affect the emission levels (such as what fuel is used to generate emissions, or if landfill methane is captured at the site of waste disposal). These are also referred to as “Scope 2” emissions
MTCO ₂ e	Metric tons of carbon dioxide equivalent, the standard unit for GHG emissions. Other emissions are converted to CO ₂ e by using their GWP. A metric ton is equal to 1,000 kilograms, or 2,205 pounds and is slightly heavier than the English short ton.
MMBTU	Million British thermal units (BTU), a standard unit for energy. In Roman numerals, “MM” = 1000 x 1000. All energy can be stated as MMBTUs
MRR	Mandatory Reporting Rule. EPA’s rule that defines the standards and requirements for the reporting of GHG emissions from large sources (74 FR 209).
MWh	Megawatt-hours, the standard for electrical energy supply. <ul style="list-style-type: none"> • 1 MWh = 1000 kilowatt hours (kwh) • 1 MWh also equals 3.412 MMBTU
NYS	New York State
NYSEG	NYS Electric & Gas
NYSDEC	NYS Department of Environmental Conservation
NYSDOT	NYS Department of Transportation
NYSERDA	NYS Energy Research & Development Authority
petroleum coke	(often abbreviated pet coke or petcoke) is a solid fuel, similar to coal, but derived from oil through the oil refinery process.
renewable energy	Renewable energy is defined in accordance with the NYS Renewable Energy Portfolio Standard (RPS), which includes hydroelectric power, wind power, photovoltaic (solar) power, wood, biomass, and landfill gas.
RG&E	Rochester Gas and Electric and Gas
SEDS	State Energy Data System, operated by the USEIA to collect and report state level energy use data.
U.S.	United States
USDOT	U.S .Department of Transportation
USEIA	U.S. Energy Information Administration
USEPA	U.S Environmental Protection Agency
VMT	vehicle miles traveled
WNY	Western New York

WNY CGC Tier II GHG Inventory

Attachment B: Acronyms and Definitions

ACS American Community Survey, a survey collected and reported by the US Census that estimates household energy usage, size, and type.

CGC New York's Cleaner, Greener Community Program

Direct Emissions: Emissions generated from the immediate action, such as the burning of fuel for heat or transportation. These are also referred to as "Scope 1" Emissions.

EDMS Emission and Dispersion Modeling System (EDMS), Version 5.1.3. EDMS is a combined emissions and dispersion model used for assessing air quality at civilian airports and military air bases (EDMS, 2011). The model was developed by the FAA

eGRID EPA's Emissions and Generation Resource Integrated Database, which calculates average emission factors for estimating GHG emissions from electricity consumption within defined regions. The latest emission factors were released in 2012, and used 2009 electricity data.

Enteric Fermentation Emissions: Methane emissions from food digestions in animals.

FAA Federal Aviation Administration

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. In this 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.

Petroleum coke (often abbreviated Pet coke or petcoke): is a solid fuel, similar to coal, but derived from oil through the oil refinery process.

GHG Greenhouse Gas: 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 (CO₂);
- Methane (CH₄);
- Nitrous Oxide (N₂O);
- Perfluorocarbons (PFCs);
- Hydrofluorocarbons (HFCs); and
- Sulfur Hexafluoride (SF₆)

GWP Global Warming Potential. Different GHGs also have different capacities to trap heat in the atmosphere. 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. In order to compare and sum the impacts of different gases, emissions are quantified in terms of CO₂ impacts, or CO₂ Equivalents (CO₂e) , calculated by multiplying emissions by their respective GWP.

ICLEI International Council for Local Environmental Initiatives

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 affect the emission levels (such as what fuel is used to generate emissions, or if landfill methane is captured at the site of waste disposal). These are also referred to as “Scope 2” emissions

MTCO₂e metric tons of carbon dioxide equivalent, the standard unit for GHG Emissions. Other emissions are converted to CO₂e by using their GWP. A metric ton is equal to 1000 kilograms, or 2205 pounds, and slightly bigger than the English short ton.

MMBTU Million British Thermal Units, a standard unit for energy . “MM” = 1000 x 1000 in Roman numerals. All energy can be stated as MMBTUs

MRR Mandatory Reporting Rule: US EPA’s Rule that defines the standards and requirements for the reporting of GHG emissions from large sources (74FR209).

MWh Megawatt-hours, the standard for electrical energy supply.

- 1 MWh = 1000 kilowatt hours (kwh)
- 1 MWh also equals 3.412 MMBTU

NYS New York State

NYSEG NYS Electric & Gas

NYSDEC NYS Department of Environmental Conservation

NYSDOT NYS Department of Transportation

NYSERDA NYS Energy Research & Development Authority

Petroleum coke (often abbreviated Pet coke or petcoke): is a solid fuel, similar to coal, but derived from oil through the oil refinery process.

Renewable Energy: Renewable Energy is defined in accordance with the NYS Renewable Energy Portfolio Standard (RPS), which includes Hydroelectric power, wind power, photovoltaic (solar) power, wood, biomass and landfill gas.

Rochester Electric and Gas (RGE)

SEDS State Energy Data System, operated by the USEIA to collect and report state level energy use data.

US United States

USDA US Department of Agriculture

USDOT US Department of Transportation

USEIA US Energy Information Administration

USEPA US Environmental Protection Agency

VMT Vehicle Miles Travelled

WNY Western New York

C

Emission and Conversion Factors

WNY CGC Tier II GHG Inventory
Attachment C: Emission and Conversion Factors

Emission Factors*				
Coal and Coke				
Fuel Type	mmBtu/short ton	kg CO2/mmBtu	kg CH4/mmBtu	Kg N2O/mmBtu
Bituminous	24.93	93.4	0.011	0.0016
Subbituminous	17.25	97.02	0.011	0.0016
Coke	24.8	102.04	0.011	0.0016
Lignite	14.21	96.36	0.011	0.0016
Petroleum Coke	0.143	102.41	0.003	0.0006
Natural Gas				
Fuel Type	mmBtu/scf	kg CO2/mmBtu	kg CH4/mmBtu	Kg N2O/mmBtu
Pipeline(US Weighted Ave)	0.001028	53.02	0.001	0.0001
Petroleum Products				
Fuel Type	mmBtu/gallon	kg CO2/mmBtu	kg CH4/mmBtu	Kg N2O/mmBtu
Distillate Fuel Oil No. 1	0.139	73.25	0.003	0.0006
Distillate Fuel Oil No. 2	0.138	73.96	0.003	0.0006
Distillate Fuel Oil No. 4	0.146	75.04	0.003	0.0006
Distillate Fuel Oil No. 5	0.14	72.93	0.003	0.0006
Distillate Fuel Oil No. 6	0.15	75.1	0.003	0.0006
Kerosene	0.135	75.2	0.003	0.0006
Liquefied Petroleum Gases (LPG)	0.092	62.98	0.003	0.0006

