Western New York Regional Sustainability Plan 2013

CLEANER GREENER COMMUNITIES

The New NY WORKS for Business

Table of Contents

Acronyms v
Glossary of Terms vi
NYSERDA Disclaimer ix
Executive Summary
WNY Region Sustainability Vision Statement xi
WNY Regional Sustainability Plan xii
WNY Planning Process xii
Sustainability Goals and Strategies xiv
Sustainability Strategies xvi
Sustainability Indicators and Targets xx
Sustainability Actions xxi
Implementation Strategy xxi
1 Introduction and Methodology
WNY Region Sustainability Vision Statement 1-1
Concurrent Planning Efforts 1-7
Existing Regional Plans 1-5
2 Regional Greenhouse Gas (GHG) Inventory
Purpose of the GHG Inventory 2-1
Methodology for the GHG Inventory 2-2
GHG Inventory Data Collection, Calculation Methods, and Results 2-3
Electricity Generation and Consumption 2-3
Conclusion 2-6
3 Energy Resources
3.1 Sustainability Indicators and Current Trends 3-2
3.2 Sustainability Goals and Strategies 3-5
3.3 Sustainability Targets 3-13
3.4 Sustainability Actions 3-14
4 Land Use and Livable Communities
4.1 Sustainability Indicators and Current Trends 4-2
4.2 Sustainability Goals and Strategies 4-7
4.3 Sustainability Targets 4-14
4.4 Sustainability Actions 4-15
5 Transportation
5.1 Sustainability Indicators and Current Trends 5-3
5.2 Sustainability Goals and Strategies 5-6
5.3 Sustainability Targets 5-13
5.4 Sustainability Actions 5-13

6 Agriculture and Forestry

6.1 Sustainability Indicators and Current Trends 6-2
6.2 Sustainability Goals and Strategies 6-4
6.3 Sustainability Targets 6-11
6.4 Sustainability Actions 6-12

7 Water Resources

7.1 Sustainability Indicators and Current Trends 7-2
7.2 Sustainability Goals and Strategies 7-5
7.3 Sustainability Targets 7-10
7.4 Sustainability Actions 7-11

8 Waste Management

8.1 Sustainability Indicators and Current Trends 8-3
8.2 Sustainability Goals and Strategies 8-5
8.3 Sustainability Targets 8-10
8.4 Sustainability Actions 8-10

9 WNY Sustainability Plan Implementation

Implementation Strategy 9-1

Appendix A Sustainability Projects Summary Matrix

Sustainability Projects Table A-1
Project Categorization A-2

Appendix B Planning Consortium and Working Group Directory B-1
Appendix C Public Meeting Outcomes C-1
Appendix D Indicator Memo D-1
Appendix E Tier II GHG Inventory Report E-1
Appendix F Municipal Center Mapping F-1

Acronyms

BNMC	*Buffalo Niagara Medical Center*
BTU	*British thermal unit*
C&D	*construction and demolition*
CAFE	*Corporate Average Fuel Economy*
CO_2e	*carbon dioxide equivalents*
CFC	*chlorofluorocarbon*
CGC	*Cleaner, Greener Communities*
CHP	*combined heat and power*
CNG	*compressed natural gas*
CNT	*Center for Neighborhood Technology*
CSO	*Combined Sewer Overflow*
DOE	*(United States) Department of Energy*
E & E	*Ecology and Environment, Inc.*
EPA	*(United States) Environmental Protection Agency*
ESF	*SUNY College of Environmental Science and Forestry*
EV	*electric vehicles*
FAO	*(United Nations) Food and Agriculture Organization*
FIT	*Feed-in Tariff*
GBNRTC	*Greater Buffalo-Niagara Regional Transit Council*
GHG	*greenhouse gas*
GLRI	*Great Lakes Restoration Initiative*
HCFC	*hydrochlorofluorocarbon*
HUD	*(United States) Department of Housing and Urban Development*
IDA	*Industrial Development Agency*
I & I	*infiltration and inflow*
LWRP	*Local Waterfront Revitalization Plan*
MMBTU	*one million BTUs*
MPO	*(Federal) Metropolitan Planning Organization*
MSW	*municipal solid waste*
MT	*metric tons*
MWC	*municipal waste combustion*
MWh	*megawatt-hours*
NFTA	*Niagara Frontier Transportation Authority*
NGO	*non-governmental organization*
NYIS	*New York Independent System Operator*
NRCS	*Natural Resources Conservation Service*
NYPA	*New York Power Authority*
NYSDEC	*New York State Department of Environmental Conservation*
NYSDOS	*New York State Department of State*
NYSDOT	*New York State Department of Transportation*
NYSERDA	*New York State Energy Research and Development Authority*
NYISO	*New York Independent System Operator*
Plan	*WNY Regional Sustainability Plan*
PSC	*Public Service Commission*
ROW	*right-of-way*
RPS	*Renewable Energy Portfolio Standard*
SSO	*Sanitary Sewer Overflow*
TDM	*Transportation Demand Management*
UB	*(State University of New York) University at Buffalo*
UB RI	*(State University of New York) University at Buffalo Regional Institute*
USDA	*United States Department of Agriculture*
USEPA	*United States Environmental Protection Agency*
VMT	*vehicle mile traveled*
WNY	*Western New York*
WNY REDC	*WNY Regional Economic Development Council*

Glossary of Terms

[Terms defined below are bolded in text of document.]

Sustainability. A planning concept focusing on meeting the present needs of our communities without compromising the ability of future generations to meet their own needs. It includes the creation and maintenance of conditions under which communities utilize the resources we have in the most effective ways to permit social and economic growth while preserving natural resources.

Energy Efficiency pertains to technological tools or infrastructure enhancements that reduce energy consumption (e.g., installing a programmable thermostat to reduce energy draw from heating, cooling, and ventilation of an unoccupied house).

Energy Conservation refers to adjustments in human behavior to reduce energy consumption (i.e., integrating cleaning activities into daytime operations to avoid having to keep buildings lit and heated during unoccupied night times).

Smart Growth. Principles that work to ensure that developments in urban, suburban, and rural communities are being coordinated so that they support local economies as well as protect the environment.

Location Efficient Housing is characterized by housing that is located close to employment centers and transportation options.

NYS State Smart Growth Public Infrastructure Policy Act, which went into effect on September 29, 2010, requires most state agencies and all state authorities, prior to approving or funding any public infrastructure project to verify that a project is consistent with the Smart Growth Criteria stated in the Act.

New York Municipal Home Rule Law grants power to all counties outside of New York City and all cities, towns, and villages to have a legislative body elected by the people; power to adopt local laws; the right to have local officers elected or appointed by the local residents or officers; the power to agree, as authorized by the legislature, with the federal government, a state or other government to provide cooperative governmental services and facilities. The Home Rule law prevents the state legislature from acting with respect to "property, affairs or government" within local municipalities.

Complete Streets. Roadway design features that accommodate and facilitate safe travel by pedestrians, bicyclists, and motorists of all ages and abilities. These features include sidewalks, paved shoulders suitable for use by bicyclists, bicycle lanes, "share the road" signs, crosswalks, pedestrian control signalization, bus pull outs, curb cuts, raised crosswalks, ramps, and traffic-calming measures designed to allow pedestrian and motor traffic to easily and safely coexist.

NYS Complete Streets Legislation (S.5411A) requires state, county, and local transportation agencies to consider roadway design features that increase the safety of pedestrians, bicyclists, and motorists.

Transportation Disadvantaged. Elderly, disabled, and low-income populations that historically have limited access to transportation options.

Feed-in-Tariff (FIT) is a policy mechanism designed to accelerate investment in renewable energy technologies that could include compensation to renewable energy producers and provide price certainty and long-term contracts that help finance such investments.

NYS Article 10 Unified Siting Law. Article 10 provides for the siting review of new and repowered or modified major electric generating facilities in New York State by the Board on Electric Generation Siting and the Environment (Siting Board) in a unified proceeding instead of requiring a developer or owner of such a facility to apply for numerous state and local permits.

Main Street. Traditional town and village center streets or traditional urban neighborhood retail centers.

Municipal Centers. Areas of concentrated and mixed land uses that serve as centers for various activities including but not limited to central business districts, main streets, downtown areas, brownfield opportunity areas, downtown areas of local waterfront revitalization areas, transit-oriented development, environmental justice areas, and hardship areas. Also includes areas that are designated for future concentrated development in a municipal or regional comprehensive plan.

Urban Sprawl. Associated with the expansion of low-density development that does not reflect local population changes.

Food Desert. An urban or rural community with little or no access to large grocery stores and/or farmer's markets that offer fresh and affordable food needed to maintain a healthy diet.

Combined Sewer Overflow (CSO). Combined sewer systems are sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe to a sewage treatment plant. CSOs are designed to overflow and discharge excess wastewater directly to nearby streams, rivers, or other water bodies if the wastewater volume in a combined sewer system is exceeded during periods of heavy rainfall or snowmelt. CSOs contain not only storm water but also untreated human and industrial waste, toxic materials and debris and are a major water pollution concern for cities that have combined sewer systems.

Sanitary Sewer Overflows (SSO). Properly designed, operated, and maintained sanitary sewer systems are meant to collect and transport all of the sewage that flows into them to a publicly owned treatment works. Occasional unintentional discharges of raw sewage from municipal sanitary sewers are called sanitary sewer overflows (SSOs). SSOs generally occur due to blockages, line breaks, sewer defects that allow storm water and groundwater to overload the system, lapses in sewer system operation and maintenance, power failures, inadequate sewer design and vandalism. The untreated sewage from these overflows can contaminate our waters, causing serious water quality problems. It can also backup into basements, causing property damage and threatening public health.

Infiltration and Inflow (I & I). Infiltration and inflow is the clean storm water and/or groundwater that enters the sanitary sewer system through holes, breaks, joint failures, downspouts, and other sources. Most inflow comes from storm water and most infiltration comes from groundwater.

Great Lakes Compact. Great Lakes-St.Lawrence River Basin Water Resources Compact.

NYSERDA Disclaimer

Executive Summary

The five-county Western New York (WNY) region includes a wide variety of natural and cultural resources, industries, and communities. The WNY Sustainability Plan is the product of a region-wide planning effort where private, public, not-for-profit organizations, and stakeholders from throughout the region's communities came together to discuss the strengths of our region and to formulate goals for creating sustainable growth in the coming years. WNY is strategically situated in the state, sharing both an international and an interstate border. The region hosts critical natural resources such as abundant fresh water supply and also key industries including energy generation facilities that supply other parts of our state with needed power. The region faces challenges related to a shrinking population, aging infrastructure in some areas, and economic and regulatory barriers that can be unsupportive of new and existing businesses.

WNY Region Sustainability Vision Statement

The WNY region seeks to create a future where social and environmental issues are addressed within a framework of a sustainable regional economy. The pursuit of sustainability includes the creation and maintenance of conditions under which our communities utilize the resources we have in the most effective ways to permit social and economic growth while preserving natural resources.

The WNY region encompasses Erie, Niagara, Chautauqua, Allegany, and Cattaraugus counties.

WNY Regional Sustainability Plan

The WNY Regional Sustainability Plan (the Plan) was developed for Erie, Niagara, Chautauqua, Allegany, and Cattaraugus counties by the Regional Planning Consortium with input from key stakeholders and the public. The Plan was developed with a grant from the New York State Energy Research and Development Authority (NYSERDA) under the Cleaner, Greener Communities (CGC) program established by Governor Cuomo in 2011. This program was designed to empower local regions throughout the state to create plans for more sustainable communities that address the diverse needs of the individual region.

The WNY region partnered with public and private experts across a wide range of fields, along with community stakeholders, to lead the development of a regional sustainability plan and to promote projects that will significantly improve the economic and environmental health of our area. This plan is intended as a guide for integrated, sustainable solutions to improve our quality of life. These solutions include ideas for regional decision-making on land use, housing, transportation, infrastructure, energy, and environmental practices.

The CGC program administered by NYSERDA is a two-phase competitive grant process. Phase I funding was provided to each of the ten regions throughout the state, as defined by the Regional Economic Development Council (REDC), to create sustainability plans or to expand the scope of existing sustainability plans. Grants were awarded to a municipality within each region, acting on behalf of a consortium of other municipalities.

Phase II of the New York CGC Program will provide up to $90 million in funding statewide, awarded on a competitive basis, toward regional projects that support and implement the regional sustainability goals identified during the planning process and that provide the greatest opportunity to reduce greenhouse gas (GHG) emissions, save energy, and deploy renewable energy while improving the economic and environmental health of our communities. Phase II is scheduled to be launched by NYSERDA in 2013. Phase II funding is an important part of the planning process; however, this Plan is intended to be used in multiple ways beyond the NYSERDA Phase II funding.

This Plan addresses the issue of climate adaptation across each of the sustainability focus areas. Examples include strategies to protect adequate and appropriate spaces for future use (for example, protecting prime farmland for future agricultural use), better management of natural resources, and improvement of aging sewer, water, and transportation infrastructure to better protect and preserve water resources and coastal areas in the region. Educational needs and capacity building at the local and county level are also identified within this Plan as initiatives that improve the capability to identify vulnerabilities to climate change and further incorporate climate adaptation initiatives into existing policies and community planning actions.

This plan was developed as a starting point, and is designed to evolve overtime based on changing or new sustainability issues the region is facing.

WNY Planning Process

The WNY Regional Planning Consortium consists of county government representatives from each of the five counties in the WNY region. The Regional Planning Consortium identified six focus areas that are critical to attaining sustainability in the region: **Energy, Land Use and Livable Communities, Transportation, Agriculture and Forestry, Water Resources, and Waste Management.** In addition, in order to help identify links between the Plan and the REDC's plan, *A Strategy for Prosperity in WNY*, the Consortium included **Economic Development** as a focus area that overlaps the six technical areas that would ensure the priorities of the REDC strategy are addressed throughout this Plan.

Topic-specific working groups were convened that addressed the six sustainability focus areas and economic development. The membership of these working groups was selected with the input of the Consortium. The working groups consisted of over 140 representatives from state, county, and local governments, including elected leaders and agencies, as well as members from industry and local non-profit organizations.

In addition, input from members of the public was a key part of the planning process, solicited via the project website www.sustainable-ny.com and during two rounds of public meetings held throughout the region in July and October 2012. Overall, approximately 270 members of the public added their input to the planning process through attending public meetings or submitting comments via the project website.

A Tier II Regional Greenhouse Gas (GHG) Inventory was developed in order to inform the WNY Sustainability Plan as well as future planning efforts related to GHG reduction. The purpose of this GHG inventory was to estimate regional emissions so that the information could be used to help identify necessary sustainability goals and actions. The total GHG emissions for 2010 in WNY were estimated at 17.5 million metric tons of carbon dioxide equivalents (MT CO_2e) or 12.48 MT CO_2e per capita. Transportation, residential energy consumption and commercial energy consumption being the largest sectors contributing to that emissions total.

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

Part of the focus of this Plan is to identify goals and strategies that will allow us to continue to grow our regional economy, improve our communities, and support local industry while reducing this overall GHG emissions total for our region. Specifically, the Plan identifies:

- Current GHG emissions and energy use along with available natural resources and economic assets;
- Strategies for GHG emissions reduction, energy efficiency improvements, and the deployment of renewable energy sources;
- Sustainability goals for each of the following sustainability focus areas: **energy, land use and livable communities, transportation, agriculture and forestry, water management, and waste management**; and
- Strategies to achieve these goals and barriers to implementation.

It should be noted that although air quality was not a specific focus area, to which a working group was convened, this issue was considered with respect to each of the six focus areas. Additionally, the goals and strategies outlined in this Plan will work to improve air quality overall within the region.

The Plan also includes projects ideas (Appendix A) that provide examples of how local stakeholders can collaborate, provide timetables for targeted milestones, and identify completion dates for the actions identified.

Sustainability Goals and Strategies

The Plan considers the opportunities and constraints that the region is facing with respect to achieving sustainability throughout the region. As a result, a broad set of goals that are achievable in the region were identified for each sustainability focus area. All of the goals were developed with consideration given to economic development, governance, and the impacts of climate change on the region. Strategies were then designed to meet the regional sustainability goals for each focus area as well as across focus areas.

The sustainability goals and strategies for each focus area share a number of themes. These common themes are addressed throughout this Plan and include the following:

GHG Emissions Reduction. A successful regional sustainability plan should result in an overall reduction in GHG emissions.

Enhancement of the Regional Economy. Sustainability should be achieved in coordination with the support and enhancement of the regional economy.

Government Policy and Programs. Local government policy and programs can support regional sustainability initiatives.

Consideration of Diverse Land Uses. Sustainable practices should meet the diverse needs of urban, suburban, and rural communities.

Conservation of Natural Resources. Conserving, enhancing, and protecting the region's abundant natural resources, including air, water and land, is vital to regional sustainability.

Education. Promoting and improving public awareness of sustainability issues is essential in realizing the region's sustainability goals.

Revitalization of Main Streets. Revitalization of the region's cities, main streets, and community centers will create more livable communities and support local economies.

Economic Viability of Agriculture. Supporting the economic viability of the agricultural industry in WNY and protecting the region's agricultural and forestry resources will serve to maintain their viability for continued sustainable uses.

Sustainable Energy Use and Production. Building energy efficiency programs while increasing infrastructure for the public and private use of alternative fuels will help build diverse energy production within the region.

Improve and Enhance Air Quality. The reduction of fossil fuel energy generation and fuel use throughout the region will work to reduce harmful air emissions being emitted throughout the region. Additionally, strategies to focus development within existing corridors resulting in the conservation of open space.

The regional sustainability goals developed for WNY are as follows:

Energy Goals

1. Promote energy efficiency and conservation efforts throughout WNY in the most environmentally sound and cost-effective way, which provides access to such efforts for all incomes and business sizes and results in a real reduction of GHG emissions.
2. Increase renewable energy generation in the region, including technologies listed in the NYS Renewable Portfolio Standard. Applications would include solar water heating, photovoltaic, landfill gas, wind, biomass, hydroelectric, fuel cells, anaerobic digestion, tidal energy, wave energy, ocean thermal, ethanol, methanol, biodiesel, and fuel cells using renewable fuel; and geothermal.
3. Upgrade the existing conventional energy infrastructure in the region in an economically and environmentally sustainable way.
4. Support innovative energy projects that are consistent with the sustainability goals of the region and that encourage economic development.

Land Use and Livable Communities Goals

1. Increase the number of local municipalities that are developing, adopting, and implementing "smart growth" policies.
2. Develop a mechanism for regional land use planning assistance and collaboration.
3. Encourage and focus development in areas served by existing infrastructure.
5. Encourage the expansion of location-efficient housing that increases access to employment centers and transportation options.
6. Preserve, protect, and enhance the viability of agriculture, including agricultural lands and urban agriculture.
7. Encourage, enhance, and coordinate regional park, greenway, and waterfront planning to connect the public with the region's natural resources and promote economic development and recreational opportunities.

Transportation Goals

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

1. Strengthen the economic viability of agriculture and forestry enterprises.
2. Achieve more efficient uses of energy inputs and maximize use 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 for strengthening the business climate for agriculture and forestry in the region.
4. Promote environmentally sustainable management systems for the agriculture and forestry sector.

Water Management Goals

1. Improve regional water quality through a focus on the identification and management of pollution sources and protection of healthy watersheds.
2. Improve regional water management systems and increase efficiency of infrastructure.
3. Address regional water quantity concerns through a focus on flooding, storm water/runoff, infiltration, and regional water use.
4. Ensure better coordination of water management with land use and conservation planning and decisions regarding where future development occurs, including public access to water resources.