Fossil Fuel-derived fuels (solid)				
Fuel type	mmBtu/short ton	kg CO2/mmBtu	kg CH4/mmBtu	Kg N2O/mmBtu
Municipal Solid Waste	9.95	90.7	0.032	0.0042
Tires	26.87	85.97	0.032	0.0042
Biomass Fuels - Solid				
Fuel type	mmBtu/short ton	kg CO2/mmBtu	kg CH4/mmBtu	Kg N2O/mmBtu
Wood and Wood Residuals	15.38	93.8	0.032	0.0042
Biomass Fuels - Gaseous				
Fuel type	mmBtu/scf	kg CO2/mmBtu	kg CH4/mmBtu	Kg N2O/mmBtu
Biogas(Captured Methane)	0.00841	52.07	0.0032	0.00063

*Emission Factors compiled from 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>

Global Warming Potential **	
Name	100-yr Global Warming Potential
Carbon dioxide (CO2)	1
Methane (CH4)	21
Nitrous oxide (N2O)	310

**GWP values from Federal Register / Vol. 74, No. 209 / Friday, October 30, 2009 / Rules and Regulations, Table A-1, <http://epa.gov/climatechange/emissions/downloads09/GHG-MRR-FinalRule.pdf>

Other Conversions

scf= standard cubic foot= 1cf

1 metric ton

2204.62 pounds (lb)

Density of natural gas:

44.8 lbs/mcf

1 MWh =

3.412 MMBTU

Appendix F Municipal Center Mapping

New York State Defined Municipal Centers of Western New York

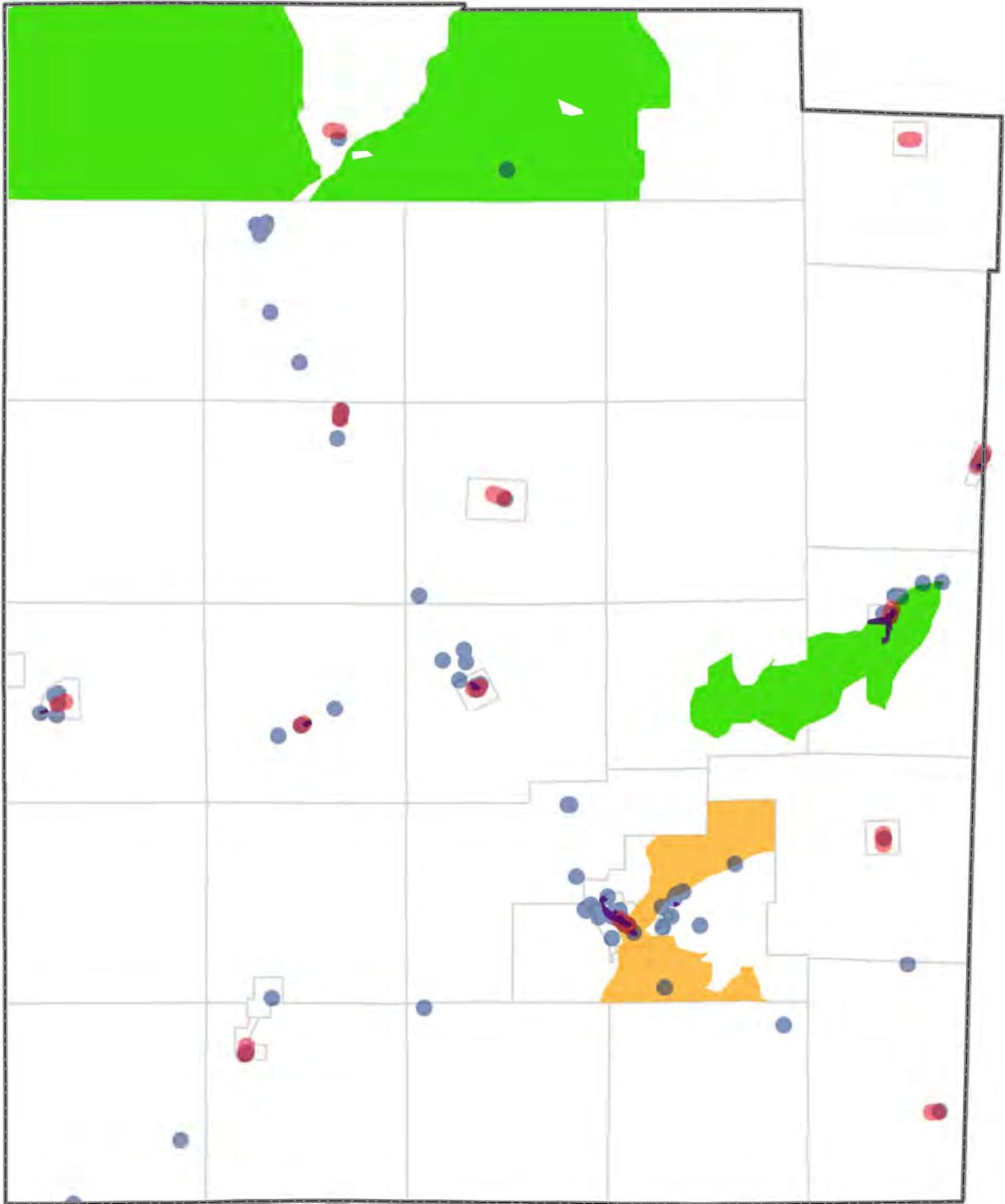
As part of the NYSERDA Clean Communities program, the Land Use & Livable Communities working group was tasked with determining municipal centers within the region which, as defined by the New York State Smart Growth Public Infrastructure Policy Act, are areas the state has targeted for economic investment. To determine these boundaries in a straightforward and justifiable manner, the working group built off of the definition of a *municipal center* employed by the New York State Smart Growth Public Infrastructure Policy Act. These *municipal centers* include, but are not limited to, the following areas, “central business districts, main streets, downtown areas, brownfield opportunity areas, downtown areas of local waterfront revitalization program areas, transit-oriented development, environmental justice areas, and hardship areas” (New York Environmental Conservation Law, Article 6, § 6-0103, 2010). Accordingly, each area within this typology was included as a *municipal center*. Areas with access to public transit were added to this set as a way of incorporating the areas of transit-oriented development stipulated in this act. Additionally, regional employment centers, as defined through a separate statistical analysis, were also included as *municipal centers* primarily due to their regional economic significance. See Appendix A, Methodology for more on this process how *municipal centers* were identified.

The series of maps as follows were developed show the complete coverage of these state-defined *municipal centers*, distinguished by type, for each of the five counties in the Western New York region. As a number of these areas overlap, a series of maps is included below to more clearly display the extent of each type of *municipal center*.

Region-wide maps were also developed to show the regional location of each of the following:

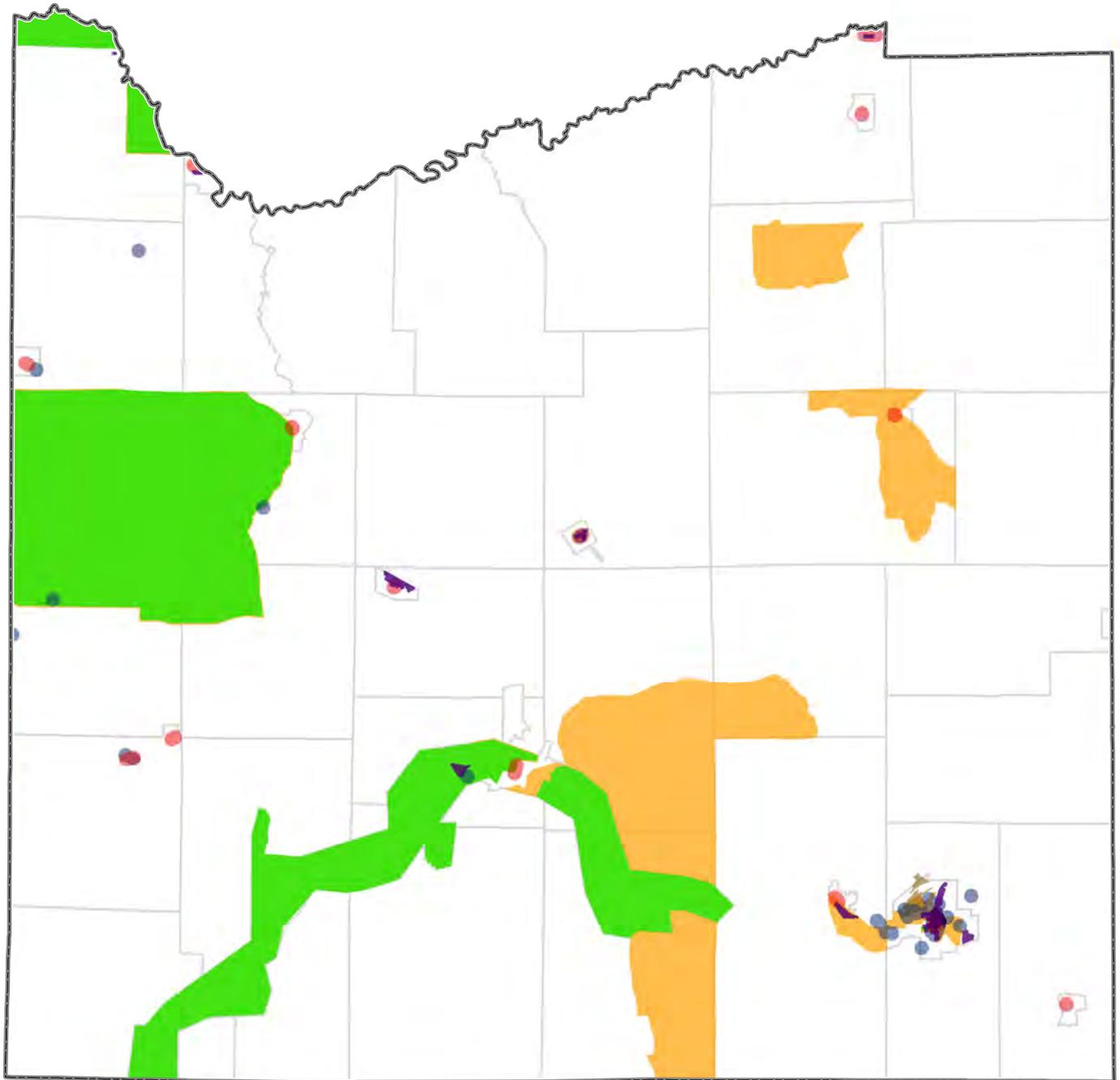
- **Brownfield Opportunity Areas and Local Waterfront Revitalization Plans**, as defined by the NYS DEC and the NYS Department of State– Offices of Communities and Waterfronts;
- **Environmental Justice Areas and Hardship Areas** as are defined by economic characteristics. Here, hardship areas are defined as census block groups which have at least 23.59% of their population living in poverty, in agreement with the definition of a low-income community put forth by the Environmental Justice and Permitting of the NYS Department of Environmental Conservation [DEC] (2003). According to the NYS DEC, Environmental Justice Areas are those block groups which meet the following criteria: (a) 51.1% or more of the urban population are members of minority groups, (b) 33.8% or more of the rural population are members of minority groups and (c) 23.59% of the total population is living below the poverty level (NYS DEC, *Environmental Justice Policy CP-29*, 2003).
- **Downtown areas, “Main Streets” and community centers**, as stated by local plans and determined by local stakeholder input of Western New York cities, towns and villages; and
- **Major employment centers and access to public transportation** (see Appendix A, Methodology).

Municipal Centers as Defined by the New York State Smart Growth Public Infrastructure Policy Act, Allegany County



-  Major Employment Centers
-  Main Streets
-  Downtowns
-  Transit Access Areas
-  Local Waterfront Revitalization Program Areas
-  Brownfield Opportunity Areas
-  Environmental Justice Areas
-  Hardship Areas

Municipal Centers as Defined by the New York State Smart Growth Public Infrastructure Policy Act, Cattaraugus County



- Major Employment Centers
- Main Streets
- Downtowns
- Transit Access Areas
- Local Waterfront Revitalization Program Areas
- Brownfield Opportunity Areas
- Environmental Justice Areas
- Hardship Areas

Municipal Centers as Defined by the New York State Smart Growth Public Infrastructure Policy Act, Chautauqua County