Waste Management Goals

1. Reduce the amount of municipal solid waste (MSW) that is disposed of (via landfills or incineration) by reducing waste generation and/or increasing recycling.
2. Maximize the diversion of organic waste from disposal facilities (landfills and incinerators) and the beneficial reuse of the organic material.
3. Reduce the amount of construction and demolition (C&D) waste that is disposed of by reducing waste generation and/or increasing recycling.
4. Increase the number of waste transport vehicles that use alternative fuels.

Sustainability Strategies

For each of the goals stated above, a range of implementation strategies was developed by the planning team. These strategies are detailed in Sections 3 through 8 of the Plan and are viewed as potential mechanisms or ideas that would help the region achieve its stated goals. While the strategies are associated with a specific goal and a specific sustainability focus area within the Plan, many of them cut across other focus areas and would be beneficial to a broad range of the sustainability goals.

The sustainability strategies identified in the plan include:

STRATEGY **Energy.** Promote clear and simplified access, navigation, and implementation of energy efficiency funding programs and education on energy conservation options through one-stop websites or other public outreach tools.

STRATEGY **Energy.** Conduct focused outreach to mid-sized businesses and industries and mid-income families that inform them on existing funding opportunities for energy efficiencies upgrades.

STRATEGY **Energy.** Encourage municipalities to implement energy efficiency programs, energy conservation practices and renewable energy within municipal operations through the promotion of programs such as NY's Climate Smart Communities and considering regulations and incentives that stimulate such programs in the community.

STRATEGY **Energy.** Promote energy efficiency programs in business and industry through establishment of the Green Business Roundtable.

STRATEGY **Energy.** Promote distributed power and the eco-industrial business model of co-locating symbiotic industrial processes and other methods.

STRATEGY **Energy.** Complete a feasibility analysis to inform the potential development of an implementation-ready, written, regional feed-in-tariff (FIT) program to spur renewable energy development and job creation, using successful programs in Germany, Ontario, and Long Island as models.

STRATEGY **Energy.** Promote the use and development of renewable energy through demonstration projects that integrate public education.

STRATEGY **Energy.** Encourage the installation of renewable energy such as solar, wind and geothermal in new and existing developments.

STRATEGY **Energy.** Ensure fuel diversity in our region and promote GHG reductions through the support of co-firing biomass technology as well as conversion to other less expensive and GHG-intensive fuel sources at existing coal-fired generating plants while considering other environmental factors.

STRATEGY **Energy.** Enhance existing programs that support the development of sustainable advanced manufacturing enterprises as well as innovative projects for alternative energy generation within the region.

STRATEGY **Land Use.** Develop municipal and county-level land use planning tools for use within the region such as a technical assistance handbook for smart growth.

STRATEGY **Land Use.** Provide technical assistance and identify sustainable funding and partnership opportunities to build regional planning capacity, though the support and coordination of the REDC Smart Growth Work Group's proposed "Smart Growth Coordinating Council."

STRATEGY **Land Use.** Revitalize main streets and community centers through redevelopment and adaptive reuse of abandoned, underutilized, or historic buildings and brownfield sites by providing municipalities with funding, technical assistance, and/or streamlining the review/approval process.

STRATEGY **Land Use.** Encourage rehabilitation of existing housing stock and siting of new housing developments in mixed-use development that are served by existing sewer and water infrastructure.

STRATEGY **Land Use.** Improve existing transportation infrastructure to better connect people to employment centers, schools, shopping, and transportation options.

STRATEGY **Land Use.** Update existing farmland protection plans that include protection of timberland at the county level, with the leadership from the cooperative extensions and farm bureaus, encourage plan development at the local level, and support implementation of plans where they already exist.

STRATEGY **Land Use.** Develop and implement Local Waterfront Revitalization Plans (LWRPs) in all eligible municipalities that include consideration of public access to regional waterfronts for recreation to promote economic development associated with tourism.

STRATEGY **Land Use.** Connect recreational trails across municipal boundaries through enhanced multi-jurisdictional coordination.

STRATEGY **Transportation.** Develop new alternative transportation programs through strategic partnerships, particularly programs that increase options for under-served populations.

STRATEGY **Transportation.** Educate the public on existing transportation options through on-line resources, including regularly updated maps of all regional transportation options.

STRATEGY **Transportation.** Implement projects such as fueling and charging stations that would increase the number of CNG and electric-powered vehicles through private and public programs.

STRATEGY **Transportation.** Implement traffic efficiency and optimization projects while encouraging walking and biking.

STRATEGY **Transportation.** Prioritize transportation infrastructure within main streets and along important corridors.

STRATEGY **Transportation.** Implement Complete Streets projects throughout the region by providing technical assistance to create or modify comprehensive plans and zoning codes that integrate bike and pedestrian traffic into transportation infrastructure plans and projects by, for example, developing a "Complete Streets" zoning template.

STRATEGY **Agriculture and Forestry.** Establish a WNY Food Hub or Agricultural Processing Facility.

STRATEGY **Agriculture and Forestry.** Develop a mechanism to continue to advocate activities that will help achieve these sustainability goals on a long-term basis. One possible solution would be to create a regional Agriculture Council.

STRATEGY **Agriculture and Forestry.** Connect local farmers with markets in new or more effective ways that increase farmers' profit margins through higher prices, value-added products, specialty products in demand by consumers, meeting demand in food deserts, etc., through the establishment of local farmers' and cooperative markets within the region.

STRATEGY **Agriculture and Forestry.** Provide farmers with resources and training for sustainable and energy efficient agriculture production, processing and distribution. One possible solution would be to create a community food training center.

STRATEGY **Agriculture and Forestry.** Implement energy generation projects that use agriculture and forestry by-products as fuel sources.

STRATEGY **Agriculture and Forestry.** Update existing farmland protection plans that include protection of timberland at the county level, with the leadership from the cooperative extensions and farm bureaus, encourage plan development at the local level, and support implementation of plans where they already exist.

STRATEGY **Agriculture and Forestry.** Educate the general public, youth, and public officials on the importance of local agriculture including promoting farmer markets and purchasing local produce.

STRATEGY **Agriculture and Forestry.** Promote and preserve agricultural enterprises through farmer recruitment programs and innovation and entrepreneurship programs for small farms.

STRATEGY **Agriculture and Forestry.** Facilitate adoption by large and small farms of variable rate application technologies that can reduce the use of pesticides and fertilizers without reducing production.

STRATEGY **Water Resources.** Educate the public on the ways that they impact and/or improve the health of local watersheds, reduce stress on water management infrastructure, and promote water conservation through public education programs and demonstration projects.

STRATEGY **Water Resources.** Implement targeted sewer infrastructure improvements for pollution sources known to impact impaired waterbodies in the WNY region.

STRATEGY **Water Resources.** Identify and implement green infrastructure practices (i.e. permeable pavement, raingardens or bioretention ponds) that reduce excessive storm water flows and runoff, which are a leading source of non-point source pollution.

STRATEGY **Water Resources.** Increase efficiency and effectiveness of water management infrastructure through implementation of system upgrades and consolidation of existing water systems.

STRATEGY **Water Resources.** Assess and seek to remove regulatory and administrative barriers to green infrastructure projects posed by local codes and permitting processes.

STRATEGY **Water Resources.** Promote the preservation and restoration of land and natural systems that can be used to naturally manage storm water and runoff.

STRATEGY **Water Resources.** Develop and implement Local Waterfront Revitalization Plans (LWRPs) in all eligible municipalities that include consideration of public access to regional waterfronts for recreation to promote economic development associated with tourism.

STRATEGY **Water Resources.** Develop and maintain links between water quantity and quality infrastructure and local land use planning (i.e. future development and land conservation), as well as the GLRI and Great Lakes Compact.

STRATEGY **Waste Management.** Educate the public, government, businesses, and institutions 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.

STRATEGY **Waste Management.** Institute more Pay-as-You-Throw programs and every-other-week trash pickup, which incentivize waste reduction and recycling.

STRATEGY **Waste Management.** Increase MSW recycling operations (collection, recovery, and processing) in WNY and the use of recycled MSW materials in goods produced in the region.

STRATEGY **Waste Management.** Encourage product stewardship that considers the life-cycle of the product for goods produced in WNY. As necessary, enact related legislation.

STRATEGY **Waste Management.** Improve the infrastructure for effectively recycling organic material (commercial, institutional, and residential) in WNY.

STRATEGY **Waste Management.** Increase C&D recycling operations (collection, recovery, and processing) in WNY and the use of recycled C&D materials in goods produced in, and processes conducted in, WNY.

STRATEGY **Waste Management.** Encourage building deconstruction and subsequent material reuse and recycling, as opposed to building demolition.

STRATEGY **Waste Management.** Encourage the conversion of waste transport vehicles, both municipal and private, to alternative fuels, such as CNG.

STRATEGY **Waste Management.** Implement projects such as fueling and charging stations that would increase the number of CNG and electric-powered vehicles through private and public programs.

Sustainability Indicators and Targets

The Plan establishes a framework for measuring progress toward a more sustainable region. **Sustainability Indicators** provide benchmarks for quantifiable results to measure the success of moving closer to achieving the sustainability goals identified in the Plan. Each sustainability focus area discussed in the Plan includes a list of specific metrics that can be used to ensure that the results of the implementation of the Plan are tracked and measured over time to gauge success. In addition, each focus area has set the following targets in which to show progress toward achieving sustainability in the region:

TARGET **Energy.** The region's target is to increase renewable energy generation to 75% by 2025.

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

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

TARGET **Energy.** The region's target is to reduce the total regional GHG emissions from a 2010 baseline by 30% by 2020 of 17.5 million $MTCO_2e$.

Red House, Allegany State Park, Cattaraugus County

TARGET **Land Use.** The region's target is to keep the developed land per capita constant through 2017 from the 2011 baseline.

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

TARGET **Land Use.** 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.

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

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

TARGET **Water Resources.** The region's target is to reduce storm water flow and frequency of combined sewer overflows (CSOs) by 40% over a period of 20 years.

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

TARGET **Waste Management.** The region's target for Municipal Solid Waste (MSW) disposed of per capita is to reduce disposal to 0.11 tons per person per year (0.6 pounds per person per day) by 2030.

Sustainability Actions

Sustainability projects were solicited from the stakeholders, including members of the public, and were included as tangible actions that can be implemented to work toward achieving these goals. It was important that each action be considered for project readiness, applicability toward sustainability goals, GHG emissions impact, and WNY REDC economic development goals detailed in the *Strategy for Prosperity*. The sustainability projects included with this Plan are those that would help the region meet the goals described above. Since the goals and strategies of this Plan align closely with the *WNY REDC's Strategy for Prosperity*, it is anticipated that the implementation of this Plan will lie with the WNY REDC's smart growth coordinating council and as the projects identified are completed, others could be added that move the region closer to the stated sustainability goals. A summary of all the identified sustainability projects garnered through public feedback is located in Appendix A.

Implementation Strategy

The WNY REDC's Smart Growth Work Group will spearhead the implementation of the WNY Regional Sustainability Plan. Implementation of a region-wide sustainability plan fits squarely within the core strategies of the WNY REDC's Plan to Implement Smart Growth, which includes assistance in implementing not only the NYS Smart Growth Public Infrastructure Act but also this Plan. This is one of several examples of the links between the goals of this Plan and those identified in the *WNY REDC Strategy for Prosperity (available at* http://regionalcouncils.ny.gov*)*.

1 Introduction and Methodology

WNY Region Sustainability Vision Statement

The WNY region seeks to create a future where social and environmental issues are addressed within a framework of a sustainable regional economy. The pursuit of sustainability includes the creation and maintenance of conditions under which our communities utilize the resources we have in the most effective ways to permit social and economic growth while preserving natural resources.

WNY Regional Sustainability Plan

The WNY Regional Sustainability Plan (the Plan) was developed for Erie, Niagara, Chautauqua, Allegany, and Cattaraugus counties by the Regional Planning Consortium with input from key stakeholders and the public. The Plan was developed with a grant from the New York State Energy Research and Development Authority (NYSERDA) under the Cleaner, Greener Communities (CGC) program established by Governor Cuomo in 2011. This program was designed to empower local regions throughout the state to create plans for more sustainable communities that address the diverse needs of the individual region.

The region partnered with public and private experts across a wide range of fields, along with community stakeholders, to lead the development of a regional sustainability plan and to promote projects that will significantly improve the economic and environmental health of our area. This Plan is intended as a guide for integrated, sustainable solutions to improve our quality of life. These solutions include ideas for regional decision-making on land use, housing, transportation, infrastructure, energy, and environmental practices.

The CGC program administered by NYSERDA is a two-phase competitive grant process. Phase I funding was provided to each of the ten regions throughout the state, as defined by the Regional Economic Development Council (REDC), to create sustainability plans or to expand the scope of existing sustainability plans. Grants were awarded to a municipality within each region, acting on behalf of a consortium of other municipalities.

> The WNY Regional Economic Development Council developed the "Strategy for Prosperity" in 2011. This document is a comprehensive plan to create a more dynamic and sustainable economy for the WNY region. The document is available, along with additional information about the WNY REDC, at: http://regionalcouncils.ny.gov

Phase II of the New York CGC Program will provide up to $90 million in funding statewide, awarded on a competitive basis, toward regional projects that support and implement the regional sustainability goals identified during the planning process and that provide the greatest opportunity to reduce greenhouse gas (GHG) emissions, save energy, and deploy renewable energy while improving the economic and environmental health of our communities. Phase II is scheduled to be launched by NYSERDA in 2013. Phase II funding is an important part of the planning process; however, this Plan is intended to be used in multiple ways beyond the NYSERDA Phase II funding.

Planning for Sustainability

The Plan was developed over an eight-month period by the Regional Planning Consortium, with input from key stakeholders who were actively involved and seven focus area working groups. The effort and results of the working groups were presented to the public and their feedback was received and incorporated into the Plan.

This plan was developed as a starting point, and is designed to evolve overtime based on changing or new sustainability issues the region is facing.

Regional Planning Consortium. The Regional Planning Consortium consists of county government representatives from each of the five counties in the WNY region. The Consortium's primary responsibility was to oversee the planning process for the region and to ensure that the regional plan accurately represented the diverse needs of the region. In addition, the Consortium initially identified stakeholders that would be interested in developing a successful sustainability plan.

The Regional Planning Consortium identified six focus areas in WNY that are critical to attaining sustainability in the region: **Energy, Land Use and Livable Communities, Transportation, Agriculture and Forestry, Water Resources, and Waste Management.** In addition, in order to help identify links between the Consortium's Sustainability Plan and the *REDC's Strategy for Prosperity* plan, the Consortium included **Economic Developmen**t as a focus area that overlaps the six technical areas.

It should be noted that although air quality was not a specific focus area, to which a working group was convened, this issue was considered with respect to each of the six focus areas. Additionally, the goals and strategies outlined in this Plan will work to improve air quality overall within the region.

The Sustainability Planning Team. At the direction of the Regional Planning Consortium, Ecology and Environment, Inc. (E & E) and the State University of New York at Buffalo Regional Institute (UB RI) facilitated the monthly working group meetings, assisted with data collection, coordinated public meetings, and prepared the draft Plan.

Working Group Process. Topic-specific working groups were convened that addressed the six sustainability focus areas: energy, land use and livable communities, transportation, water resources, waste management, and agriculture and forestry. In addition, the economic development working group was assembled and was charged with ensuring that the priorities of the *REDC's Strategy for Prosperity* are addressed in the sustainability goals for the focus areas. The membership of these work groups was selected with the input of the Regional Planning Consortium, as well as stakeholder recommendations and consisted of over 140 representatives from state, county, and local governments, including elected leaders and agencies, as well as members from industry and local non-profit organizations. A full list of working group members is located in Appendix B.

From May 2012 through October 2012 each working group met once a month throughout the region. The working groups researched and discussed existing conditions, opportunities, issues, and best practices relating to sustainability within and outside the region; generated sustainability goals and strategies; recommended projects for implementation within existing community budgets; and reviewed the draft Plan.

Public Participation. Input from the public and stakeholders was a key part of the planning process. The public and stakeholders were notified of plan developments and public meetings through the project website (www.sustainable-ny.com), emails to stakeholder networks, and through the media networks. In addition, public input was solicited during two rounds of public meetings

held throughout the region in July and October 2012. The first round of meetings focused on receiving feedback from the public on the preliminary sustainability goals and the second round of meetings on reviewing portions of the draft Plan and soliciting sustainability project ideas for inclusion in the Plan. Overall, approximately 270 members of the public added their input to the planning process (see Appendix C, Public Meeting Outcomes), through attending public meetings or submitting comments via the project website.

More than 270 members of the public attended public meetings held in July and October 2012, throughout the region.

Sustainability Focus Areas

A summary of current conditions and the need for sustainability of each focus area is discussed below. Economic development, climate change, and governance have been integrated into the goals and strategies of each focus area.

Energy. WNY is a net exporter of energy, particularly hydropower. The region's Niagara Power Project is currently the largest producer of electricity in New York State. To move closer to energy sustainability, the region will have to identify opportunities to implement energy efficiency programs, harness its abundant natural resources to increase renewable energy production, upgrade to existing conventional energy generation, and promote energy innovation.

Land Use and Livable Communities. WNY has a history of land development that has not always been consistent with sustainable principles and practices. The industrial past of much of WNY has left blighted areas throughout the region that are in need of redevelopment. However, there are many opportunities to ensure sustainable land use and create livable communities throughout the region moving forward. It is essential to implement smart growth principles throughout the region to ensure that future growth and transportation/infrastructure investments reflect the character of individual communities while providing for economic growth and improved quality of life in the community.

Transportation. A more sustainable WNY transportation system will reduce vehicle miles traveled and GHG and other hazardous air emissions while also meeting the diverse transportation needs of the population. Successful strategies will use smart growth principles to increase options for personal travel and freight shipments, improve overall fuel efficiency through alternative fuels and other measures, and build and improve infrastructure along existing corridors.

Agriculture and Forestry. Agriculture and forestry are two important industries for the WNY region, providing tremendous economic value and environmental benefits to local communities. While both these industries are key to regional sustainability in themselves, it is also critical to incorporate sustainable practices within them to ensure their viability, protect agricultural lands, and increase the availability of local value-added products in the community. The economic viability of agriculture in the region is important in supporting the entire food system from farmers to processors and transportation to restaurants and grocers. Additionally, land that remains in farming—agriculture or managed forest—can provide scenic, recreational, employment and/or tourism benefits while avoiding the costs of urban sprawl.

Water Resources. New York State has the benefit of being a Great Lakes state, thanks to the WNY region's proximity to Lakes Erie and Ontario. These waterbodies have a unique historical, economic, and cultural significance in the region and it is essential that WNY makes an effort to conserve and enhance these abundant and natural water resources for future generations. Targeted implementation of strategies that both improve water quality and ensure the efficient use of water will work to preserve this region's water resources while addressing the needs of the community.

Waste Management. Waste generation without recycling is an unsustainable practice, and the goal of the region should be to move toward achieving zero waste disposal. Although this goal probably cannot be achieved in the near future, it is important to consider strategies that move the region toward a more sustainable waste management system, including reducing waste generation and increasing recycling, which have the added benefit of reducing GHG emissions from landfills and manufacturing. The region also has a great opportunity to create a "closed loop" system for recyclables that includes processing recyclables locally and using the recycled product in local industry and processes.