Major Employment Centers

Main Streets

Downtowns

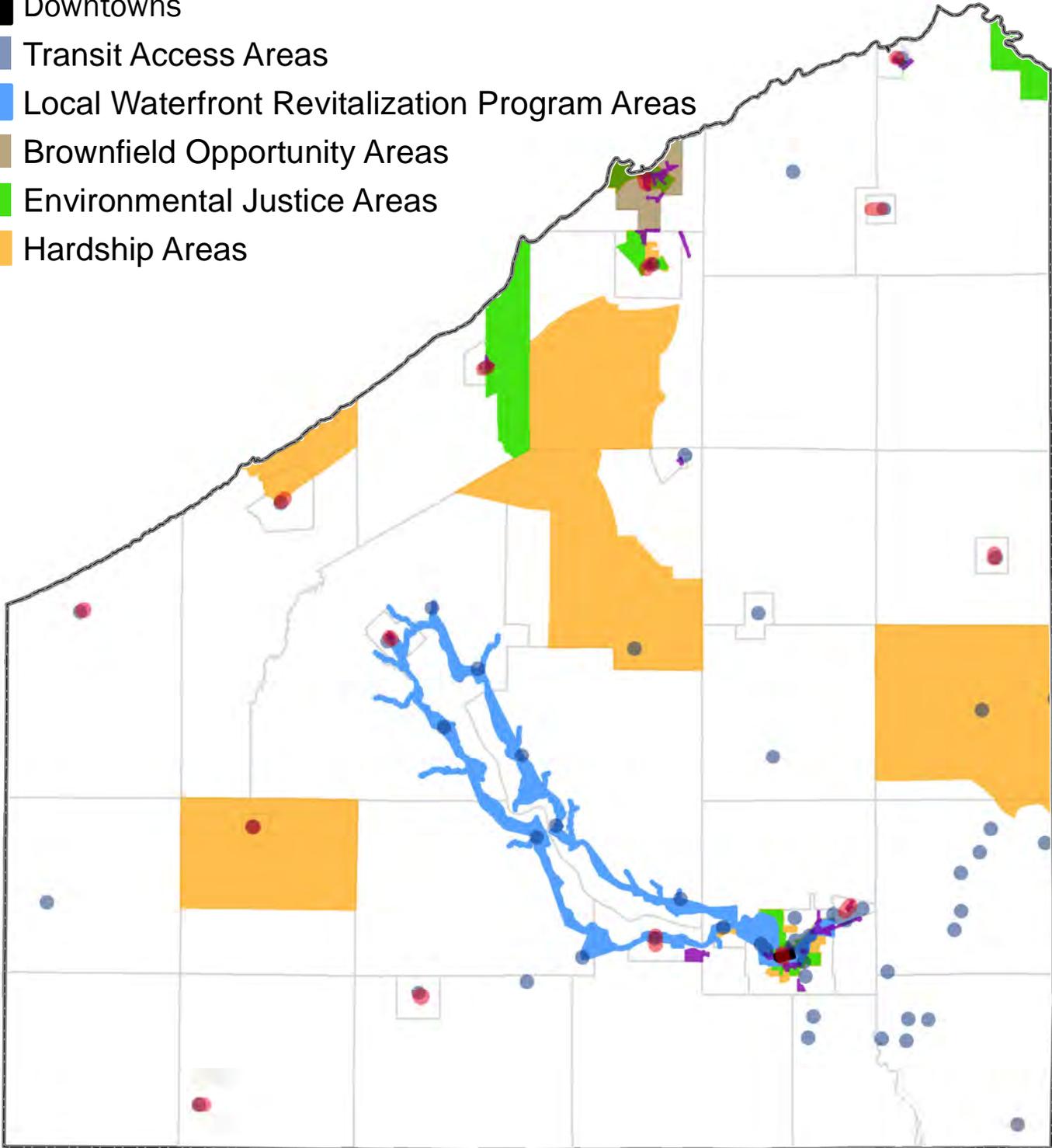
Transit Access Areas

Local Waterfront Revitalization Program Areas

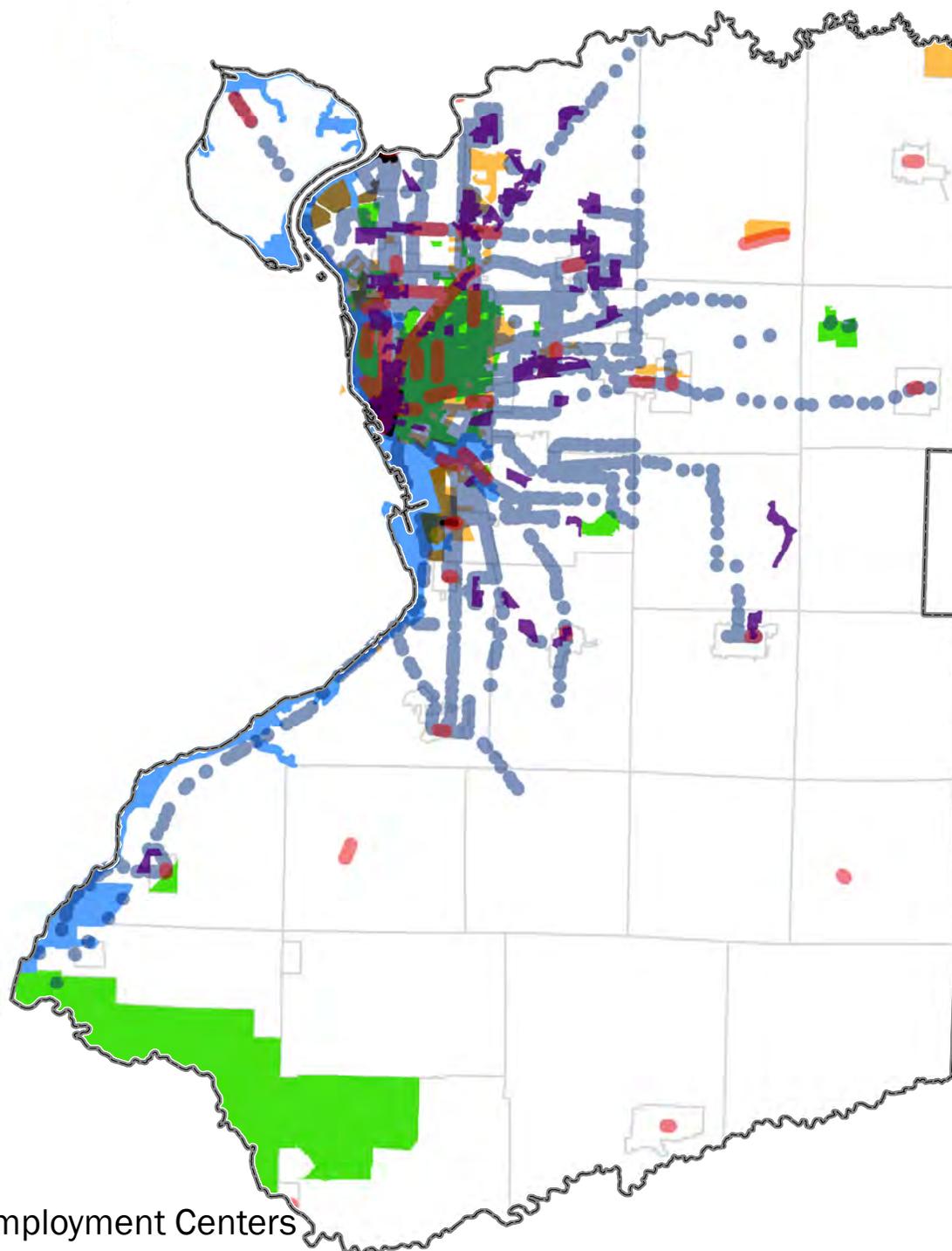
Brownfield Opportunity Areas

Environmental Justice Areas

Hardship Areas

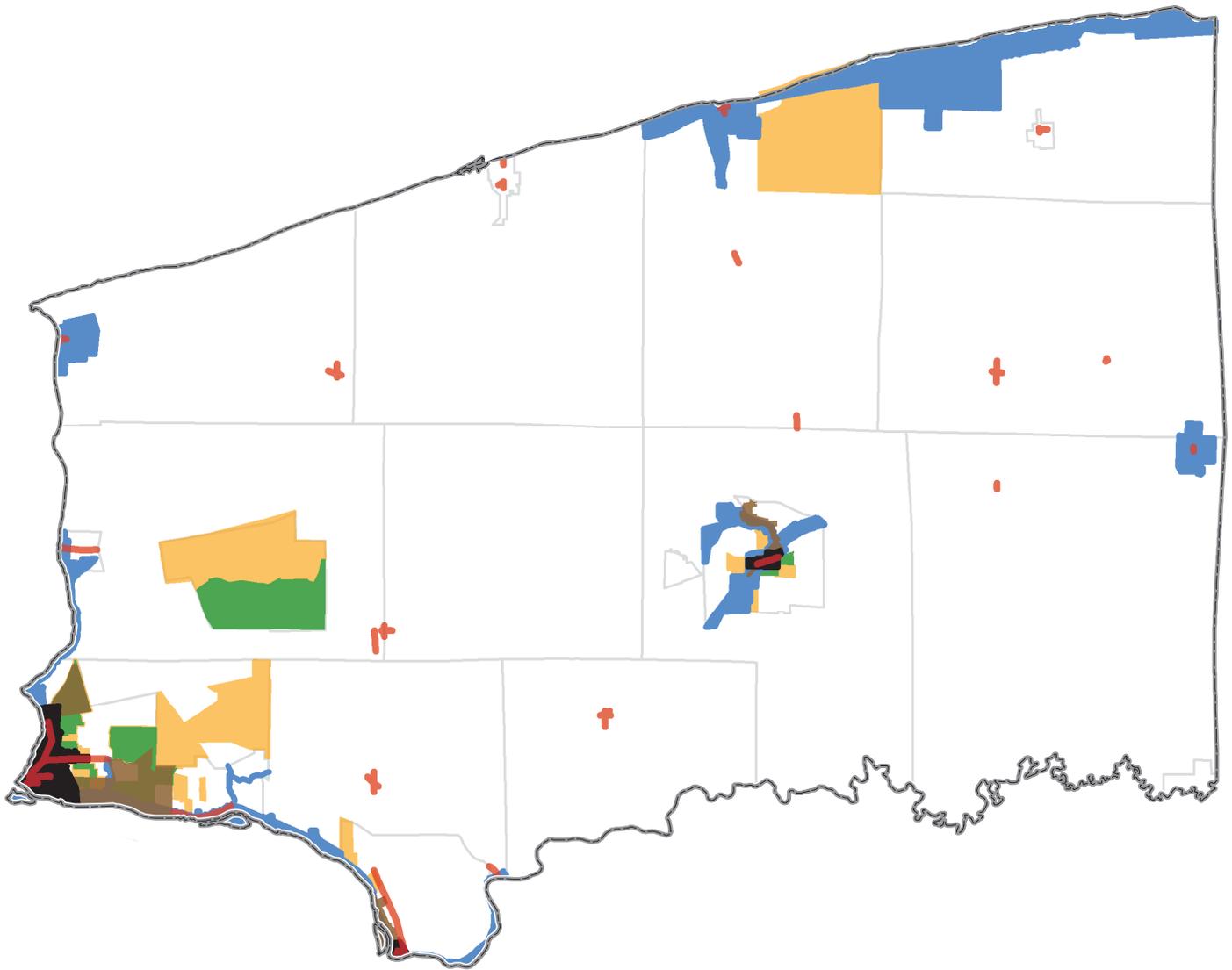


Municipal Centers as Defined by the New York State Smart Growth Public Infrastructure Policy Act, Erie County