Measuring Success

The Plan establishes a framework for measuring progress toward a more sustainable region. **Sustainability Indicators** provide benchmarks for quantifiable results to measure the success of moving closer to achieving the sustainability goals identified in the Plan. Each sustainability focus area discussed in the Plan includes a list of specific metrics that can be used to ensure that the results of the implementation of the Plan are tracked and measured over time to gauge success. Additional details for each indicator identified in this Plan are provided in the Indicator Memo located in Appendix D.

Developing Goals and Strategies

The Plan considers the opportunities and constraints that the region is facing with respect to achieving sustainability throughout the region. The stakeholders for each working group developed broad goals and strategies that are achievable in the region. The goals chosen for the plan were developed during multiple meetings and discussions with region-wide stakeholders.

These discussions were informed by the baseline indicator information presented in this Plan and by the previous experiences and challenges faced by the stakeholders. The final goals were selected because they represent a critical level of consensus among participating stakeholders about the direction of the region with respect to sustainability. Goals were not prioritized one over the other. Rather, they are designed to be implemented together in most cases and to complement multiple sustainability focus areas. The strategies presented within the Plan are viewed as potential mechanisms or ideas that would help the region achieve its stated goals. While the strategies are associated with a specific goal and a specific sustainability focus area within the Plan, many of them are cut across other focus areas and would be beneficial to a broad range of the sustainability goals. The goals represent broad concepts. However, the strategies were designed to point the way toward specific actionable steps to be taken throughout the region that would advance region-wide indicators toward the stated targets.

The sustainability goals and strategies for each focus area share a number of themes. These common themes are addressed throughout this Plan and include the following:

GHG Emissions Reduction. A successful regional sustainability plan should result in an overall reduction in GHG emissions.

Enhancement of the Regional Economy. Sustainability should be achieved in coordination with the support and enhancement of the regional economy.

Government Policy and Programs. Local government policy and programs can support regional sustainability initiatives.

Consideration of Diverse Land Uses. Sustainable practices should meet the diverse needs of urban, suburban, and rural communities.

Conservation of Natural Resources. Conserving, enhancing, and protecting the region's abundant

natural resources, including air water and land, is vital to regional sustainability.

Education. Promoting and improving public awareness of sustainability issues is essential in realizing the region's sustainability goals.

Revitalization of Main Streets. Revitalization of the region's cities, main streets, and community centers will create more livable communities and support local economies.

Economic Viability of Agriculture. Supporting the economic viability of the agricultural industry in WNY and protecting the region's agricultural and forestry resources will serve to maintain their viability for continued sustainable uses.

Sustainable Energy Use and Production. Developing energy efficiency programs throughout the region while increasing infrastructure for the public and private use of alternative fuels will help reduce the region's use of fossil fuels.

Improve and Enhance Air Quality. The reduction of fossil fuel energy generation and fuel use throughout the region will work to reduce harmful air emissions being emitted throughout the region. Additionally, strategies to focus development within existing corridors resulting in the conservation of open space.

Identification of Sustainability Projects

Over the eight-month planning process, project ideas that would help meet the region's sustainability goals were solicited from the stakeholders and the public. The project ideas were evaluated by the Consortium for project readiness, applicability of sustainability goals, GHG emissions impact, and economic development. The sustainability projects included with this Plan are those that would help the region meet the sustainability goals of the region. The projects included in this Plan are intended to be a broad overview of example projects that could be implemented in the region. As additional projects are identified that align with the region's sustainability goals and strategies, the Plan would be modified accordingly. A summary of all the identified sustainability projects garnered through public feedback are located in Appendix A.

Connection with other Regional Planning Efforts

A priority of this regional planning process has been to identify links between existing regional plans and current regional planning efforts. The existing state and regional plans were considered during the development of the sustainability goals and strategies of this regional sustainability plan. Throughout the planning process, the participants sought to find connections with existing plans and to coordinate with groups currently working on new plans that will have an overlapping focus with the WNY Regional Sustainability Plan.

Existing Regional Plans

Strategy for Prosperity for WNY, WNY Regional Economic Council Strategic Plan (November 2011). The WNY REDC led the creation of the plan, working with stakeholders to set WNY's economic development priorities to build realistic, comprehensive, regional strategies for achieving the vision of a prosperous and

sustainable economic future. The *WNY REDC's Strategy for Prosperity* identifies smart growth principles that address issues pertaining to land use, transportation, governance, energy efficiency, and conservation of natural resources as keys to the economic development of the region.

2035 Long-Range Transportation Plan (May 2010). The Greater Buffalo-Niagara Regional Transportation Council (GBNRTC) prepared a long-range multi-mode transportation plan for Erie and Niagara counties that is updated every four years. The plan considers long-term goals and objectives that address the region's projected needs based on the anticipated demographics of the region over the next 25 years.

Erie-Niagara Framework for Regional Growth (October 2006). Erie and Niagara counties partnered to develop the Framework for Regional Growth. The framework establishes basic policies and principles to guide the future growth and development of the region for the next 15 years.

Southern Tier West Transportation Strategy (June 2009). Through its Transportation Committee and a grant from the NYS Department of Transportation, Southern Tier West prepared the 2009 Southern Tier West Transportation Strategy. The document describes how non-metropolitan public officials representing units of rural local government are able to provide input to local, county, and regional transportation planning. Their Transportation Strategy contains a mission, vision, goals, and objectives for the region's transportation system. The vision supports the development of a comprehensive transportation network that will allow the region to compete in the global economy while at the same time emphasizing safety, increased quality of life, and environmental stewardship.

Southern Tier West Region Comprehensive Economic Development Strategy (September 2011). The Southern Tier West Regional Planning and Development Board has developed a strategic plan for economic development for New York State's Southern Tier West Region, which includes Allegany, Cattaraugus, and Chautauqua counties. This plan addresses the region's economic health and quality of life and identifies goals that allow the region to regain and retain economic competitiveness. The plan identifies the need to maintain and cultivate the value-added sectors of its economy including manufacturing, service, or agricultural.

Comprehensive Economic Development Strategy, Erie County, New York (July 2011). The Comprehensive Economic Development Strategy for Erie County developed by the Erie County Industrial Development Agency was built on elements of several existing county and regional strategies that consider a variety of economic and smart growth principles. For example, the targeting of sustainable development that is detailed in The Framework for Regional Growth is considered throughout the strategy.

Niagara County Comprehensive Economic Development Strategy (June 2012). This strategy is the product of a committee by the same name organized to maximize economic opportunity in Niagara County and, ultimately, the region as well. It describes existing conditions of the infrastructure, natural resources, demographics and socioeconomics, and local legislation and details how these areas of focus come together for mutual improvement. The County Economic Development Committee continues to meet on a voluntary basis to discuss progress and future plans.

County Comprehensive Plans. Comprehensive plans from Niagara, Erie, Cattaraugus and Chautauqua counties have been developed to ensure sustainable future development, including the focus on improved economic development and smart growth principles. Although the Allegany County comprehensive plan does not include any specific sustainability measures for future development of the county, it was still considered in the development of this Plan.

Great Lakes Restoration Initiative (GLRI). The GLRI is a task force of federal agencies that is charged with

improving the Great Lakes through a focus on five areas: 1) cleaning up areas of concern; 2) addressing invasive species; 3) promoting nearshore health; 4) restoring wetlands and other habitats; and 5) working with partners on outreach and accountability. The third and fifth focus areas have the most overlap with the WNY Sustainability Plan because they address common issues and themes. The third focus area includes targeting high-priority watersheds and reducing polluted runoff from a variety of sources (urban, suburban, and agricultural), and the fifth focus area includes the formation of strategic partnerships and undertaking outreach efforts.

Great Lakes Compact. The Great Lakes Compact is a multi-state agreement to adopt water-conservation plans and to abide by Compact rules for allowing and managing diversions of Great Lakes water.

Beyond Waste Plan. The Beyond Waste Plan is a sustainable materials management strategy for New York State (December 2010). The New York State Department of Environmental Conservation (NYSDEC) funded this strategy that provides an in-depth look at improving waste management, focusing on how waste originates and emphasizing increasing recycling efforts statewide. NYSDEC estimates that nearly 21 million metric tons of carbon dioxide equivalent (CO_2e) GHG emissions could be reduced by implementing this plan.

Concurrent Planning Efforts

One Region Forward. Supported by a grant from the U.S. Department of Housing and Urban Development (HUD), the GBNRTC is playing a lead role in preparing a Regional Plan for Sustainable Development. The two-county plan covering Erie and Niagara counties will serve as a roadmap for improving mobility, promoting more efficient land use patterns, strengthening basic infrastructure, growing a 21st century economy, assuring broad access to healthy food, protecting housing and neighborhoods, and responding to the challenge of global climate change.

Buffalo Green Code. The City of Buffalo is currently revising the city's land use and zoning policies to promote investment, facilitate job creation, and improve the environment. The revisions are intended to help create a healthy, sustainable, and prosperous community and have been championed by local residents throughout the city. The goal of the Green Code is the economic resurgence, community renewal, and environmental repair of Buffalo.

WNY Regional Economic Development Council. The WNY REDC is made up representatives from each of the region's five counties—Allegany, Cattaraugus, Chautauqua, Erie, and Niagara. Ten regional councils for New York State, each with its own unique economic strengths and challenges, were created by Governor Cuomo as a key component of his approach to statewide economic development. The WNY REDC is a public-private partnership made up of local experts and stakeholders from business, academia, local government, and non-governmental organizations (NGOs). The REDC convenes ongoing work groups and encourages stakeholder engagement to address regional issues pertaining to economic growth, including encouraging smart growth, fostering a culture of entrepreneurship, and preparing our workforce. In 2011, WNY was named a best plan awardee and received $100.3 million for the implementation of its plan, *WNY REDC's Strategy for Prosperity*.

Buffalo Investment Strategy, Metropolitan Business Plan. New York State is helping the Buffalo area to realize immediate economic growth while setting the foundation for sustainable economic opportunity for future generations. Governor Cuomo committed an historic $1 billion in state funds to the Buffalo area economy to enable the region to attract an additional $5 billion in investment from across the country and around the globe. This planning effort is currently under way and builds on the guiding principles denoted in the *WNY REDC's Strategy for Prosperity*.

2 Regional Greenhouse Gas (GHG) Inventory

As part of the 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.

Purpose of the GHG Inventory

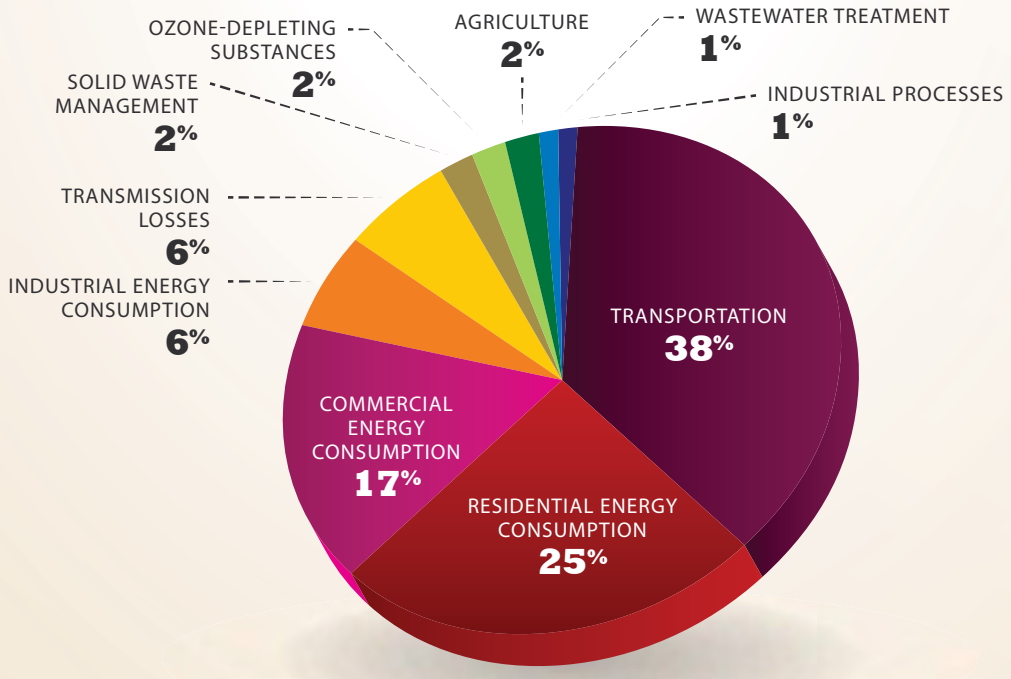
The WNY regional GHG inventory provides specific information for county and local decision makers to use in prioritizing local efforts to reduce GHG emissions. While a Tier I, or "top down" inventory, uses only allocation and averages to estimate regional emissions, the Tier II analysis completed for this project uses a "bottom up" approach, using local utility usage or other specific regional data to create the inventory. Specific Tier II data were used when 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.

Methodology for the GHG Inventory

To establish a uniform method for the development of the regional GHG inventories, NYSERDA established the GHG Inventory Protocol Working Group, assigned to develop the NY GHG Protocol for the CGC Program. The Protocol Working Group was made up of members from other regional teams in the state, as well as representatives of New York State agencies such as the Department of Transportation (DOT), Department of Environmental Conservation (NYSDEC), and NYSERDA. NYSERDA also provided a preliminary Tier I GHG inventory, developed in April 2012, to provide a regional GHG inventory for each region which was based on allocation of state-level energy data. The Protocol Working Group collaborated for seven months to develop a regional GHG inventory protocol and reporting template to provide a summary of the agreed-upon GHG inventory calculation methods and to report the resulting GHG inventory for each region. 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 work provides key information to manage the variety. To be useful, this data needs to be collected and analyzed in a consistent, transparent, and replicable fashion. The WNY regional planning team utilized discussions and references from the Protocol Working Group to assemble a Tier II GHG inventory, which relies on specific regional data to the extent possible. 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. The results of the Tier II GHG inventory for WNY are summarized below. For complete information on the GHG inventory calculation methods and results see Appendix E, Tier II GHG Inventory Report.

The total GHG emissions for 2010 in WNY were estimated at 17.5 million metric tons (MT) of carbon dioxide equivalents (CO_2e) or 12.48 MT CO_2e per capita. A breakdown of the emissions by sector is provided in *Figure 1* below.

Figure 1 WNY CO_2e Emissions Baseline Year 2010



WNY GHG Emissions 17.5 Million MT CO_2e

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

GHG Inventory Data Collection, Calculation Methods, and Results

As stated above, the Tier II GHG Inventory for WNY utilized the method and reporting template developed by the Protocol Working Group. These methods, calculations, and the WNY CGC Regional GHG Inventory Reporting Template are included in *Appendix E*. The WNY regional GHG inventory used data from 2010 for the baseline year, in order to coincide with the most recent U.S. Census. The inventory includes an evaluation of the following sectors: electricity generation and consumption; direct stationary energy consumption; transportation; industrial process sources; energy transmission losses; solid waste and wastewater management; and agriculture and forestry.

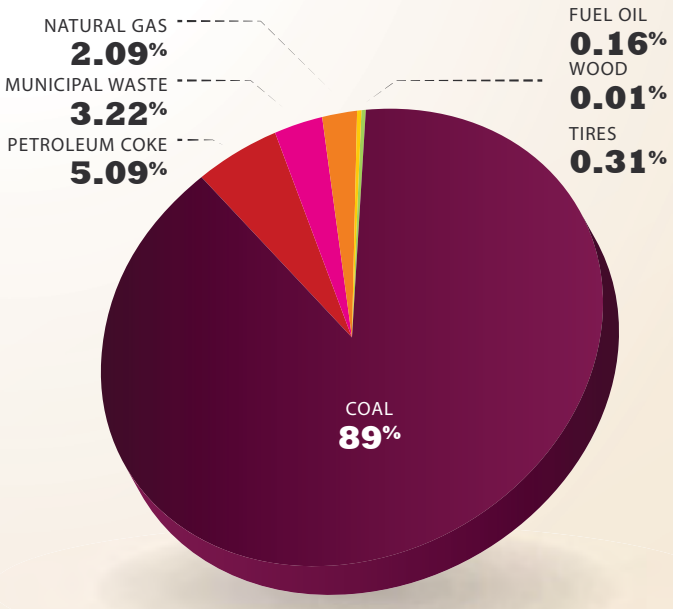
Electricity Generation and Consumption

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, and these emissions are considered indirect and calculated from sales data provided by supply companies and average emission factors. 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.

The WNY region generated 23.8 million megawatt-hours (MWh) in 2010, resulting in 9.8 MT CO_2e. Most of this energy, more than 13.6 million MWh, was generated without direct GHG emissions at the Robert Moses hydroelectric plant in Niagara County. Sixty percent of the electricity generated in WNY was exported to other regions of the state.

As renewable energy results in almost zero emissions, most GHG emissions from electricity generation in the region are from the use of coal. *Figure 2* shows the GHG emissions from WNY grid-tied electricity generation.

Figure 2 WNY 2010 Grid-Tied Electricity Generation GHG Emissions

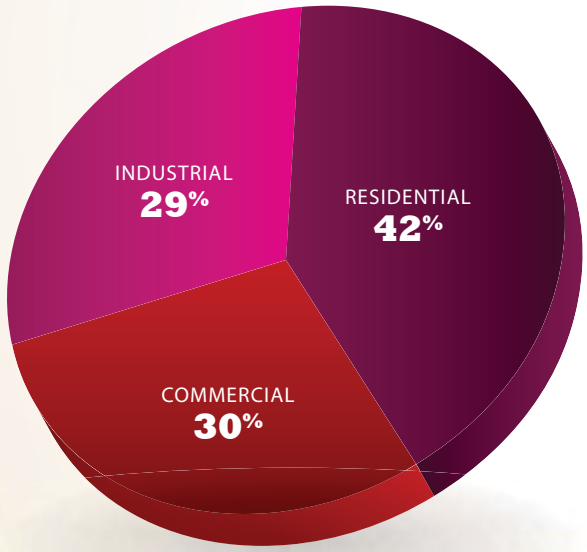


WNY Electricity Grid-Tied Generation GHG Emissions
(9.8 Million MT CO_2e)

While WNY contributes to a big portion of New York's renewable energy (about 45%), the region also contributes a big portion of the state's electricity generation GHG emissions (about 20%). Regional priorities should continue to build on the region's renewable assets while facilitating a shift from high-carbon energy sources.

In the WNY region, 9.0 million MWh of electricity were consumed, resulting in 2 million MT CO_2e that is attributed to the region's use of electricity. This represents 11% of all the GHG emissions generated in the region. *Figure 3* shows the percentage of electricity consumption by sector.

Figure 3 WNY 2010 Electricity Consumption by Sector



Electricity Consumption in WNY (9 Million MWh)

Direct Stationary Energy Consumption

Direct consumption of other fuels includes the use of natural gas, distillate and residual fuel oil (but not gasoline), propane and liquid natural gas, and wood or biomass. This energy use in residential, commercial, and industrial facilities amounted to 6.4 million MT CO_2e, or 36% of WNY regional GHG emissions.

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 fugitive refrigerants and lubricants such as SF6 and hydrochlorofluorocarbon (HCFC) and chlorofluorocarbon (CFC). This category represents a small percentage (3%), of emissions in the region.

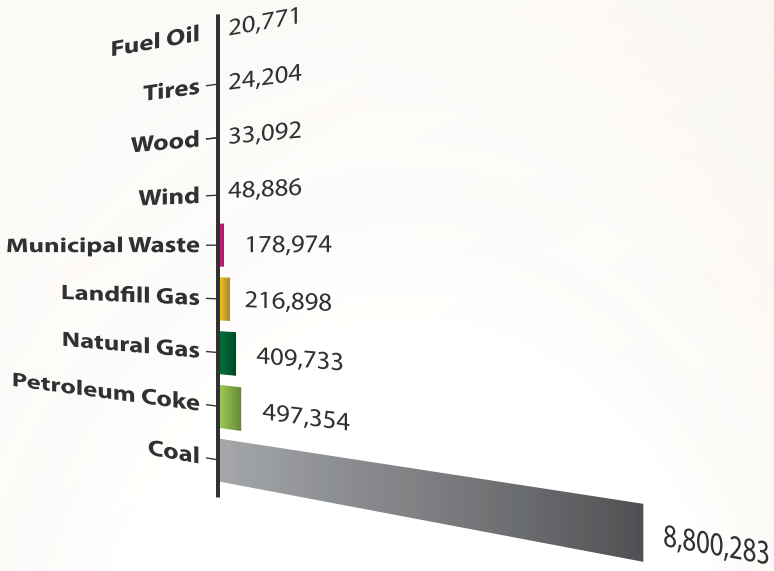
Energy Transmission Losses

GHG emissions are also attributed to losses in energy resulting from transmission, either through the loss of power through the generation of heat, in the case of electricity, or from direct emission losses of natural gas. These emissions represent 6% of GHG emissions in the WNY region.

Transportation

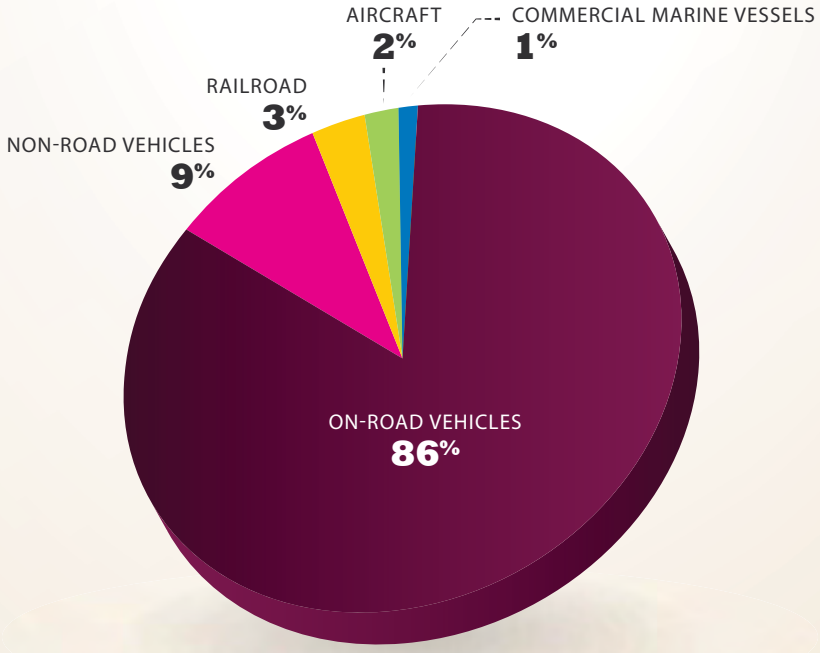
Energy consumption from the operation of vehicles and mobile sources includes a broad range of uses. All mobile sources result in 6.6 million MT CO_2e, or 38% of regional GHG emissions *(see Figure 4)*. On-road vehicle travel represents the majority of transportation total emissions, while emissions from aircraft, rail, and marine vessels represent a small percentage of this category. Non-road mobile sources such as construction equipment, landscaping equipment, and recreational vehicles (including boats and snowmobiles) are included as well. *Figure 5* provides a breakdown of transportation GHG emissions by source.

Figure 4 WNY 2010 Grid-Tied Electricity Generation



WNY Grid-tied Net Electricity Generation Million Megawatt-hours (MWh)

Figure 5 WNY 2010 Transportation GHG Emissions by Source



Western New York Transportation GHG Emissions
(6.6 Million MT CO_2e—37% of Regional Western New York Total)

Agriculture

GHG emissions from manure management, livestock populations, and fertilizer applications are primarily methane and nitrogen dioxide. These operations represent only 2% of regional GHG emissions.

Grazing dairy cows, Allegany County

Forestry

Forests in rural areas and even in some urban areas can represent a source for carbon absorption. While this source 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 CO_2e stored in the region's forests and also the annual amount of GHG emissions absorbed by urban trees. Total forest carbon is estimated based on types and amount of forest land in the region. It is estimated that 306 million MT CO_2e is sequestered in WNY regional forests. In addition, urban trees can provide an important carbon sink in the region. Urban forest carbon is calculated based on the estimated density of trees and the amount of urban space in the region. Urban trees sequester 0.3 million MT CO_2e of GHG emissions annually in WNY.

Solid Waste and Wastewater Management

Unlike energy use emissions, which are mostly carbon dioxide (CO_2), emissions from waste and wastewater management consist primarily of methane and nitrogen dioxide, 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 result in only a small amount of GHG emissions in our region (1.8% and 0.8%, respectively). Most landfill methane, more than 70%, is captured and used to generate electricity 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.

Conclusion

WNY GHG emissions are similar to state averages for most sectors, except the percentage of commercial and industrial emissions is lower. As WNY expands its economy, it will be important to address the inevitable increases in energy use and activity that could increase regional GHG emission levels in total and on a per capita basis. Addressing the efficiency of existing buildings, transportation, and other activities will also help ensure a decline in GHG emissions as the regional economy grows.

3 Energy Resources

To ensure energy sustainability it is essential to promote energy efficiencies, increase renewable energy generation capacity, identify potential upgrades to conventional energy generation facilities, and support innovative technologies. Cost, potential energy savings, and GHG emission reductions as well as short-term, medium-term, and long-term strategies to achieve energy sustainability also must be evaluated. The following were considered in the development of the region's energy goals and strategies set forth in this Plan:

- Increasing and promoting energy efficiency of existing buildings;
- Evaluation of energy efficient building standards for new construction;
- Analysis of existing financing tools that support energy efficiency and renewable energy investment;
- Consideration of innovative ownership, financing, or leasing mechanisms for renewable energy systems;
- Development of community-scale energy systems; and
- Energy generation, use, and on-site combustion by building type (residential, commercial, industrial, and institutional).

Energy plays a significant role in the generation of GHG emissions in the WNY region. In 2010, approximately 48% of regional GHG emissions come from energy consumption in buildings and facilities. Of the electricity generation in WNY, approximately 60% is exported out of the region, evidence of the strength of the resource in our region. Additional data regarding GHG emissions associated with energy consumption and generation are provided in the GHG Inventory Memo, Appendix E.

Electricity generation in WNY comes from a diverse range of fuel sources. In 2011, more than 66% of the electricity generated within the WNY region was from renewable sources.

3.1 Sustainability Indicators and Current Trends

The energy indicators discussed below are a measure of the baseline conditions of the region. These indicators were used to inform the goals established to increase energy efficiency and renewable energy, which will result in decreased GHG emissions. Additional detail on the sustainability indicators is provided in the Indicator Memo in *Appendix D*.

INDICATOR Energy Consumption Per Capita

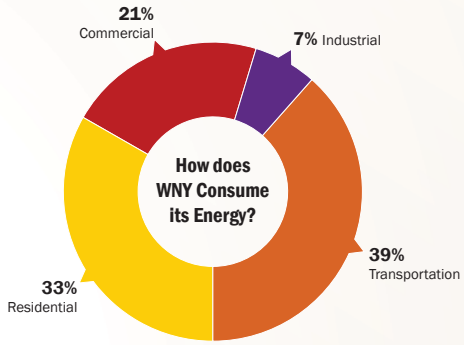
In 2010, the average energy consumption per capita in the region was 181 MMBtu, which includes energy consumed for residential, commercial, industrial and transportation uses. According to the United States Energy Information Administration, the New York State average per capita energy consumption was 192 MMBtu; the national average was 317 MMBtu. Implementation of actions that work to increase energy efficiency in all sectors within the region will reduce this number as long as the population remains constant.

ENERGY
Year: **2010**

Energy Consumption Per Capita

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

A more in-depth look



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 *CGC WNY Regional Tier II GHG Inventory.*

INDICATOR Energy Savings Realized Through Energy Efficiency Projects

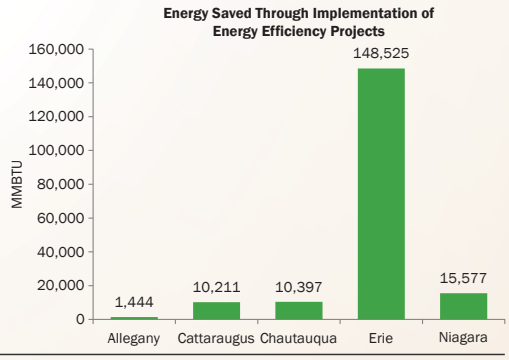
Energy savings generated by specific energy efficiency projects can provide more immediate estimates of energy reductions. In 2010, NYSERDA energy-efficiency program projects in the region accounted for a savings of 186,154 MMBtu. This indicator provides continued tracking of energy savings gained through projects funded through new or existing NYSERDA funding, and other utility programs.

ENERGY
Year: **2010**

Energy Savings Realized Through Energy Efficiency Projects

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

A more in-depth look



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

INDICATOR Electricity Generated from Renewable Sources

The expansion of renewable energy is a goal of New York State through the state's Renewable Energy Portfolio Standard (RPS), of 30% renewable electricity generation by 2015. WNY is a key contributor to this goal because 58% of the electricity generated in the region in 2010 was from renewable sources and 66% was renewable in 2011. The variability of the amount of renewable energy generation from 2010 to 2011 was due to fluctuations in energy produced by the region as managed for the NY Independent System Operator (NYISO) by the Public Service Commission (PSC). Of the renewable electricity produced in the region, almost all (98%) is from hydropower associated with the Robert Moses hydroelectric plant at Niagara Falls. Other renewable electricity generation sources include wind power, biomass, and landfill gas, which together represent only 2% of the region's renewable energy generation. This provides the region an opportunity to increase the amount of renewable energy produced by increasing this type of renewable energy generation.

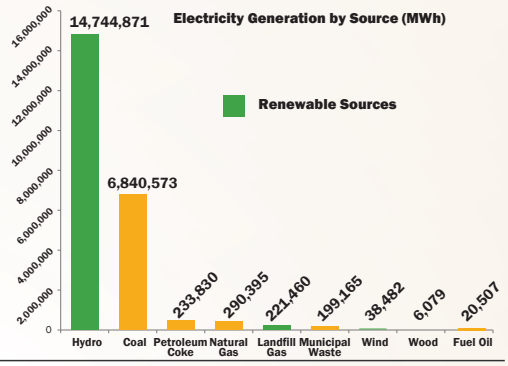
ENERGY
Year: **2011**

Electricity Generated from Renewable Sources

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

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

A more in-depth look



INDICATOR Average Carbon Dioxide Emissions per MWh of Electricity Generated

The other 42% of electricity generated in the region comes from the combustion of more carbon-intensive fuels (e.g., coal, natural gas, petroleum coke, tires, waste-to-energy), a major source of GHG emissions in the region. The average CO_2 emissions per MWh of electricity generated in the region, including all sources, was 899.99 lbs CO_2/MWh for 2010, which is higher than the upstate average for consumption (approximately 500 lbs CO_2/MWh), despite the 58% of electricity generated in the region coming from non-emitting, renewable energy sources. Tracking this average provides information on the region's progress towards reducing GHG emissions.

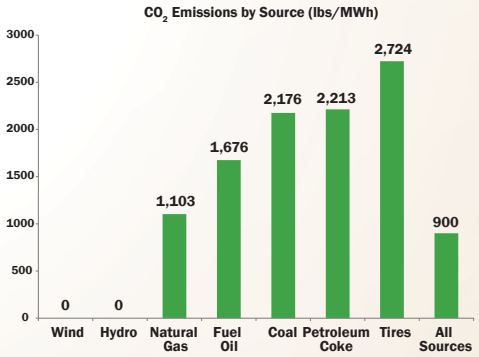
ENERGY
Year: **2010**

Average Carbon Dioxide Emissions Per MWh of Electricity Generated

On average, **899.99 lbs of CO_2** was emitted per MWh of electricity generated in WNY in 2010

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

A more in-depth look



INDICATOR

Climate Smart Communities

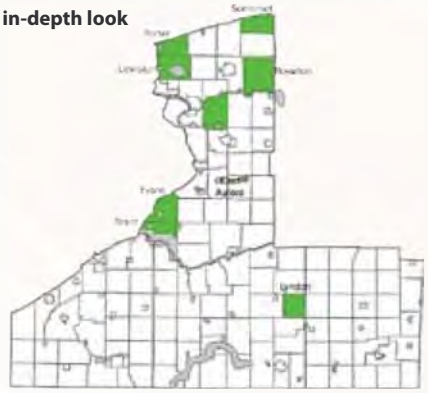
Nine communities that have made a pledge to become a Climate Smart Community. This initiative signifies a community's dedication to reduce GHG emissions and adapt to climate change. To carry out the pledge, communities must develop a climate action plan and set goals for GHG emissions reductions. Climate 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.

ENERGY
Year: **2013**

Climate Smart Communities

9 communities in WNY have pledged to become a Climate Smart Community

A more in-depth look



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

Regional Greenhouse Gas Emissions

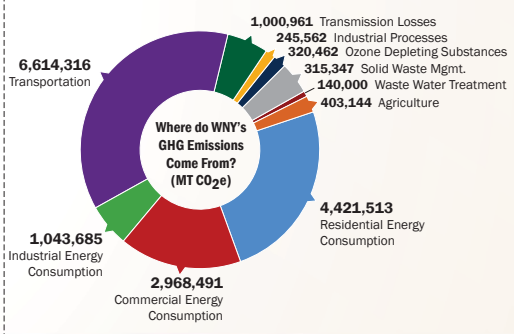
Since the majority of GHG emissions are from energy use, it is important to consider the overall GHG emissions from all sources, as described in the Tier II GHG Inventory, on a per capita basis. In 2010 this average per capita was 12.48 MT CO_2e. The goals and strategies included in this Plan have been developed to consider reductions in overall GHG emissions; therefore as this Plan is implemented this indicator will go down, as long as the population remains constant.

ENERGY
Year: **2010**

Regional Greenhouse Gas Emissions

WNY's 2010 baseline greenhouse gas emissions were 17,473,481 MT CO_2e, or **12.48 MT CO_2e per person**

A more in-depth look



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 *CGC WNY Regional Tier II GHG Inventory.*

Zero Energy Demonstration Home at Alfred State College, Wellsville, Allegany County

3.2 Sustainability Goals and Strategies

GOAL

Energy Sustainability Goal 1: ***Promote energy efficiency and conservation efforts throughout WNY in the most environmentally sound and cost-effective way, which provides access to these programs for people at all income levels and business sizes and results in a real reduction of GHG emissions.***

Of the total GHG emissions for the region, approximately 48% result from residential, commercial, and industrial energy consumption. A reduction in the GHG emissions associated with consumption in the region can be realized through implementation of energy efficiencies and conservation. Energy efficiency and conservation programs, such as those programs offered through NYSERDA, are aimed at identifying opportunities to reduce energy consumption in residential, commercial, and industrial settings, thereby decreasing GHG emissions. Increased use of existing funding programs can be realized through awareness, education, and technical assistance programs that can be targeted strategically to specific markets including local governments, businesses, and homeowners. The strategies below work to expand the implementation of existing and the development of new energy efficiency programs and conservation practices throughout the region.

Energy efficiency pertains to technological tools or infrastructure enhancements that reduce energy consumption (e.g., installing a programmable thermostat to reduce energy draw from heating, cooling, and ventilation when your house is unoccupied). **Energy conservation** refers to adjustments in human behavior to reduce energy consumption (i.e., integrating cleaning activities into daytime operations to avoid having to keep buildings lit and heated during unoccupied night times).

STRATEGY Promote clear and simplified access, navigation, and implementation of energy efficiency funding programs and education on energy conservation options through one-stop websites or other public outreach tools.

To assist with implementation of energy efficiency measures, both public and private customers can apply for funding, technical support, or reduced power pricing through NYSERDA, the New York Power Authority (NYPA), the U.S. Department of Energy (DOE), as well as the local power utilities. A one-stop interactive website could be developed that would identify existing opportunities for potential funding sources for residential, commercial, or industrial energy efficiency projects, as well as detailed information about the respective funding process. The website could also include educational outreach to the general public regarding energy conservation practices that would further work to reduce energy consumption.

A one-stop website could be developed by a local college or university that has students enrolled in technical programs geared toward energy efficiency, renewable energy or sustainability degree programs such as Alfred State College, Alfred University, or Jamestown Community College. The development of the website could be a student project and then maintained by that college or university. With the involvement of a local college/university this strategy could be implemented and maintained with limited funding that could potentially be obtained through NYSERDA or other programs, which aims to promote energy efficiency and installation of clean technologies to reduce energy costs and reduce GHG emissions.

STRATEGY Conduct focused outreach to mid-sized businesses and industries and mid-income families that inform them on existing funding opportunities for energy efficiencies upgrades.

Many existing energy-efficiency programs from federal, state, and local government, utilities, non-government organizations (NGOs), and other organizations are available in the region. There are programs that provide public outreach to lower-income consumers, such as small businesses and low-income families regarding financial incentives that are available. Larger energy consumers, such as large commercial-industrial facilities tend to implement energy-saving measures because there are fiscal incentives to reduce energy use and they have the upfront capital needed to implement such measures. Mid-sized businesses and middle income residents are eligible for some additional programs such as NYSERDA's Green Jobs/Green New York program that offers reduced cost or free home energy audits, as well as traditional or On-Bill Recovery financing. Additionally, mid-sized businesses are eligible for NYSERDA's Flex Tech and Existing Buildings programs. However, generally participation in these programs is low due to the lack of focused outreach to these communities to educate them on the existing programs.

Yahoo Energy-Efficient Data Center, Niagara County

A potential solution would be to create public outreach program that would work increase awareness of energy efficiency opportunities for funding through existing programs that are available to mid-income families and businesses. The program could be implemented locally by a community non-profit organization such as PUSH Buffalo who is already doing such work for low-income communities. A program like this could work with the existing NYSERDA-contracted organizations across the state that have been working to help build trusted relationships with

property owners to increase program participation and thereby reduce the costs of mass advertising and marketing. The goal of the program would be to make energy efficiencies available to a large portion of the community resulting in such upgrades being more affordable to implement and extending energy cost savings. As these existing funding opportunities are identified and potential gaps are identified, there may be a need to develop an additional regional financing vehicle, such as a regional revolving loan fund, that could provide additional opportunities for property and business owners throughout the region. However, any additional regional funding opportunities would not be eligible for existing or new NYSERDA funding, and additional funding options for a program such as these would need to be explored further.

STRATEGY **Encourage municipalities to implement energy efficiency programs, energy conservation practices and renewable energy within municipal operations through the promotion of programs such as NY's Climate Smart Communities and considering regulations and incentives that stimulate such programs in the community.**

Municipalities also have the ability to increase energy efficiency in the community through the adoption of stricter codes or regulations. Municipalities should be aware that when considering implementing energy efficiency codes or standards for new construction or major renovation, in some cases incentive programs may be the most effective tool for promoting both sustainability and economic development goals. Doing so can be very effective at meeting sustainability goals in an area with a growing population. However, in areas without prominent growth the implementation of stricter codes could deter development, due to actual or perceived high cost of construction. In these cases, voluntary incentive programs may be preferable.