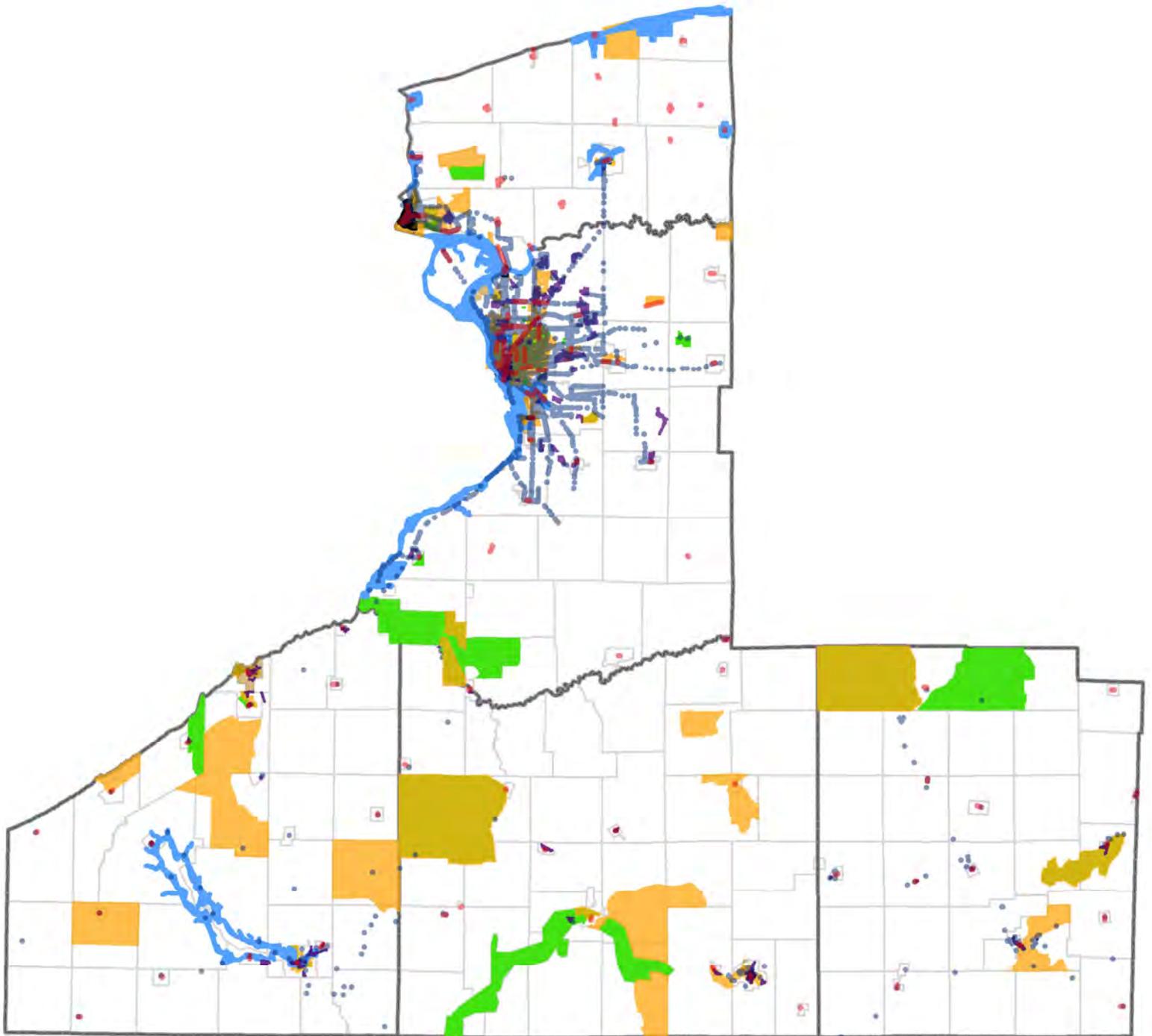
- Major Employment Centers
- Main Streets
- Downtowns
- Transit Access Areas
- Local Waterfront Revitalization Program Areas
- Brownfield Opportunity Areas
- Environmental Justice Areas
- Hardship Areas

Municipal Centers as Defined by the New York State Smart Growth Public Infrastructure Policy Act, Niagara County