Technical assistance from programs like NYS's Climate Smart Communities Program can help municipalities evaluate what types of regulatory changes and/or incentive programs would be the most effective for them to employ to increase efficiency. An essential part of the program included education to the public regarding mechanisms that can be implemented to achieve emission reductions, and demonstration of methods to implement energy efficiency and conservation. The Climate Smart Communities program also encourages municipalities to create individual climate action plans to reduce GHG emissions when considering their own municipal operations.

Local governments consume energy and generate GHG emissions through their operations. Assessments of energy use and GHG emissions were identified as effective tools to improve the sustainability footprint of local governmental agencies. Additional programs for municipalities to reduce their GHG emissions include conducting a study to evaluate the electricity loads of a municipality's top energy users, as well as conducting a GHG inventory of municipal operations that includes identification of methods to reduce specific GHG emissions. Furthermore, as local governments begin to incorporate energy efficiencies and conservation practices, there is a potential to set an example to their residents.

These types of studies and programs will need to be implemented by the respective municipality or county and would require in-kind funding from municipal budgets as well as support from energy efficiency programs such as New York State Department of State's Local Government Efficiency Program. The additional staff that may be required to support such work could be sustained beyond the initial studies through cost saving associated with the energy saved through energy efficiency and conservation programs.

STRATEGY **Promote energy efficiency programs in business and industry through establishment of the Green Business Roundtable.**

The development of a Green Business Roundtable would be an example of a resource that would encourage and assist businesses to increase energy

efficiencies and conservation that would reduce their carbon footprint and other environmental impacts. Establishing this type of collaboration in the region would not only provide existing sustainable businesses a peer to peer resource to help them network to improve their programs but would also be an effective marketing tool to get other businesses to adopt sustainable practices and GHG reduction objectives.

At a minimum the Green Business Roundtable will include the following:

- Presentations and training regarding sustainable business practices and services;
- An environmental benchmarking system for tracking GHG reductions as well as other environmental and economic benefits;
- A recognition program to recognize and reward businesses for sustainable accomplishments;
- Marketing and outreach program to continually recruit business participants;
- Organizing business partnerships to further sustainable goals;
- Development of a an independent, self-supporting sustainable business collaboration, and
- Adoption of a business advisory board to direct and determine all of the roundtable's programs and initiatives.

The development of this program would require funding to establish the infrastructure of the roundtable and build membership and support from the business sector to the point where the membership through a participation fee structure would sustain the effort. Potential funding through a USEPA P2 Grant and could assist with the initial startup costs.

STRATEGY

Promote distributed power and the eco-industrial business model of co-locating symbiotic industrial processes and other methods.

Efficiencies in industrial applications can be realized by co-locating symbiotic processes (i.e., facilities that use each other's products or by-products) and using on-site power generation. These practices have been termed the eco-industrial business model and have been identified as an innovative way to increase industrial efficiencies and attract new business to the region. This type of process is currently being utilized within the region. Covanta's Waste-to-Energy facility located in Niagara Falls provides its steam by-product to neighboring industries that require steam for their processes, which result in decreased overall energy consumption.

This strategy requires symbiotic industries to be sited near each other. Therefore implementation of this strategy remains ultimately with the industries to identify when this would be beneficial. However it could also be a consideration from local planning boards when reviewing the siting of new industry in their municipalities. The costs of implementation could be funded by NYS Empire State Development Environmental Investment Program, which is a financial assistance program to help businesses capture the economic benefits of pollution prevention, waste reduction, and reuse and recycling, including awards for the use of industrial wastes into higher value products.

GOAL

Energy Sustainability Goal 2: ***Increase renewable energy generation in the WNY region (including technologies listed in the NYS Renewable Portfolio Standard: solar water heat, photovoltaic, landfill gas, wind, biomass, hydroelectric, fuel cells, anaerobic digestion, tidal energy, wave energy, ocean thermal, ethanol, methanol, biodiesel, and fuel cells using renewable fuel, and geothermal).***

Electricity generation in the region accounts for 9.8 million MT CO2e annually, which includes electricity that is exported and consumed outside the region. As mentioned earlier, approximately 66% of the electricity produced in the region is from renewable sources, of which 98% is from the Robert Moses hydroelectric plant in Niagara Falls. Therefore there is significant opportunity to increase other forms of renewable energy within the region.

Renewable energy development is also currently constrained due to regulatory hurdles such as municipal home rule, the lack of an expedited screening process (i.e., NYS Article 10 uniform siting law), and public opposition. Increased generation and use of renewable energy will significantly lower GHG emissions. Current regulatory processes can be cumbersome for siting small-scale projects. It is essential that regulatory reforms that promote innovative renewable energy development are adopted.

Upgrading the aging transmission infrastructure, as called for in the NYS Energy Highway Program, can relieve congestion, promote distributed generation, and reduce line loss. In addition, constraints on the transmission of energy can also inhibit renewable development; local transmission line improvements would allow new projects to be connected to the larger grid, and regional line improvements would allow renewable power to be transmitted to higher paying regions (i.e., New York Independent System Operator [NYISO] Zones G-K).

Buffalo Niagara International Airport, Solar Panels, Erie County

STRATEGY **Complete a feasibility analysis to inform the potential development of an implementation-ready, written, regional feed-in-tariff (FIT) program to spur renewable energy development and job creation, using successful programs in Germany, Ontario, and Long Island as models.**

The implementation of a feed-in-tariff program in the region could potentially increase the rate of development of renewable energy projects. A feed-in-tariff is a long-term contract that could be put in place by the New York Power Authority to establish a long-term, fixed-rate power purchase agreement. Implementation of a feed-in-tariff program in the region would require action at the state level, however, planning stakeholders felt that the strategy is worthy of a feasibility study to determine the potential benefits and challenges for the region from the implementation of a feed-in-tariff. The outcome of the study should determine an entity, such as a local utility, that could implement a pilot program in the region. This would also require a decision from the NYS Public Services Commission.

A feasibility study could be undertaken by the Sierra Club, as they are currently advocating for this type of program in the region. The funding of the feasibility study could be supported by funding through New York State Empire State Development Economic Development Fund.

STRATEGY **Promote the use and development of renewable energy through demonstration projects that integrate public education.**

Public opposition to renewable energy generation projects can prohibit these types of projects from being permitted and built, and thus it is important to incorporate public education as a tool in promoting the use and development of renewable energy. One strategy to combat the public opposition is the development of highly visible renewable energy generation projects that serve as an opportunity to educate the public on the benefits and opportunities for renewable energy generation. One example of this in the region is the University at Buffalo (UB) Solar Strand, which was placed into service April 2012. The UB Solar Strand is a 750-kilowatt, 3,200 photovoltaic array that generates electricity for the university which is also open to the public, serving as a natural classroom for UB students, as well as K-12 classrooms. This project was funded through the university and NYPA. Another example of this type of demonstration project is Alfred State College's Zero Energy Demonstration Home that was built by students and is used as a learning tool for the college.

UB Solar Strand, Amherst, Erie County

There is an opportunity for projects similar to the UB Solar Strand and the Zero Energy Demonstration Home that demonstrates other types of renewable energy to be integrated into other colleges and universities in the region. For example, Daemen College is in the process of developing a geothermal demonstration project with funding from US Department of Energy, NYSERDA, and funding from private foundations.

STRATEGY **Encourage the installation of renewable energy such as solar, wind and geothermal in new and existing developments.**

There is an opportunity to incorporate individual renewable energy installations into new and existing buildings. The installation of renewable energy can accommodate all or a portion of a building's energy needs and will reduce the building's energy costs and the energy needed from the grid. In order to encourage the implementation of these small-scale renewable energy installations the cost of these units must have a reasonable payback period to the customer. As the cost of these installations can be prohibitive to a majority of consumers, it can be offset by funding through NYSERDA (Existing Facilities Program, Solar PV Program Incentives, On-Site Wind Programs, Solar Thermal Program Incentives) and US Department of Energy (Solar Tax Incentives), which are eligible to residential, commercial and industrial customers.

GOAL

Energy Sustainability Goal 3: ***Upgrade existing conventional energy infrastructure in the WNY region in an economically and environmentally sustainable way.***

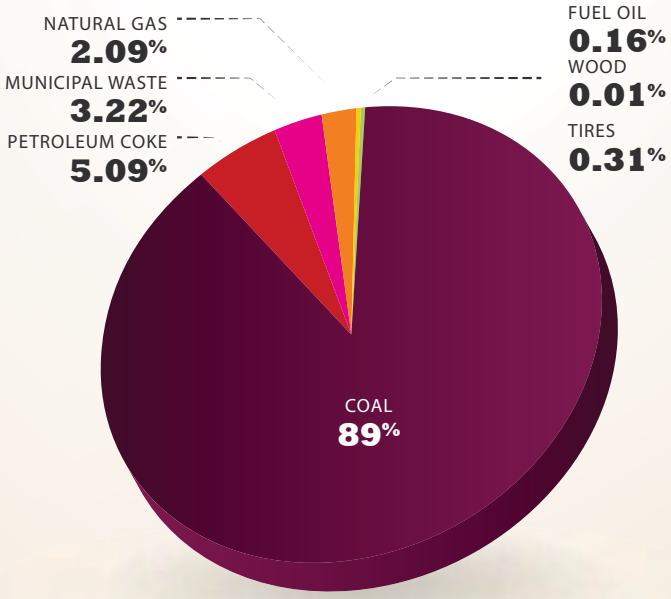
Coal-fired power plants provide 38% of the electricity generated in the WNY region while accounting for 89% of the GHG emissions associated with electricity generation. The generating capacity of these facilities is essential to the overall electricity on the grid, but progress can be made in reducing emissions and promoting sustainability.

STRATEGY **Ensure fuel diversity in our region and promote GHG reductions through the support of co-firing biomass technology as well as conversion to other less expensive and GHG-intensive fuel sources at existing coal-fired generating plants while considering other environmental factors.**

Fuel diversity and reduced emissions can be realized through partial or complete conversion of existing coal-fired generating plants to high efficiency, low emission biomass and other less GHG-intensive fuels. To encourage such conversion there needs to be a financial incentive in order to make the conversion financially viable in the long term. The existing coal-fired plants in the region could make this transition to either high efficiency, low emission biomass or natural gas co-firing. They would need to start the process with a feasibility study that considers the cost to retrofit the current operations, as well as to ensure there are the proper mechanisms in place to ensure local fuel suppliers price and volume certainty for the fuel.

The conversion of these facilities to less GHG intensive fuel sources can result in significant reductions in GHG emissions. For example if the USNYPP Somerset Operating Facility converted a portion, 50MW of its generation to biomass, that would result in a decrease of GHG emissions by 10%. As these facilities begin converting and are made more financially viable, even further conversions can be achieved. Potential funding for these studies and the eventual upgrades to the facilities could be supported by the US Department of Energy or NYSERDA.

GHG Emissions by Electrical Source



WNY Electricity Grid-Tied Generation GHG Emissions
(9.8 Million MT CO_2e)

Conventional energy generation produces significant GHG emissions in the region. Renewable energy generation associated with hydropower and wind does not produce GHG emissions.

GOAL

Energy Sustainability Goal 4: ***Support innovative energy projects that are consistent with the sustainability goals of the region and encourage economic development.***

Great progress is often made from new ideas that have yet to be formulated. Other technologies are in their infancy but promise to deliver when they reach maturity. In order to maintain a stronghold in the sustainability arena, innovative technologies and programs must be considered. Support for energy education and development of new ideas will promote problem solving while spurring economic and intellectual development.

Some innovative technologies that should be promoted in the region include the following:

- Distributed generation, such as fuel cells, and combined heat and power (CHP) to enable collection of energy from many sources while reducing transmission losses.
- The eco-industrial business model, through which networks of neighboring businesses use each other's products or waste products as inputs (e.g., one facility's waste heat could help heat greenhouses for another enterprise).
- Modern, environmentally compliant waste-to-energy facilities that produce power from a nontraditional fuel source while diverting waste from landfills.

STRATEGY

Enhance existing programs that support the development of sustainable advanced manufacturing enterprises, as well as innovative projects for alternative energy generation within the region.

The region has the opportunity to become the hub of innovative alternative energy generation development, as well as supporting sustainable advance manufacturing that are currently under way in the region's colleges and universities. For example, the Alfred State College School of Applied Technology is currently working to enhance current technologies and provide students opportunities to learn hands-on about sustainable construction, operation, and maintenance. Future plans for the college include the development of the Sustainable Advanced Manufacturing Center (SAMC) that 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. A program like this will work to develop and enhance new technologies while producing graduates that will have the skill sets to be integrated into industry throughout the region. Funding for projects similar to this could be through NYSERDA's Industrial and Process Efficiency Program.

3.3 Sustainability Targets

Sustainability targets were established for selected indicators. These targets are intended as reasonable quantifications that the WNY region should strive to achieve as it implements the projects associated with this sustainability plan. Further information about the targets and associated indicators is provided in *Appendix D*.

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

The implementation of strategies associated with Energy Goal 1 – Increase Energy Efficiency and Conservation will work to increase the number of energy efficiency projects within the region. It is important to set a target to increase the number of projects that are implemented within the region in order to show progress.

Energy-efficient projects reduce the overall energy demands of residential, commercial, and industrial consumers in the region. NYSERDA has many programs in place to assist end-users in implementing these projects. However, these programs can be underutilized. This can be accomplished through implementation of efficiency projects through more effective outreach and use of existing programs.

TARGET **The region's target is to increase renewable energy generation to 75% by 2025.**

The implementation of strategies associated with the Energy Goal 2 – Renewable Energy can be measured by the amount of renewable energy generation facilities that come on line. Since the region already produces 66% of its energy from renewable resources, of which 98% is from hydropower, setting a target to increase the amount of renewable generation that is from non-hydropower sources will work to increase the diversification of renewable generation facilities in the region while also increase the overall amount of renewable energy available on the grid.

This target is in line with the state's goal of reducing statewide GHG emissions by 80% below 1990 levels by 2050. Due to varying interests in the region, consensus was not met on this target. The established target listed above is based on input from the working group, the planning consortium, and readily available data. Some working group members pushed for a stronger target of 85% by 2025 and 100% by 2050. However, consensus was not met on these aggressive targets. Conventional generation facilities provide considerable tax revenue in their host communities. Additionally, many of the conventional generation facilities are in the process of partial or complete conversion to less GHG-intensive fuels (e.g., biomass and natural gas) or processes (e.g. combined cycle gas turbines). The 75% target can be met by the addition of one of the following: approximately 1,000 MW of additional wind turbines, approximately 1,800 MW of additional solar generation capacity, or approximately 650 MW of additional hydroelectric generation capacity.

Due to the region's status as an exporter of electricity, the mix of electricity generated in the region does not necessarily represent the mix of electricity used in the region. However, it is a valuable measure of progress of the amount of installed renewable generation capacity. The total amount of electricity generated is a complicated mix of demand across the WNY region, state, and neighboring states, as orchestrated by the PSC.

TARGET **The region's target is to double the number of Climate Smart Communities to 18 communities by 2015.**

The implementation of the strategy will increase the number of NYS Climate Smart Communities, detailed in Goal 1 – Increase Energy Efficiency and Conservation. As this target is achieved the region will see progress toward meeting Energy Goals 1 and 2, as both energy efficiency/conservation and renewable energy is a priority for the Climate Smart Communities program.

There are currently 9 communities within the WNY region that have made a pledge to become a Climate Smart Community. These communities have pledged to identify ways to reduce GHG emissions, become energy independent, promote smart economic growth, protect the environment and ultimately, improve the quality of life for current and future residents, save taxpayer dollars and advance communities goals for health and safety, economic vitality, energy independence and quality of life. These communities must develop a climate action plan and set goals for GHG emissions reductions. As more communities sign on to this initiative, the GHG emissions produced within the region will ultimately be reduced.

TARGET

The region's target is to reduce the total regional GHG emissions by 30% by 2020 from a 2010 baseline of 17.5 million $MTCO_2e$.

The implementation of the strategies associated with most of the goals discussed in this Plan will address this overall target toward achieving sustainability in the region. As the sustainability strategies detailed in this Plan are implemented through the region, the region will experience a reduction of GHG emissions.

Total GHG emissions for the region are a composite of electricity consumption, direct energy use, transportation, and other minor sources, as presented in the indicator section and the GHG inventory ***(Appendix E)***. Therefore, this target applies to subject areas aside from energy. Energy usage in buildings (not transportation) accounts for approximately 48% of total regional GHG emissions. The target was established as a total target, rather than per capita, so the trend of declining population would not artificially increase the indicator value. Progress can be made by reducing overall energy consumption, converting to less GHG-intensive fuels for electricity generation and direct energy use, and implementing energy efficiency projects.

3.4 Sustainability Actions

The promotion of energy efficiencies, renewable energy development, upgrades to existing conventional energy facilities, and innovative energy technologies are examples of actions that would benefit the WNY region and result in a more competitive energy economy that is aligned with the goals set forth in the *WNY REDC's Strategy for Prosperity*. Implementation of these types of actions would also serve to realize direct and indirect reductions in GHG emissions.

The region's economy would be advanced through the sustainment of existing employment in the energy industry and the creation of new jobs in sustainable energy development. The strategies of this plan are designed to create an environment where advancements in innovative energy technologies can be discovered, manufactured, and demonstrated locally. As a result WNY could become a hub of innovative energy development that would entice new industries and skilled workers to the region.

Reducing the emissions associated with electrical generation could be accomplished by reducing electricity generation in the region, or the more favorable option of replacing more GHG-intensive electricity sources with renewable energy, or other less intensive GHG energy sources. Therefore it is critical that the region pursue the goals and strategies discussed here, not just because of their positive economic benefits but for the added need to reduce our carbon emissions in the region in keeping with stated goals.

A summary of identified sustainable energy projects that align with the goals and strategies of this Plan is located ***on pages A-2 through A-8 of Appendix A***.

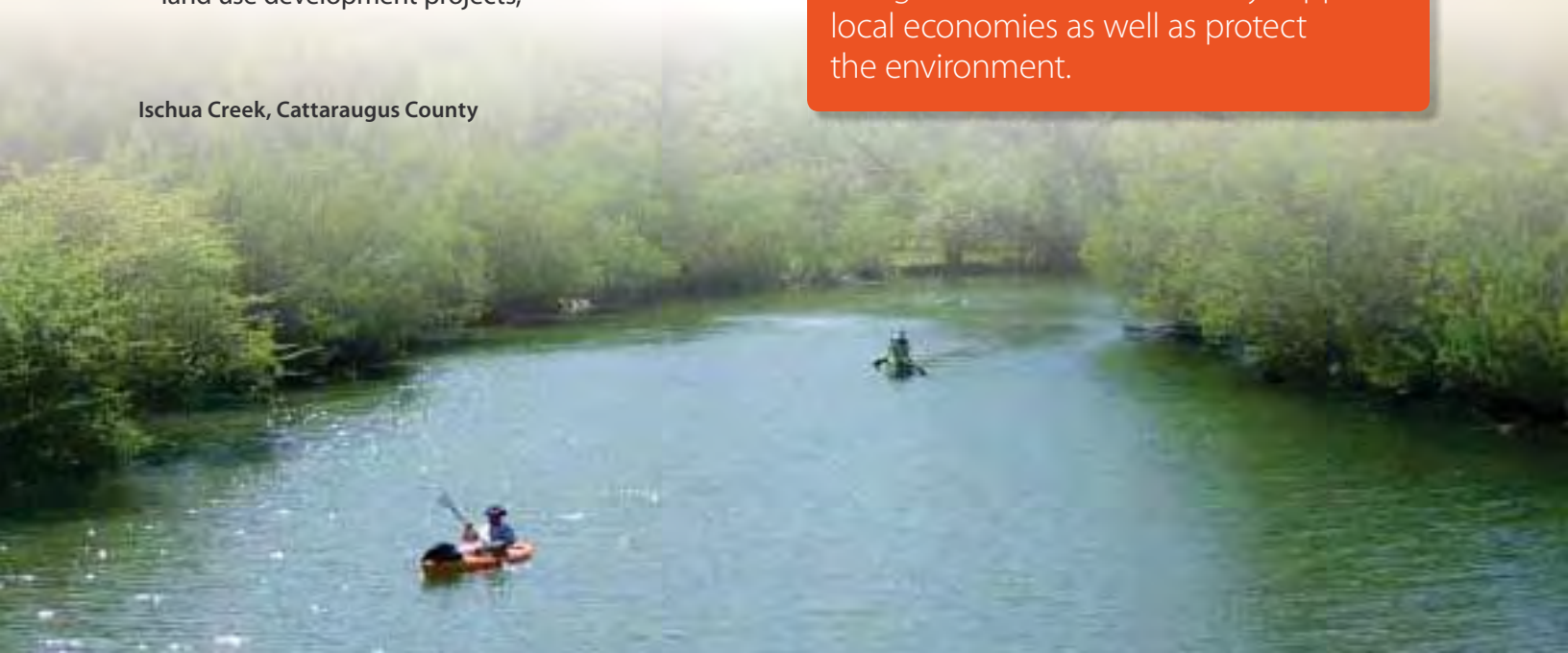
Steel Winds, Lackawanna, Erie County

4 Land Use and Livable Communities

Sustainability as it pertains to land use and livable communities in the WNY region includes the incorporation of **smart growth** principles in land use planning and the creation and preservation of livable communities. Because of the diversity of the WNY region, sustainability strategies need to consider how urban, suburban, village/hamlet, and rural communities can use land efficiently and sustainably while providing opportunities for economic growth and improved quality of life for their residents. The following were considered in the development of the region's land use and livable communities goals and strategies set forth in this Plan:

- Potential to align infrastructure and transportation investments to support equitable land-use development throughout the region;
- Identify ways to stimulate both public and private investment in mixed-use developments, brownfields redevelopment, and adaptive reuse of existing buildings and historic structures within existing **Main Streets** and community centers;
- Protection of natural ecosystems and encouragement of sustainable use of natural resources;
- Consider the incorporation of natural ecosystems projects, including green infrastructure, in future land use development projects;
- Evaluate future development within areas currently served by adequate water, sewer, and transportation infrastructure; and
- Consider ways to encourage the expansion of **location-efficient housing** and infrastructure to existing housing that increases access to employment centers and transportation options.

Smart Growth principles work to ensure that developments in urban, suburban, and rural communities are being coordinated so that they support local economies as well as protect the environment.



Ischua Creek, Cattaraugus County

In order to guide public officials and planners, this Plan identifies **municipal centers**, as defined by the **New York State Smart Growth Public Infrastructure Policy Act**, as areas where future development that aligns with the principles of smart growth should be encouraged. These centers were identified for the express purpose of encouraging and facilitating targeted growth in location-efficient, developed areas with increased mobility options. The development of the municipal center's mapping (Appendix F) was based on natural resource mapping, identification of main streets and community centers, access to public transportation, proximity to major employment centers, brownfield opportunity areas, existing Local Waterfront Revitalization Plans (LWRPs) and environmental justice areas.

Several regional planning groups in WNY are addressing land use development, including the WNY REDC's Smart Growth Work Group. The WNY REDC Smart Growth Work Group's ongoing planning work is an opportunity to coordinate the goals of this Plan with regional economic development.

4.1 Sustainability Indicators and Current Trends

The Land Use and Livable Communities indicators discussed below are a measure of the baseline conditions of the region. These indicators were used to inform the goals established for land use and livable communities in the region. Additional indicators were considered but due to lack of data at the date of this Plan were not included. Additional detail on the sustainability indicators is provided in the Indicator Memo in *Appendix D*.

INDICATOR Developed Land per Capita

Since 1992 the WNY region has experienced an unsustainable increase in acres of developed land. Over the past 20 years the region has experienced a 107% increase of developed land while over the same time period the region's population decreased by 5%. The developed land per capita in 1992 was 0.103 acres per person and by 2011 it increased by more than double to 0.23 acres per person. However, the region's developed land per capita is slightly lower compared with all of upstate New York (which excludes the nine downstate counties), which is 0.28 acres per person. As smart growth principles are implemented throughout the region, the amount of developed land per person should remain constant, and not increase.

LAND USE
Year: **2011**

Developed Land Per Capita

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

Data Sources

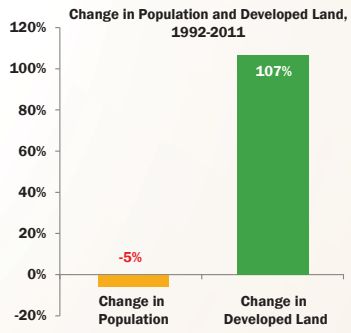
U.S. Geological Survey. 1997. 1992 *New York Land Cover Dataset.*

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.*

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.*

A more in-depth look



Knox Farm State Park, East Aurora, Erie County

INDICATOR

Agricultural Land Loss

The region has lost 41.5 square miles of farmland each year for the past 20 years. This indicator should be considered alongside the developed land per capita indicator as both show that the region has been encroaching on agricultural lands for further development. This increased use of more land resources that is serving a shrinking population base has left urban areas in need of redevelopment and resulted in the loss of agricultural land and open space throughout the region. Implementation of actions that are focused on the preservation and enhancement of agricultural lands will work to reduce this annual loss of agricultural lands throughout the region.

LAND USE
Year: **2011**

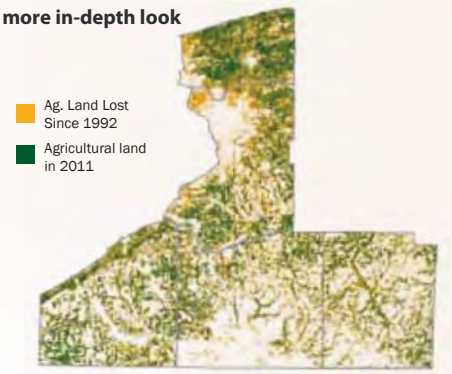
Agricultural Land Loss

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

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.*

A more in-depth look



INDICATOR

Housing and Transportation Affordability

In 2009, the typical family in WNY spent 52% of its income on housing and transportation costs, which is in line with upstate New York as a whole, which also spends 52% on housing and transportation. According to the Center for Neighborhood Technology, any number less than 45% is considered affordable. Each of the counties in the region have affordability indexes greater than what is considered affordable. The three southern counties, Chautauqua, Cattaraugus, and Allegany, have the highest cost for this indicator due to the rural communities in this part of the region having high cost of transportation associated with the greater distances these residents often need to drive to reach necessities such as employment centers, schools, and shopping options. As the region implements strategies that reduce transportation options and associated costs while working to improve main streets, the region will become more affordable for the residents.

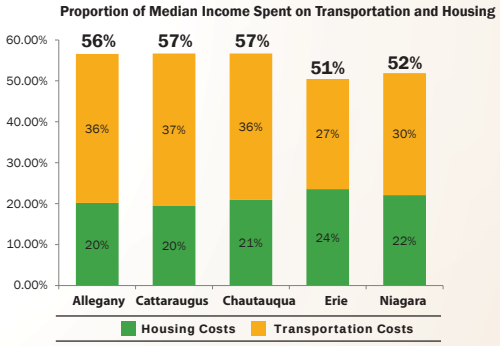
LAND USE
Year: **2009**

Housing and Transportation Affordability

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

Data Sources
Center for Neighborhood Technology (CNT). 2009. *H+T affordability index.* http://htaindex.cnt.org.

A more in-depth look



INDICATOR Municipalities with a Comprehensive Plan and Zoning Code

Within the past 15 years, approximately 13% of municipalities in the region (24 out of 190) have adopted and updated their comprehensive plan and zoning code, an indication that these municipalities may be currently incorporating smart growth principles into their land use planning. While these updates are considered positive, it is critical to provide all local municipalities with the tools and support needed to assist them to make these updates and to increase the number of comprehensive plans and zoning codes in the WNY region that incorporate smart growth principles.

LAND USE
Year: **2012**

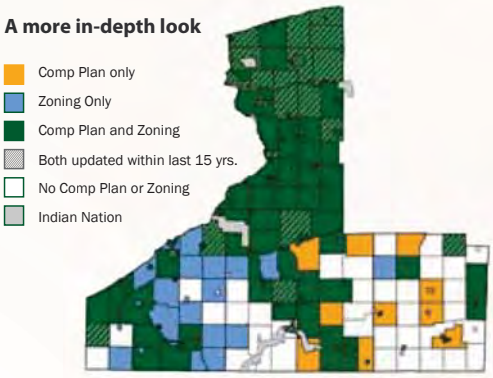
13% of municipalities in WNY (24 of 190) have updated both their comprehensive plan and zoning code within the past 15 years

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.

Municipalities with a Comprehensive Plan and Zoning Code

A more in-depth look



INDICATOR New Homes Built near Municipal Centers

Since 2000, approximately 20% of all new homes were built within one-quarter mile of a municipal center. Municipal centers within the region as defined by New York State Smart Growth Public Infrastructure Policy include downtowns, central business districts, main streets, Brownfield Opportunity Areas, LWRP areas, public transit access locations, low-income census tracts or major employment centers. This indicates that the majority of all new housing developments in the region are likely increasing the amount of developed land in the region as these new developments are likely being built on former agricultural or open space lands. This indicator should increase as smart growth principles are implemented throughout the region, resulting in a reduction of the loss of agricultural and developed area per capita.

LAND USE
Year: **2010**

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

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.

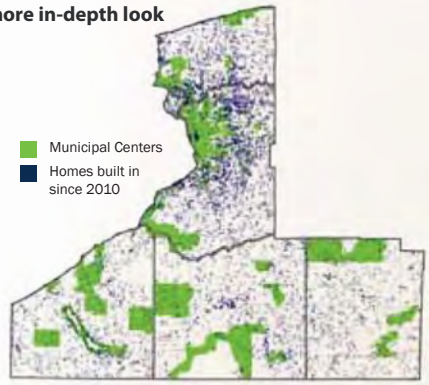
N.Y. Department of State; New York State Department of Environmental Conservation. 2012. Brownfield Opportunity Area and Local Waterfront Revitalization Plan Boundaries.

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*

New Homes Built Near Municipal Centers

A more in-depth look



INDICATOR

Population Living Near Public Parks of Conservation Areas

In 2010, approximately 16% of the residents within the region live within one-quarter mile of a publicly owned public park, playground, athletic field or conservation area. This indicator should be considered in association with the public parks and conservation areas per capita discussed below, as together they provide a understanding of the proximity and amount of public parks available to the community. The availability of these public open spaces are critical to create a livable community.

LAND USE
Year: **2010**

Population Living Near Public Park and Conservation Areas

16% of WNY residents (227,607 people) live within a 1/4 mile of public park and conservation areas

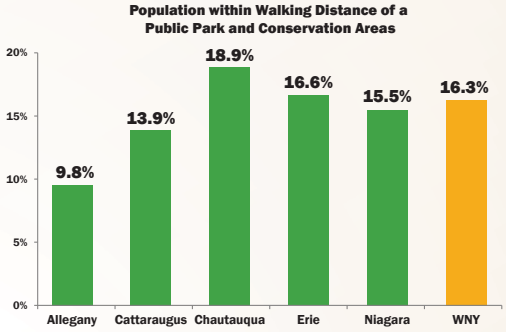
Data Sources
Erie County Department of Environment & Planning; Niagara County Department of Economic Development; Southern Tier West. 2012. Parcel Boundary Data.

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.*

A more in-depth look



INDICATOR

Public Parks and Conservation Areas per Capita

There are 162 acres of public parks or conservation areas for every 1,000 residents within the region. This includes land classified as public parks, greenways, bike trails or publicly owned forest lands. This indicator should be considered in association with the population living near public parks and conservation areas discussed above, as together they provide a understanding of the proximity and number of public parks available to the community. The increased availability of public open spaces are critical to creating a livable community.

LAND USE
Year: **2010**

Public Park and Conservation Areas Per Capita

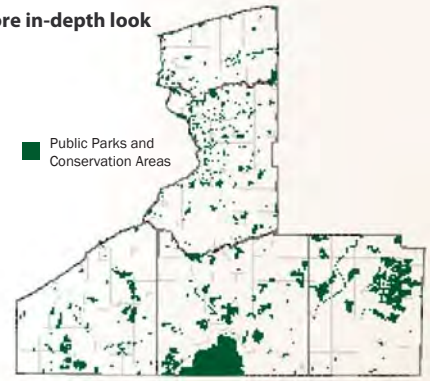
There are **162 acres** of public park and conservation areas for every 1,000 people living in WNY

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.*

A more in-depth look



Equestrian Trails, Chautauqua County

INDICATOR Walkability of Local Main Streets

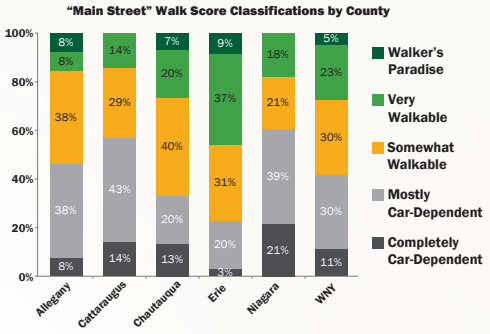
In 2012, 58% of the region's main streets were rated very walkable or better. These are main streets that have infrastructure that allow pedestrians to safely access a variety of amenities along the main street such as groceries, drug stores, restaurants, and other shops and entertainment options while also having safe access to public transportation. An example of a "walker's paradise" is East Aurora's Main Street, which has recently been updated to increase sidewalk and road infrastructure to accommodate walkers and bicyclists throughout the entire stretch of the village. It should be noted that the calculation of this score has some issues in rural communities throughout the region due to the limitation of www.walkscore.com. An example of this is the Village of Alfred in Allegany County, which is a very walkable community but is only rated "somewhat walkable" using the calculation from www.walkscore.com. As communities incorporate smart growth into their planning it is likely that the walkability of local main streets will improve throughout the region.

LAND USE
Year: **2012**

Walkability of Local Main Streets

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

A more in-depth look



Data Sources
Walk Score. 2012. www.walkscore.com

County Planning Department, personal consultation with planning staff participating in the planning process. October, 2012.

INDICATOR Waterfront Municipalities with a Local Waterfront Revitalization Programs

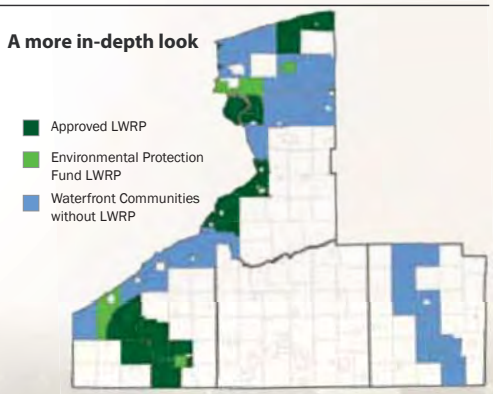
In 2012, 38% of "waterfront communities" as defined by the NYS Department of State (NYSDOS) have an approved LWRP. A LWRP provides comprehensive support and planning for critical issues regarding waterfront management and development. This is an indicator that shows progress toward increasing the number of communities in the region that are considering specific land use polices that protect and promote waterfront resources in the community.

LAND USE
Year: **2012**

Waterfront Municipalities with a Local Waterfront Revitalization Program (LWRP)

38% of waterfront municipalities in WNY have a NYS approved LWRP

A more in-depth look



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.*

Summer Street, Ellicottville, Cattaraugus County

4.2 Sustainability Goals and Strategies

GOAL

Land Use and Livable Communities Sustainability Goal 1: ***Increase the number of local municipalities that are developing, adopting, and implementing smart growth policies.***

Local municipalities throughout the region need technical land use planning tools to update existing comprehensive plans, zoning ordinances, and other land use controls to include smart growth policies in their communities. Smart growth policies work to support the local economy as well as protect the environment. It is essential that local municipalities, the public, and developers understand the impacts, costs and benefits for incorporating smart growth principles in to their land use planning efforts.

Future land use planning must consider **New York Municipal Home Rule Law**, which provides each municipality control over developing and implementing local laws and zoning ordinances. Therefore it is important that the smart growth policies consider the diverse needs of each individual community, including the urban, suburban, and rural communities.

Ulrich City Centre, Lockport, Niagara County

STRATEGY

Develop municipal and county-level land use planning tools for use within the region, such as a technical assistance handbook for smart growth.

Encouraging municipalities to update zoning and other land use controls must include methods that make it easier for municipalities, understanding the lack of resources currently available to undertake such initiatives. A method that could be implemented region-wide would be the development of technical assistance handbooks to provide guidance on how to incorporate smart growth principles into municipal comprehensive plans or zoning documents. Additionally, the handbook could serve as a means of educating municipalities on the benefits of implementing smart growth policies. These handbooks could be developed for a county planning department and provided to the individual municipalities within that county; and, depending on the applicability of the handbook, it could be used or modified to meet the specific needs of other counties within the region. Other technical assistance programs could include training and other outreach to further educate municipalities about smart growth. Potential funding assistance for these types of programs could come from the New York State Housing and Community Renewal Community Block Grant programs.

GOAL **Land Use and Livable Communities Sustainability Goal 2***: Develop mechanisms for regional land use planning assistance and collaboration.*

Many local municipalities throughout the region lack the technical resources to develop and implement smart growth policies in their communities. As such it is essential to provide municipalities throughout the region with technical assistance and incentives to adopt smart growth policies in their comprehensive plans and zoning ordinances as well as to inform the community of the impacts, costs, and benefits of smart growth policies.

STRATEGY **Provide technical assistance and identify sustainable funding and partnership opportunities to build regional planning capacity, though the support and coordination of the REDC Smart Growth Work Group's proposed "Smart Growth Coordinating Council."**

It is important for the region to go beyond providing only technical assistance and work to build a regional planning assistance entity. Since the regional county and local governments currently have limited budgets and planning resources, other means of accomplishing this must be identified. There is potential for the REDC's Smart Growth Work Group proposed "Smart Growth Coordinating Council" to work to build planning capacity throughout the region through the identification of funding sources for the technical assistance and financial incentives to municipalities that are implementing smart growth in their communities.

The region must work to identify funding opportunities to assist in this process through federal and state grants and local community foundations as well as more sustainable sources, e.g. fee-for-service. Potential funding opportunities for building planning capacity in the region includes the New York State Housing and Community Renewal Community Block Grant programs.

The increase in planning capacity and technical assistance within the region is vital to the success of the rest of the goals and strategies, as this in an overarching strategy that will encompass the strategies detailed below for land use and livable communities.

GOAL **Land Use and Livable Communities Sustainability Goal 3:** ***Encourage and focus development in areas served by existing infrastructure.***

Through the provision of technical assistance and education to local municipalities, development in areas of existing infrastructure—especially in existing water and sewer districts— and redevelopment and adaptive reuse of brownfields, vacant and underutilized buildings in the vicinity of main streets, and community centers can be encouraged.

Identification of municipal centers, which are areas that the state has targeted for investment, will help to revitalize these areas and promote economic development in these areas. The municipal centers within the region are detailed in Appendix F.