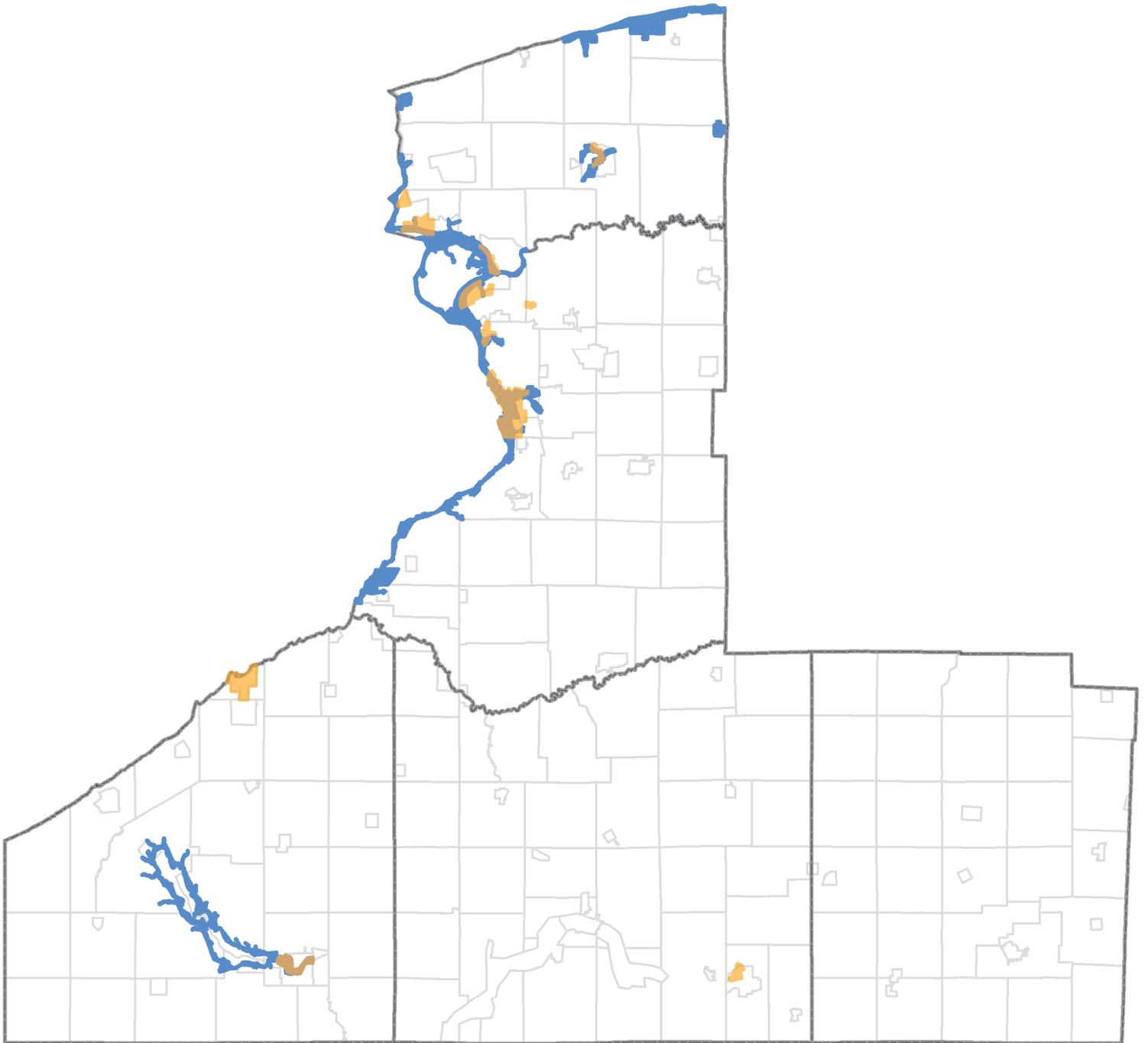
-  Main Streets
-  Downtowns
-  Transit Access Areas
-  Brownfield Opportunity Areas
-  Local Waterfront Revitalization Program Areas
-  Environmental Justice Areas
-  Hardship Areas

Municipal Centers as Defined by the New York State Smart Growth Public Infrastructure Policy Act, Western New York



- Main Streets
- Transit Access Areas
- Major Employment Centers
- Local Waterfront Revitalization Program Areas
- Brownsfield Opportunity Areas
- Downtowns
- Hardship Areas
- Environmental Justice Areas

Brownfield Opportunity Areas and Local Waterfront Revitalization Program Areas in Western New York