STRATEGY **Revitalize main streets and community centers through redevelopment and adaptive reuse of abandoned, underutilized, or historic buildings and brownfield sites by providing municipalities with funding, technical assistance, and/or streamlining the review/approval process.**

The implementation of smart growth principles will assist with the revitalization of the region's main streets and community centers. It will be the responsibility of the municipality to prioritize the redevelopment and adaptive reuse of abandoned, underutilized or historic buildings and brownfields within areas of existing water

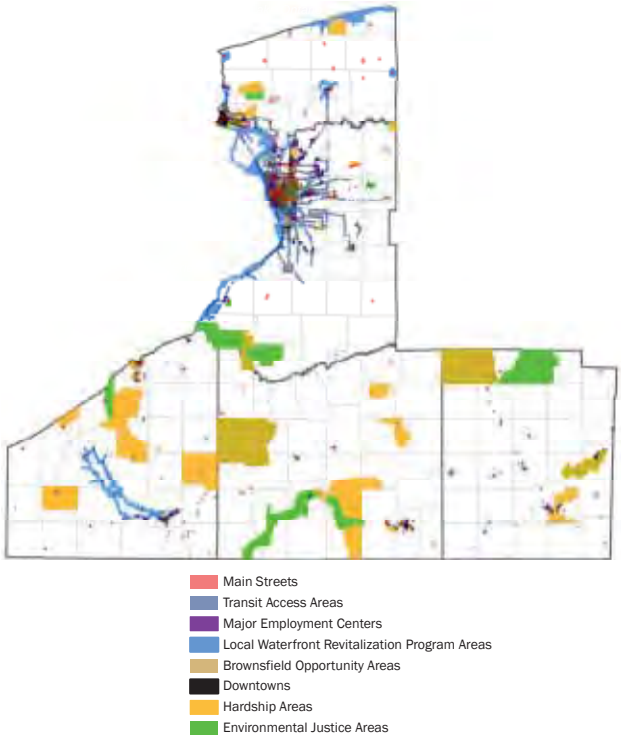
and sewer infrastructure, in lieu of the construction of a new building/development in a "greenfield." This has many benefits to the community, such as reduced cost of infrastructure as well as economic revitalization in older communities.

One way to provide financial assistance to municipalities would be the development of a county main street revitalization fund that would assist communities in demolishing vacant, abandoned and dilapidated buildings. This has specifically been planned in Chautauqua County, with funds tied directly to the Chautauqua County Land Bank, which may receive some funding through the Mortgage Settlement money from these properties.

As discussed in the strategy above, this can be accomplished through building planning capacity within the region that can educate municipalities about the benefits and opportunities to redevelop existing buildings, as well as providing the technical assistance and capacity needed to apply for funding assistance. Municipalities could also work to expedite the review process for site plans associated with redevelopment.

There are a variety of funding sources that can provide financial assistance for projects that revitalize main streets and community centers such as NYS Housing and Community Renewal Main Street Program and Rural Area Revitalization Program; Community Development Block Grant Program; NYS Empire State Development Grant Funds; NYS Office of Parks, Recreation, and Historic Preservation Historic Tax Credit Program; and/or NYS Department of State's Brownfield Opportunity Area program.

Municipal Centers as Defined by the New York State Smart Growth Public Infrastructure Policy Act, Western New York



City of Buffalo, Erie County

GOAL

Land Use and Livable Communities Sustainability Goal 4: ***Encourage the expansion of location-efficient housing and improved infrastructure/services for existing housing that increases access to employment centers and transportation options.***

As new housing developments are sited in the region, it is essential that proximity to employment centers and transportation options are considered. In addition, encouraging upgrading existing infrastructure (sewers, sidewalks, bike paths, etc.) and siting employment centers and transit stops in villages and community centers makes existing housing more location-efficient.

STRATEGY **Encourage rehabilitation of existing housing stock and siting of new housing developments in mixed-use development that are served by existing sewer and water infrastructure.**

As previously discussed, since 2000, only 20% of new homes in the region were built within ¼ mile of a municipal center. This has resulted in an increase in the developed land within the region that is not in-line with the population trends of that same time period. This has also resulted in the expansion of the sewer and water infrastructure and associated costs for the municipalities where this growth is occurring. Therefore it is essential that municipalities consider alternatives to new developments in "greenfields" and focus on the rehabilitation of existing house stock and siting new developments in areas that are already served by sewer and water infrastructure. In order to assist municipalities to consider these alternatives they need additional planning capacity to update their local comprehensive plans and zoning that identify this type of development in these areas as a priority, as well as working with local developers to help site new development that reduces the need for new infrastructure.

Remington Lofts on the Canal, North Tonawanda, Niagara County

STRATEGY **Improve existing transportation infrastructure to better connect people to employment centers, schools, shopping, and transportation options.**

In order to enhance the existing housing stock within the region it is important to focus on upgrading existing transportation infrastructure including sidewalks, bike paths and public transit stops along existing roads that will work to better connect people to the employment centers. Improving the transportation infrastructure to include safe options for pedestrians will reduce the transportation costs residents experience. This should be considered when a municipality is focusing their attention to revitalizing neighborhood or a community that lacks safe pedestrian access to major destinations.

An example is the Village of Allegany, in Cattaraugus County, which is proposing to build a Bicycle-Pedestrian Connector trail that connects the village to the middle and high school, which are located on a major county road that currently has no safe access for student pedestrians, and that will also provide access to the Alleghany River. Potential supplemental funding for similar projects includes the National Safe Route to School Program; the Federal Highway Administration's Moving Ahead for Progress in the 21st Century (MAP-21); and the Transportation Enhancement program.

GOAL

Land Use and Livable Communities Sustainability Goal 5: ***Preserve, protect, and enhance the viability of agriculture, including agricultural lands and urban agriculture.***

Encroachment on agricultural lands should be discouraged and land that is to be used for agricultural purposes, including in urban areas, protected. Protecting and conserving the region's agricultural lands from further development is essential to limiting urban sprawl and focusing land use development in areas of existing infrastructure but also to protect the viability of the agriculture industry in the region. In addition, the continued development of urban agriculture initiatives, and community gardens that facilitate growing, production, distribution, and consumption of regionally produced agricultural products both regionally and elsewhere should be encouraged.

STRATEGY

Update existing farmland protection plans that include protection of timberland at the county level, encourage plan development at the local level, with leadership from the cooperative extensions and farm bureaus, and support implementation of plans where they already exist.

Currently, each county has a Farmland Protection Plan for their county. However, Chautauqua and Niagara Counties are older than 10 years old, and Allegany and Cattaraugus counties were last updated in 2006 and 2007 respectively. Erie County just recently updated their plan in 2012. A farmland protection plan gives a

municipality the tools to preserve and protect existing agriculture and maintaining it as a vital and important part of their economy. It is important that each of the counties within the region regularly review and update the Plan to ensure they are adequately representing the conditions of their county. Counties also encourage similar plan development at the local level. As the planning capacity is increased within the region, there will be more resources to assist local municipalities to develop and update their plans regularly.

Massachusetts Avenue Project Farm Stand, Buffalo, Erie County

Funding for local municipalities to develop a farmland protection plan would include the cost to develop a plan, and could potentially be funded through in-kind resources from the municipality along with supplemental funding from NYS Department of Agriculture and Market County Farmland Protection Planning Grants as well as the United States Forest Service (USFS) Forest Legacy Program.

This strategy also works toward meeting the Agricultural and Forestry Goal 1 – Strengthen the economic viability of agriculture and forestry enterprises, discussed further in Section 6.2.

GOAL

Land Use and Livable Communities Sustainability Goal 6: ***Encourage, enhance, and coordinate regional park, greenway, and waterfront planning to connect the public and natural resources to each other while promoting economic development and recreational opportunities.***

The region's proximity to water-based resources such as Lake Erie, Lake Ontario, Chautauqua Lake, Niagara River, Alleghany River, Genesee River and the Cattaraugus Creek, as well as abundant four-season recreational resources throughout the five-county region is an asset for the region and should be enhanced to encourage public access, as well as economic development, including tourism. The region should work to protect, maintain, connect and expand regional trails, greenways, and other projects that encourage walkable, public access to waterfronts, open space areas, and other natural resources. In addition, the region's abundant public forest resources should be protected from forest and habitat fragmentation and conserved for public access.

STRATEGY

Develop and implement Local Waterfront Revitalization Plans (LWRPs) in all eligible municipalities that include consideration of public access to regional waterfronts for recreation to promote economic development associated with tourism.

As mentioned previously, only 38% of "waterfront" communities have an NYS Department of State (DOS) approved LWRP. An LWRP is a plan and implementation program that includes specific zoning and site plan review for development along the waterfront portion of a community. The LWRP must be in compliance with the Waterfront Revitalization of Coastal Areas and Inland Waterways Act. These plans provide many benefits to the community including a community's ability to attract specific development along the waterfront and

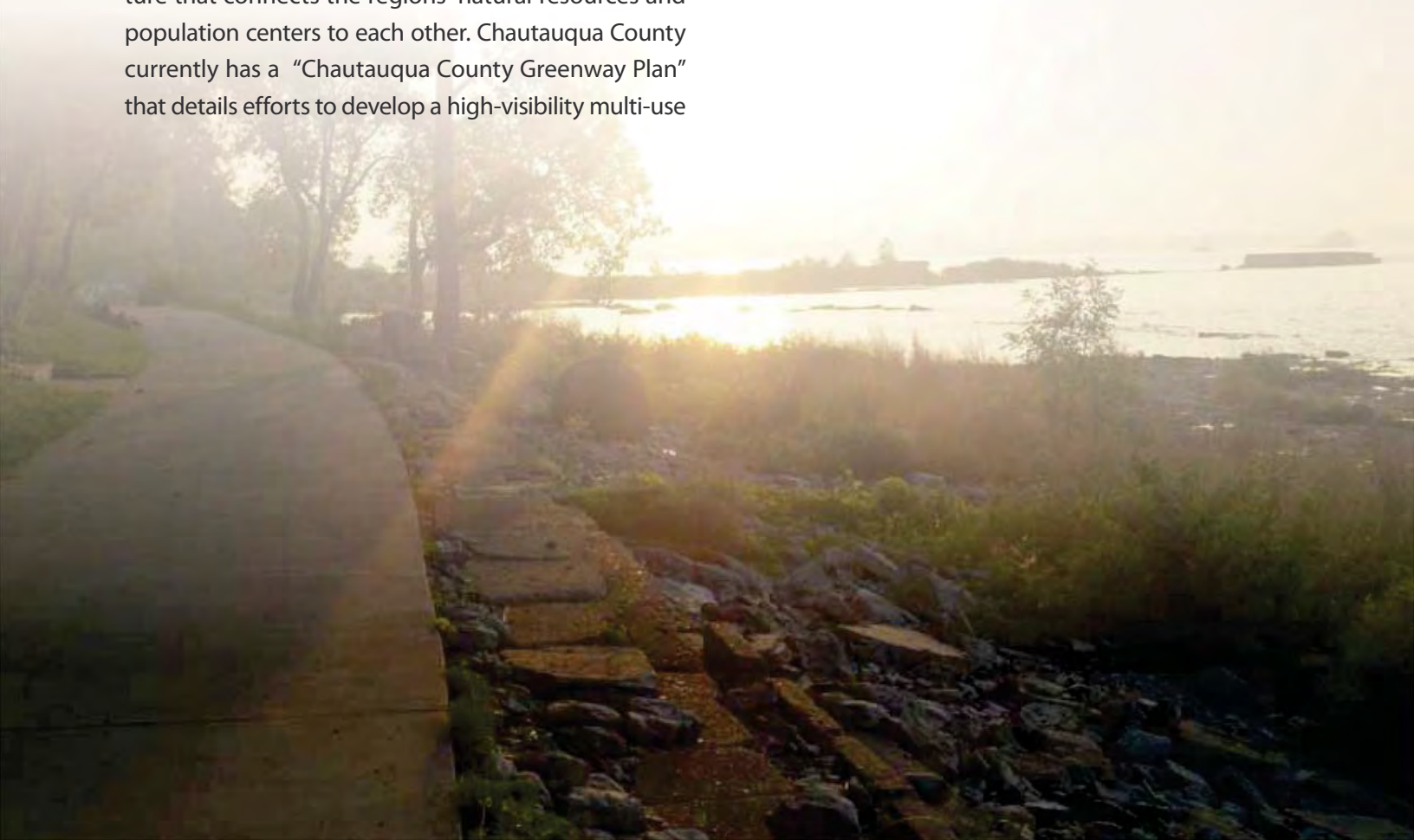
technical assistance for implementing the plan, as well as financial assistance that includes public and private funding for projects. Additionally, LWRP's should take in to consideration potential impacts associated with climate change and include climate adaptation measures.

The NYSDOS provides municipalities technical and financial assistance for the preparation and implementation of LWRPs. In addition, municipalities that are located along a designated waterbody (as defined by the NYSDOS) are eligible for funding from the New York State Environmental Protection Fund for projects that are identified in the LWRP. LWRPs must be approved by the municipality and the Secretary of the State.

STRATEGY Connect recreational trails across municipal boundaries through enhanced multi-jurisdictional coordination.

The region currently has a network of multi-use trails that are not necessarily connected between municipalities or counties. Therefore, the region should develop a greenway plan that would work to connect existing multi-use trails and other walking and biking infrastructure that connects the regions' natural resources and population centers to each other. Chautauqua County currently has a "Chautauqua County Greenway Plan" that details efforts to develop a high-visibility multi-use trail utilizing existing Rights-of-Way (i.e. rail lines, utility corridors and existing paths). One of the findings of the Chautauqua Greenway Plan is that their existing trails would benefit from a regionally connected network across counties. This would allow the region to have a network of trails that could connect Lake Erie, Chautauqua Lake, the Alleghany River, Niagara Falls, the Genesee River, and other significant inland natural resources within the region for recreational purposes.

The development of a region-wide Greenway Plan would require an entity to take this on that already focuses on planning for the entire region, such as the Smart Growth Coordinating Council as previously mentioned. However, this may be best implemented by the individual counties within the region to ensure they are coordinating with neighboring counties to extend the trails beyond the county boundary. Potential funding could come from the New York State Empire State Development Grant Funds, the respective county economic development departments, or private foundations funds.



4.3 Sustainability Targets

Sustainability targets were established for selected indicators. These targets are intended as reasonable quantifications that the WNY region should strive to achieve as it implements the projects associated with this sustainability plan. Further information about the targets and associated indicators is provided in *Appendix D*.

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

The strategies outlined to achieve the Land Use and Livable Communities Goals 1 through 5 are focused on keeping the developed land per capita within the region constant. It is important to set a target associated with the amount of developed land per capita as it is a prime indicator for the success of the implementation of smart growth policies outlined in this Plan.

Since the current trend is moving up (from 0.103 in 1992 to 0.23 in 2011), in order to decrease sprawl while not restricting positive growth and development, the target for this indicator would be to keep it constant over the next five years. As the population in the region stabilizes or possibly increases, the target would be decreased as the developed land per capita moved past this initial target.

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.**

The strategies outlined to achieve the Land Use and Livable Communities Goals 1 and 2 are focused on improving regional planning capacity and technical assistance that would assist in the updating of municipal comprehensive plans and zoning. Although this target only measures municipalities updating their plans and zoning and is not necessary if they have incorporated any smart growth principles, it is an indicator as to the increase in technical assistance being provided throughout the region.

In 2009, the typical household in the region spent approximately 52% of their income on 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% is deemed affordable or efficient. Therefore, as this indicator decreases it will show progress toward the Land Use and Transportation goals associated with smart growth and increase availability of public transportation and walkable main streets.

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

The strategies outlined to achieve the Land Use and Livable Communities Goals 3 and 4 focus on upgrading existing housing and siting new housing within existing infrastructure while improving the transportation infrastructure. As a result these will reduce housing costs associated with taxes that are spent on maintaining such infrastructure as well as transportation costs. It is important to set a target for Housing and Transportation costs as this shows how the implementation of smart growth principles affect the cost of living in a region.

The sustainability goals that were developed for land use and livable communities are designed to encourage smart growth principles for future development in the region. By providing local municipalities with the land use planning tools to incorporate smart growth principles into their local land use planning documents, it is anticipated that these municipalities will update their comprehensive plan and zoning codes to include smart growth principles.

4.4 Sustainability Actions

As the strategies identified for land use and livable communities are implemented, the region will begin to realize both economic and environmental benefits associated with smart growth. Technical assistance will encourage municipalities to adopt land use planning that focuses on the revitalization of municipal centers through adaptive reuse, improving infrastructure, protecting valuable agricultural lands, expanding location-efficient housing, and improving access to the abundant natural areas and water resources within the WNY region. These strategies align with the REDC goals as they will enhance the overall image of the WNY region and could become a catalyst that would help attract additional economic development that would in turn increase and retain employment opportunities. Additionally, smart growth strategies would save regional taxpayers from incurring the immense costs associated with unsustainable land use patterns.

The region would experience direct and indirect reductions in GHG emissions associated with the development of more walkable communities while providing more opportunities for people to live closer to employment centers and transportation options. In addition, redeveloping brownfield sites and sites within existing infrastructure instead of new development on green land or farmland will avoid GHG emissions associated with constructing and servicing new sewer and water infrastructure. A summary of identified sustainable land use and livable communities projects that align with the goals and strategies of this Plan is located ***on pages A-22 through A-26 in Appendix A.***

BIKE LANE
NO PARKING
8AM-4PM
SCHOOL
DAYS

Alfred State College, Alternative Fuels Fleet, Allegany County

5 Transportation

The transportation network in the WNY region is defined principally by the region's roads and on-road activity, but also encompasses walking and biking, railroads and rail corridors, aviation, and marine transportation activities.

Sustainable approaches to improving regional transportation systems that reduce vehicle miles traveled (VMTs), increase transit-oriented development, increase fuel efficiency and improve transportation infrastructure will improve air quality, reduce GHG emissions, reduce runoff from roads, improve mobility (especially for **transportation-disadvantaged** populations), and support economic development through improved access to job centers and efficient shipping and distribution channels throughout the region. Thus, transportation projects and programs will address not only the transportation sector's significant contribution (37%) to regional GHG emissions but other regional priorities as well. The following were considered in the development of the region's transportation goals and strategies set forth in this Plan:

- Evaluate existing transportation systems and identifying improvements that would provide more efficient system operation, especially in serving the transportation-disadvantaged populations including low income, disabled and elderly;
- Evaluate potential programs to encourage the use of more efficient fuels, vehicles, and modes of transportation, including alternatives to driving alone;
- Consider street, highway, transit, and fueling infrastructure that would support and complement the expansion of transportation choices and align with smart growth land use policies, e.g., projects built according to **NYS Complete Streets Legislation** principles; and
- Identify ways to coordinate and partner at the multi-county level to support the degree of information and idea-sharing required to address complex issues.

In WNY, the two northern counties are served by the Greater Buffalo Niagara Regional Transportation Council and the federal Metropolitan Planning Organization (MPO) responsible for transportation planning and policy-making. Supported by a grant from the U.S. Department of Housing and Urban Development (HUD), the GBNRTC is currently playing a lead role in preparation of a *One Region Forward Plan* for sustainable development in Erie and Niagara counties. The plan will serve as a roadmap for improving mobility, promoting more efficient land use patterns, strengthening basic infrastructure, growing a 21st century economy, assuring broad access to healthy food, protecting housing and neighborhoods, and responding to the challenge of global climate change.