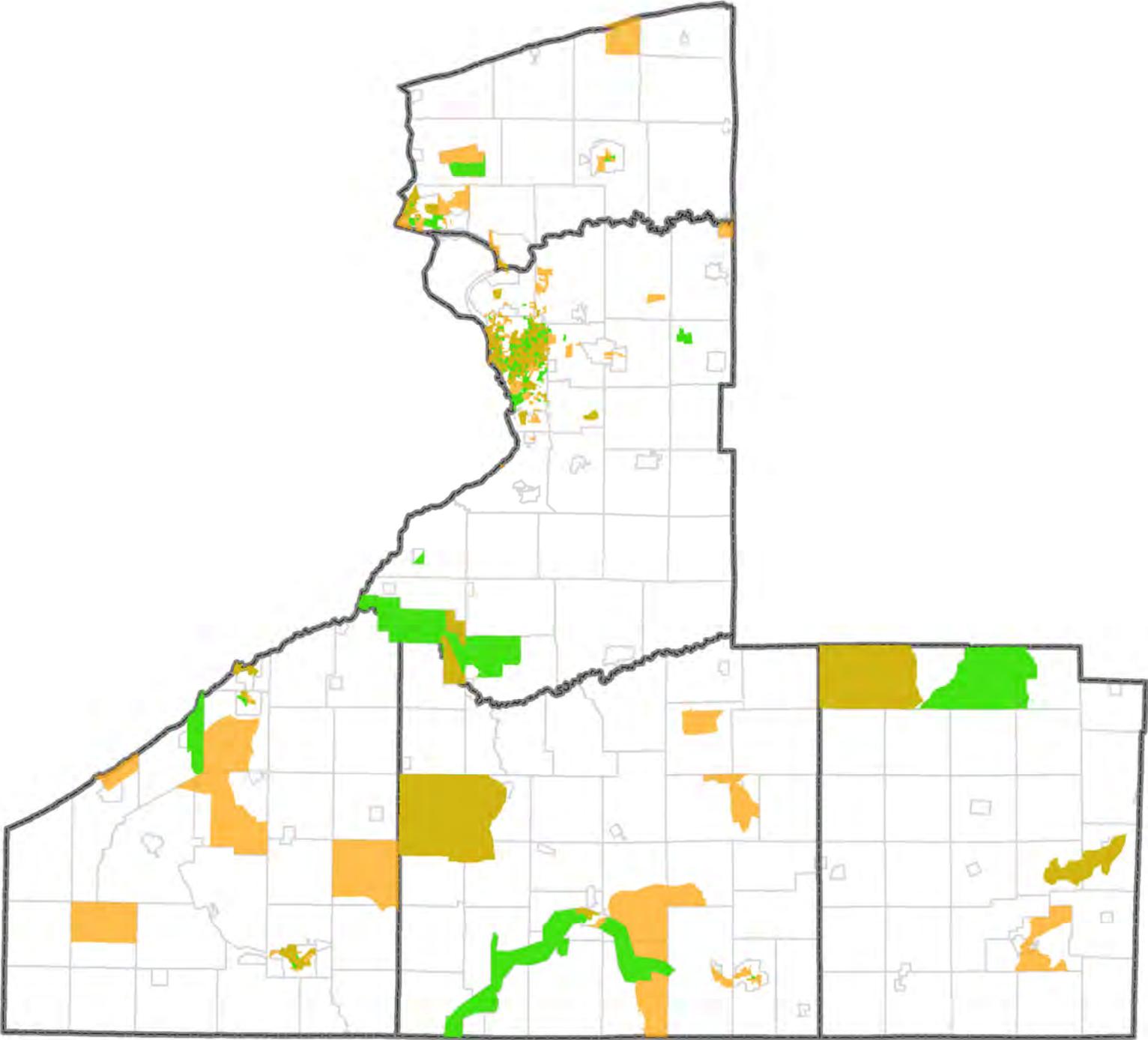


Brownfield Opportunity Areas



Local Waterfront Revitalization Program Areas

Environmental Justice and Hardship Areas in Western New York

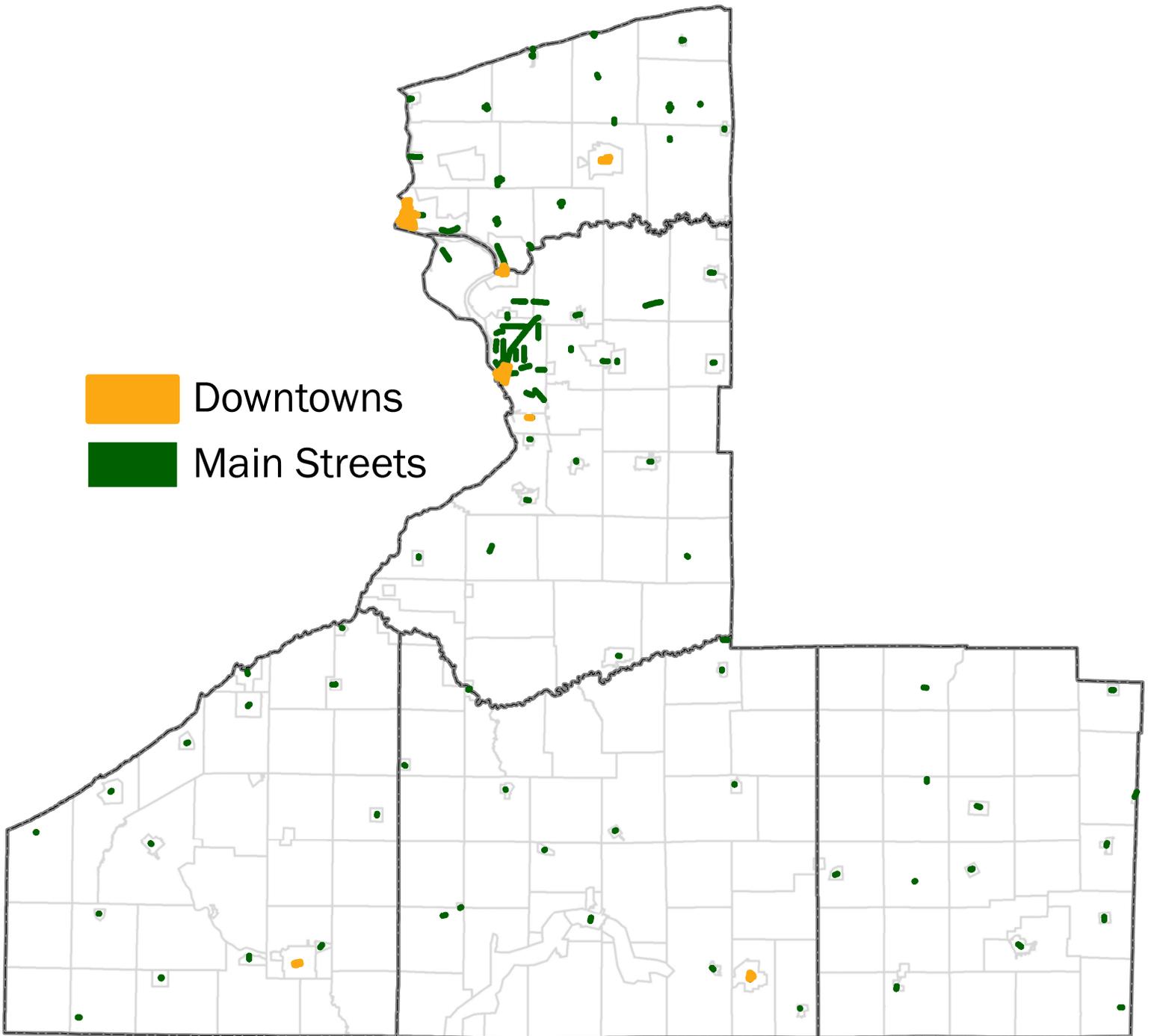


Hardship Areas

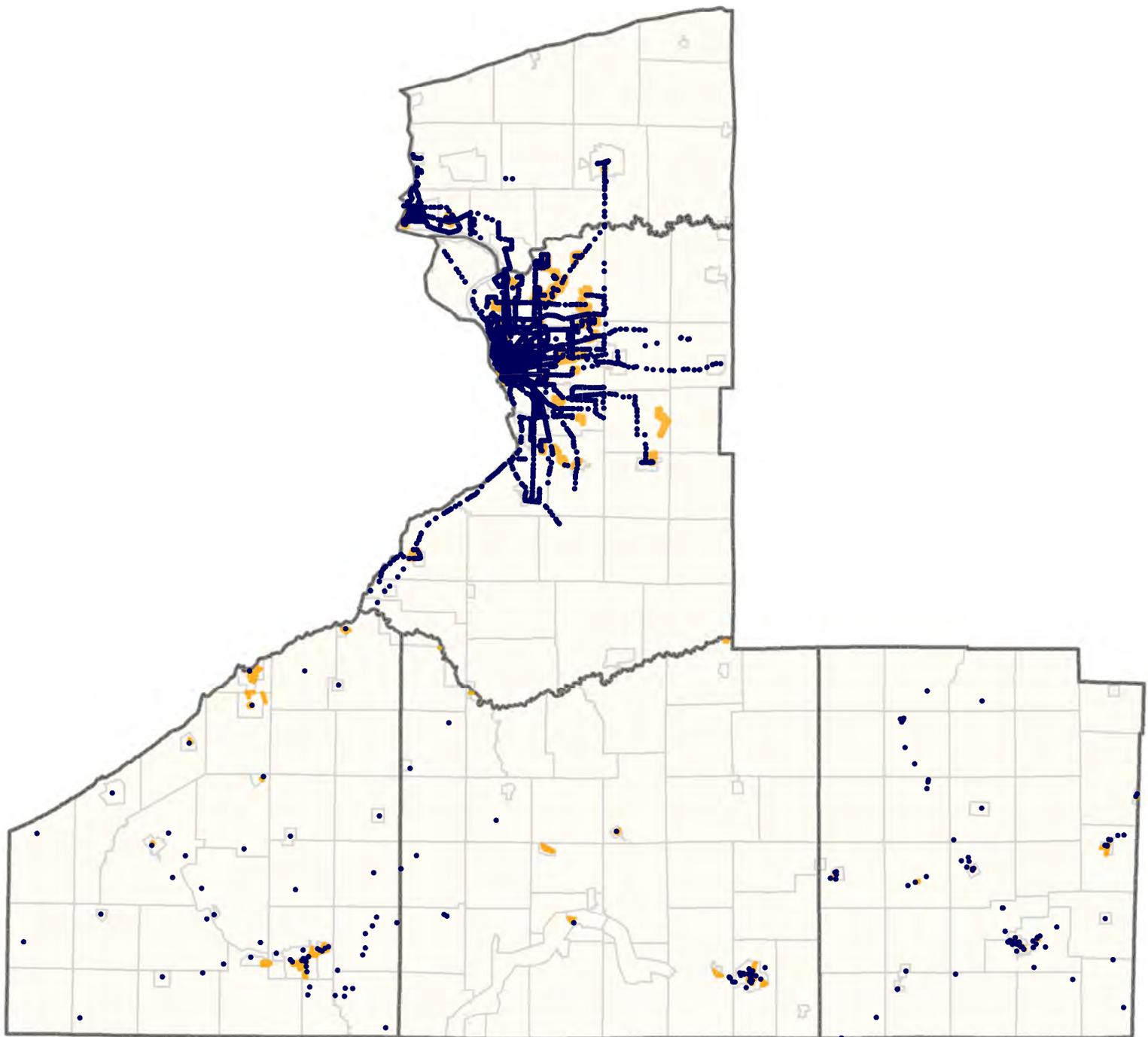


Environmental Justice Areas

Downtowns and Main Streets of Western New York



Major Employment Centers and Areas with Access to Public Transportation in Western New York



-  Public Transportation Access Areas
-  Major Employment Centers

Appendix A
Methodology

Methodology for Location Municipal Centers:

The geographic extent of municipal centers needed to be determined. According to New York Environmental Conservation Law 6-0103, the term “Municipal Centers” includes, but is not limited to, the following areas, “central business districts, main streets, downtown areas, brownfield opportunity areas, downtown areas of local waterfront revitalization program areas, transit-oriented development, environmental justice areas, and hardship areas.” (*Source*, New York Environmental Conservation Law. Article 6, § 6-0103. (2010))

The locations of environmental justice areas and hardship areas are determined by socioeconomic characteristics. Here, hardship areas are defined by the Environmental Justice and Permitting of the NYS Department of Environmental Conservation’s [DEC] (2003) designation of a low-income community. These are census block groups that have at least 23.59% of their population living in poverty. According to the NYS DEC, Environmental Justice Areas are those block groups which meet the following criteria: (a) 51.1% or more of the urban population are members of minority groups, (b) 33.8% or more of the rural population are members of minority groups and (c) 23.59% of the total population is living below the poverty level (NYS DEC, *Environmental Justice Policy CP-29*, 2003). These areas were found by investigating tabular data on socioeconomic variables from the American Community Survey (2005-2009). The block groups which met the criteria listed above were then joined to spatial files of block group boundaries (2000) and extracted to yield a geospatial layer of both Environmental Justice Areas and Hardship Areas.

As regional employment centers fit the New York State description of a municipal center, an independent analysis was conducted to ascertain these boundaries in order to incorporate them in this calculation. First, Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES) data (2010), which provides the total number of jobs within each census block, was downloaded from the US Census Bureau (available at onthemap.ces.census.gov) and joined to a geospatial layer of 2010 Census blocks in Western New York. The area of each census block was then computed and used to calculate the employment density of each block (measured in jobs per acre).

All additional steps of this analysis demanded that data be independently examined for two distinct regions, (1) the metropolitan Erie-Niagara region and (2) the rural Southern Tier (Chautauqua, Cattaraugus and Allegany counties). Due to the variance in employment and population levels between these two areas, this distinction was thought to be necessary in order to generate an accurate number of locally-appropriate major employment centers. The mean employment density of all blocks containing jobs was calculated independently for both regions. Blocks which had an employment density above the average for their region

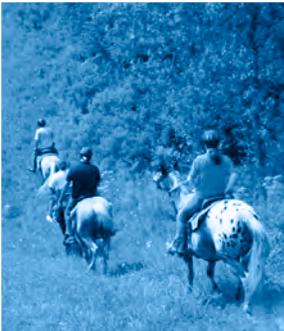
were selected and aggregated so that adjoining blocks with an employment density higher than the regional mean were merged into contiguous areas.

Next, the mean employment density and total number of jobs within each cluster of blocks was recalculated. These statistics were then used to determine cut-off values and finalize the selection of regional major employment centers. These threshold values were established by consulting prevailing methods on the delineation of regional employment centers, (**Sources:** (1) Giuliano, G.; Redfearn, C.; Agarwal, A.; Li, C.; Zhuang, D. (2005): "Not all sprawl: Evolution of employment concentrations in Los Angeles, 1980-2000." In: Proceedings of the ERSA Conference, Amsterdam, Netherlands. (2) Giuliano, G., and Small, K. (1991). "Subcenters in the Los Angeles region." *Regional Science and Urban Economics*, 21(2), 163–182.) investigating the data and applying localized knowledge to the potential results. The determination was made to define regional employment centers as blocks, or block clusters, that (1) contained a minimum 0.25% of all the jobs within their region and (2) had an employment density greater than 10 jobs per acre. All blocks or block clusters which met these criteria were extracted and used as regional employment centers.

Methodology for Locating Major Employment Centers:

- As regional employment centers fit the New York State description of a municipal center, an independent analysis was conducted to ascertain these boundaries in order to incorporate them in this calculation. First, Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES) data (2010), which provides the total number of jobs within each census block, was downloaded from the US Census Bureau (available at onthemap.ces.census.gov) and joined to a geospatial layer of 2010 Census blocks in Western New York. The area of each census block was then computed and used to calculate the employment density of each block (measured in jobs per acre).
- All additional steps of this analysis demanded that data be independently examined for two distinct regions, (1) the metropolitan Erie-Niagara region and (2) the rural Southern Tier (Chautauqua, Cattaraugus and Allegany counties). Due to the variance in employment and population levels between these two areas, this distinction was thought to be necessary in order to generate an accurate number of locally-appropriate major employment centers. The mean employment density of all blocks containing jobs was calculated independently for both regions. Blocks which had an employment density above the average for their region were selected and aggregated so that adjoining blocks with an employment density higher than the regional mean were merged into contiguous areas.
- Next, the mean employment density and total number of jobs within each cluster of blocks was recalculated. These statistics were then used to determine cut-off values and finalize the selection of regional major employment centers. These threshold values were established by consulting prevailing methods on the delineation of regional employment centers, (**Sources:** (1)

Giuliano, G.; Redfearn, C.; Agarwal, A.; Li, C.; Zhuang, D. (2005): "Not all sprawl: Evolution of employment concentrations in Los Angeles, 1980-2000." In: Proceedings of the ERSA Conference, Amsterdam, Netherlands. (2) Giuliano, G., and Small, K. (1991). "Subcenters in the Los Angeles region." *Regional Science and Urban Economics*, 21(2), 163–182.) Investigating the data and applying localized knowledge to the potential results. The determination was made to define regional employment centers as blocks, or block clusters, that (1) contained a minimum 0.25% of all the jobs within their region and (2) had an employment density greater than 10 jobs per acre. All blocks or block clusters which met these criteria were extracted and defined as regional employment centers.



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