The three southern tier counties are not served by an MPO. However, the Southern Tier West Regional Planning and Development Board, which serves the three counties, have an active transportation planning function. Through its Transportation Committee and a grant from the NYS Department of Transportation, Southern Tier West prepared the 2009 Southern Tier West Transportation Strategy. The document describes how non-metropolitan public officials representing units of rural local government are able to provide input to local, county and regional transportation planning. The Strategy contains a mission, vision, goals and objectives for the region's transportation system. The vision supports the development of a comprehensive transportation network that will allow the region to compete in the global economy while at the same time emphasizing safety, increased quality of life considerations, and environmental stewardship.

Following the preparation of this Plan and the *One Region Forward Plan*, actualizing new projects and programs in the transportation sector requires the steady participation and cooperation of transit agencies, municipalities, counties, multiple state agencies, and non-profit organizations. The regions' leaders will need to facilitate effective, ongoing working relationships among transportation champions and other sectors and networks as described in this Plan.

Harlem Road Roundabouts, Cheektowaga, Erie County

5.1 Sustainability Indicators and Current Trends

The transportation indicators discussed below are a measure of the baseline condition for the region. These indicators were used to inform the goals established for transportation in the region. Additional detail on the sustainability indicators is provided in the Indicator Memo in *Appendix D*.

INDICATOR Vehicle Miles Traveled per Capita

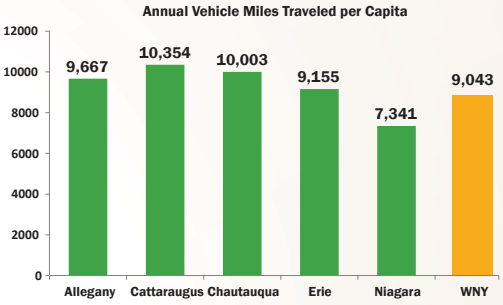
In 2009, the region's annual total VMTs was 9,043 miles per person. Comparatively, the state's total VMTs was 6,945 miles per person, and the U.S. was 9,666 miles per person. The calculation of VMT per capita includes all the region's vehicles in addition to all transient vehicles divided by the total population of the region. As efforts to get more people within the region to commute via alternative transportation VMTs per capita will be reduced.

TRANSPORTATION
Year: **2009**

Vehicle Miles Traveled Per Capita

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

A more in-depth look



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 Workers Commuting via Alternative Transportation Modes

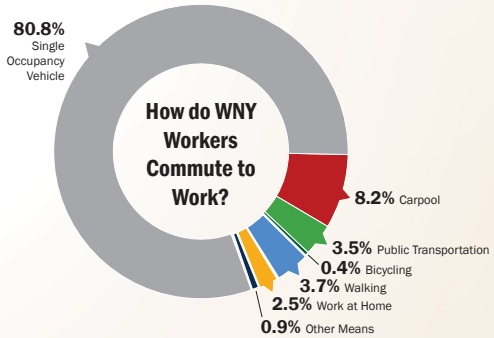
In 2010, the primary mode of transportation to work in the region was single occupancy vehicles, with only 15.8% of workers in WNY commuted to work by walking, biking, public transportation or carpool. Increasing the rate of workers who travel via means alternate to single occupancy vehicles corresponds to fewer vehicles on the road, fewer miles traveled and lower greenhouse gas emissions. Implementation of strategies to increase options to travel via alternative transportation should work to increase this indicator.

TRANSPORTATION
Year: **2010**

Workers Commuting Via Alternative Transportation Modes

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

A more in-depth look



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 Transit Trips per Capita

An average of 17.7 one-way trips were taken via public transportation for each person residing within the region. In the Erie-Niagara portion of the region this includes transit trips by the Niagara Frontier Transportation Authority's service to Erie and Niagara counties. The Southern Tier portion of the region 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). As efforts are made to increase the awareness of and use of public transit throughout the region, it is anticipated that the transit ridership will also increase.

TRANSPORTATION
Year: **2011**

Transit Trips Per Capita

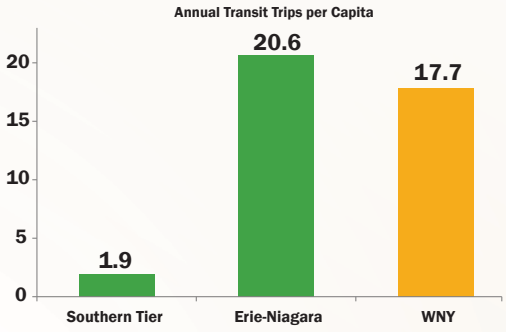
In WNY, an average of **17.7 public transit trips** are taken per person, per year

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

SUNY Fredonia. 2011. Student population data. 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.

A more in-depth look



INDICATOR Alternative Fuel Stations

As of 2012 the WNY region had 36 alternative fueling stations of which 20 are publicly accessible. There are four types of alternative fuel stations in the region—compressed natural gas (CNG), ethanol-85, electricity, and liquefied petroleum gas (LPG)—and the majority of the fueling stations in the region are located in Erie and Niagara counties. Encouraging the purchase of more efficient vehicles with lower GHG emissions would encourage building more alternative fuel stations throughout the region.

TRANSPORTATION
Year: **2012**

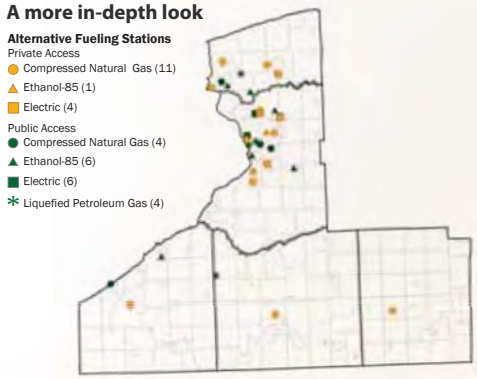
Alternative Fuel Stations

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

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.

A more in-depth look



CNG Filling Station, Modern Corporation

INDICATOR

Municipalities Adopting Complete Streets Policies

As of 2012, ten municipalities have adopted a complete streets policy. 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 considered a positive indication that the municipality's policy is to consider building streets for all modes of travel. As more municipalities adopt complete street policies and those that already have one adopted begin to implement such policies, the region will see positive gains in roads that are safe for all modes of transportation.

TRANSPORTATION
Year: **2012**

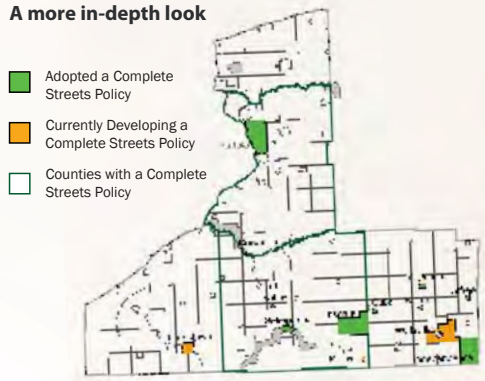
Municipalities Adopting Complete Streets Policies

10 municipalities in WNY have adopted a complete streets policy

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.

A more in-depth look



5.2 Sustainability Goals and Strategies

Investment in transportation infrastructure must be evaluated not only in terms of a single goal or community, but in terms of short-term and long-term impacts on all affected communities. For instance, how will a hamlet be affected by the Main Street in the nearest town becoming more walkable? What should a municipality do about informal park and rides? What should a community do if trucks are being routed down its streets by GPS-enabled devices? What will be the long-term impacts of a new bypass on all communities potentially affected? How are regional economic development objectives best aligned with air quality concerns in a particular neighborhood, such as in considering the development of new Peace Bridge facilities that could potentially increase vehicle crossings and resulting emissions?

This plan does not attempt to answer such questions but to provide a framework under which such questions and issues may be considered. The so-called "triple bottom line" view of sustainability applied to transportation considers the economic aspects (such as short and long-terms benefits and costs), social aspects (such as impacts on human health and safety and community dynamics), and environmental aspects (such as resource use and long-term ecosystem impacts) of any such question or related project.

The uninterrupted pavement that connects all roads and highways together makes the interrelationship of transportation decisions at the local and regional level somewhat more palpable than such interrelationships in other sectors. Policies and projects designed to improve the transportation network in WNY will recognize and account for such connections.

GOAL

Transportation Sustainability Goal 1: *Increase and improve alternatives to driving alone (public transit, carpool, vanpool, park-and-ride, bicycle, walking) through interagency partnerships and cooperative efforts, especially in serving the transportation-disadvantaged.*

Addressing sustainability with respect to transportation includes reducing VMTs while increasing mobility through better options for public transit, carpooling and vanpooling, park and ride, biking and walking, and through transportation demand management (TDM) strategies such as providing incentives to encourage alternatives to driving alone. Given the persistent funding challenges faced by regional transportation providers, improving overall mobility— particularly for transportation-disadvantaged populations including low income, disabled and elderly constituencies—will require enhanced regional coordination, interagency partnerships, and creative solutions.

STRATEGY

Develop new alternative transportation programs through strategic partnerships, particularly programs that increase options for under-served populations.

Programs to encourage residents to adopt alternatives to single-occupant vehicle travel must be developed according to the characteristics of the area and population served, with significant differences in rural and urban contexts. In the cities and dense suburbs, public transportation is the only option for some travelers. Others who currently use their own vehicles may only consider adopting transit modes if offered a combination of affordability, convenience, and a high level of service. In rural communities where mass transit service isn't available or limited, reducing VMTs will be addressed by facilitating carpooling, through program such as online ride matching resources, well-placed park and rides, and by focusing on improving paratransit options for disabled and elderly populations needing to travel to town and urban centers.

Across the region, in light of tight budgets faced by seemingly all transportation providers, multi-agency partnerships show the most promise in terms of the potential to improve and expand services. Some successful partnerships include the following:

- Olean Area Transit Service partnering with the Seneca Nation of Indians to provide public bus service to Salamanca;
- Buffalo Niagara Medical Campus (BNMC) partnering with Buffalo CarShare, GO Bike Buffalo, and the NFTA to increase transit trips, carsharing, ridesharing, and biking on and adjacent to its campus, in an effort to provide more sustainable commuting options for its swiftly growing employee base; and
- The Center for Transportation Excellence partnering with People Inc., Aspire of WNY, and Southeast Works to plan, implement, and study a new coordinated transportation model for day habilitation and pre-vocational programs.

Additional partnerships such as the proposed Go Buffalo Integrated Mobility Hub, which would enhance existing partnerships with the NFTA, BNMC, Buffalo CarShare and GO Bike Buffalo, is designed to promote and improve the city's growing alternative transportation system. The Mobility Hub will provide neighborhood residents and BNMC employees with greater access to transit and mobility services, such as Metro info, car- sharing, bikesharing, and community bicycle workshops. The Hub also will be a source of information and a venue to educate community members and employees about their alternative transportation and transit options.

Efforts to re-establish passenger rail service in Dunkirk, Chautauqua County, and to launch a new multi-county bus service from the southern counties into Buffalo are also more likely to succeed if additional partners can be engaged. Funding for these types of coordination projects can be supported through the NYS Department of Transportation's Rural Transportation Assistance Program or Large Urban Area Program.

STRATEGY **Educate the public on existing transportation options through on-line resources, including regularly updated maps of all regional transportation options.**

Enhancing mobility entails improvements to peak-hour commuting and also to the types of travel that make up the majority of daily trips—e.g., trips to school, medical appointments, cross-border trips, delivery vehicles, etc. Current and future mobility needs for the transporting disadvantaged populations region-wide pose a growing challenge. For example, rural communities in the southern portion of the region need regular transportation for patients to medical services that are only available in the northern portion of the region. Helping these populations identify and access all currently available transportation options is a first step.

In the southern portion of the region, Southern Tier West, in partnership with the three southern counties, is seeking to develop a user-friendly website that provides updated information for all modes. Southern Tier West is also working with the three counties to pursue a study to identify up to six locations where new park-and-ride lots could be sited. As a meeting place for carpools, whether for workplace commutes or non-work-related trips and outings, park-and- rides throughout the region serve an important role in facilitating alternatives to single-occupant travel. The development can be supported through in-kind funding from such organizations as Southern Tier West, as well as supplemental funding from NYS Department of Transportation's Rural Transportation Assistance Program.

GOAL **Transportation Sustainability Goal 2:** ***Improve regional fuel efficiency, especially in fleets and through strategic investment in infrastructure and planning to increase the use of alternative fuels.***

Cars, trucks, and buses are responsible for nearly a third (31%) of total regional GHG emissions in the region, with nearly a quarter (23%) coming from personal vehicles alone. Programs and policies that reduce total VMTs, increase fuel efficiency, and provide incentives to switch to alternative fuels will also reduce GHG emissions and other harmful emissions.

The 2011 guidelines for the federal Corporate Average Fuel Economy (CAFE) standards, regulated by the National Highway Traffic Safety Administration, call for steadily increasing fuel economy in new vehicles through 2025. The more efficient vehicles entering the market over the next decade will gradually improve the overall average fuel efficiency of vehicles in the region, but other programs designed to improve economy in the operation of vehicles currently on the road, such as anti-idling measures and programs designed to change driver behavior, should also be pursued. For example, truck stop electrification projects give drivers a viable alternative to idling, and Fleet Management Plans for private and public fleet operators can improve overall fleet efficiency.

The increased use of alternative fossil fuels that generate fewer emissions and reduce transportation costs makes sense in the near-term. While not currently attainable, the eventual, long-term goal should be a regional transportation network powered entirely by renewable energy with no harmful effects on air quality.

STRATEGY **Implement projects such as fueling and charging stations that would increase the number of CNG and electric-powered vehicles through private and public programs.**

Introducing more CNG and electric vehicles will reduce GHG emissions, but the upfront costs for fueling infrastructure and converting fleets are significant obstacles. Many government agencies and private companies in the region recognize the potential cost savings of CNG

vehicles and are interested in obtaining these vehicles, as long as the upfront investments in fueling station infrastructure and vehicle purchases or conversions can be made. Formation of the group CNG for Upstate NY is indicative of the degree of interest and coordination of efforts, principally in Erie and Niagara counties.

The Niagara Frontier Transportation Authority (NFTA) has introduced hybrid diesel-electric buses into its fleet and is moving to introduce more CNG-powered buses into its operations, such as installing a CNG fueling station and CNG-powered circulator shuttles at the Buffalo Niagara International Airport. The BNMC has also proposed a CNG-powered circulator shuttle and public safety vehicles on its campus, which could potentially refuel at an adjacent CNG station owned and operated by NYSDOT.

Efforts to increase CNG vehicles in the three southern counties are more preliminary, but representative stakeholders view CNG as a promising option. The Jamestown Board of Public Utilities has completed a feasibility study for the installation of a CNG fueling station and is currently moving forward on the development of the station, which is going to be shared by multiple public and private partners.

Other options such as hybrids, electric vehicles (EVs), and propane-fueled vehicles should also be encouraged to the extent that, like CNG, they can offer both cost savings and reduced GHG emissions. For instance, the BNMC has installed multiple electric-vehicle charging stations on its campus, and the Erie County Sheriff's department would like to address high fuel costs by introducing propane-fueled vehicles, and has installed GPS units in their fleet as part of a program to reduce idling.

In order to alleviate some of the initial upfront costs of alternative fuel fleet conversions and associated fueling infrastructure there are several NYSERDA transportation programs that provide supplemental funding for such projects.

STRATEGY Implement traffic efficiency and optimization projects while encouraging walking and biking.

Traffic efficiency and optimization projects such as roundabouts and coordinated traffic signals along corridors with high traffic volumes have the potential to reduce congestion and idling, producing gains in terms of air quality and fuel efficiency. Recognizing the principle that communities can't simply escape congestion by building more roads, such projects must be implemented in the context of a broad smart growth approach, meaning that other concerns such as increasing walking and bicycling are considered when corridors are optimized.

Traffic optimization can be achieved by coordinating poorly timed traffic signals, which contribute to increased travel times and frequent stopping, which in turn causes increased pavement wear, safety concerns, fuel consumption, and emissions. As a part of optimization it is important to also begin collecting continuous traffic data on arterials for planning, real-time operations, and regional traffic modeling functions. Projects such as this that are being implemented throughout the region include the Buffalo Niagara Regional Arterial Management System, which is designed to mitigate current deficiencies of NYS Department of Transportation (NYSDOT), City of Buffalo, and NFTA facilities. This system is being managed and funded through NYSDOT infrastructure budget funding. Additionally the NYSDOT is collaborating with the Niagara International Transportation Technology Coalition to support the collection of transportation data.

GOAL

Transportation Sustainability Goal 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.***

As discussed in the land use section of this plan, land use policies and decisions that result in more mixed-use communities and site housing, employment, retail, and services (including public transit) closer to one another have a positive effect on mobility while reducing the length of trips and limiting the need for new roads. In terms of transportation, smart growth in the region should be characterized by preserving and improving existing infrastructure and focusing improvements on existing communities and corridors.

Emphasizing and prioritizing existing infrastructure does not, however, mean that no new roads should be constructed. The long-planned extension of Route 219, for instance, affords a variety of economic development and quality of life benefits for multiple municipalities in Cattaraugus County, as well as benefiting truck freight haulers traveling through the region.

STRATEGY **Prioritize transportation infrastructure upgrades within main streets and along important corridors.**

There is no reason to expect that the region will not experience the same heightened transportation costs anticipated nationally as roads, bridges, and other infrastructure built in the first half of the twentieth century ages to the point at which significant reinvestment and/or redesign is necessitated. As the population in the region has remained relatively steady, the expectation should be that existing road capacity is sufficient, and development concentrated in or near city, town, and village centers makes the most sense in terms of handling long-term transportation costs.

Projects such as the proposed Springville Bike/Pedestrian Master Plan and Central Business District Streetscape Design, which aim to increase pedestrian and economic activity along main street, should be encouraged. Transportation infrastructure improvement projects that are initiated by the municipality, that are focused along their main streets, include safe access for pedestrians and increase economic development within the main street area may be eligible for funding from NYS Housing and Community Renewal Main Street Program or Community Development Block Grant program.

STRATEGY **Implement Complete Streets projects throughout the region by providing technical assistance to create or modify comprehensive plans and zoning codes that integrate bike and pedestrian traffic into transportation infrastructure plans and projects by, for example, developing a "Complete Streets" zoning template.**

As stated earlier, ten municipalities in the region have adopted Complete Street policies. Additional municipalities should be encouraged to adopt Complete Streets principles in their comprehensive plans and zoning ordinances as part of broader efforts to restore and/or maintain walkable main streets. The aesthetics, safety, and comfort of a streetscape for pedestrians and bicyclists are important factors that impact, in both obvious and more subtle ways, how residents and visitors perceive a given neighborhood and corridor. In order to assist municipalities to adopt Complete Streets it would be beneficial to develop a "Complete Streets" zoning template for Complete Streets principles which, when coupled with technical assistance education, would ultimately extend the benefits of the Complete Streets model to new parts of the region.

As municipalities that have adopted Complete Streets begin to integrate these policies into their transportation designs the region will begin to realize how they benefit the community. The recent reconfiguration of Linwood Avenue in the City of Buffalo to include bike lanes is an example of a municipality that has integrated Complete Streets concepts into its design guidelines. Additionally, there are several proposed Complete Streets projects throughout the region such as the redesign of Niagara Street in Buffalo, Buffalo Avenue Heritage District Streetscape in Niagara Falls, and the North Union Street/Walkable Olean Infrastructure Project in Olean, which would bring further gains in terms of bike and pedestrian-friendly corridors.

Pursuant to adopting such policies, municipalities must be proactive in clarifying the particular desired changes or improvements and in communicating them early and clearly to the government entity responsible for constructing and maintaining the road. In many cases the principal thoroughfare is a state-owned transportation infrastructure, so the municipality should begin working with NYSDOT as soon as possible before any construction would occur.

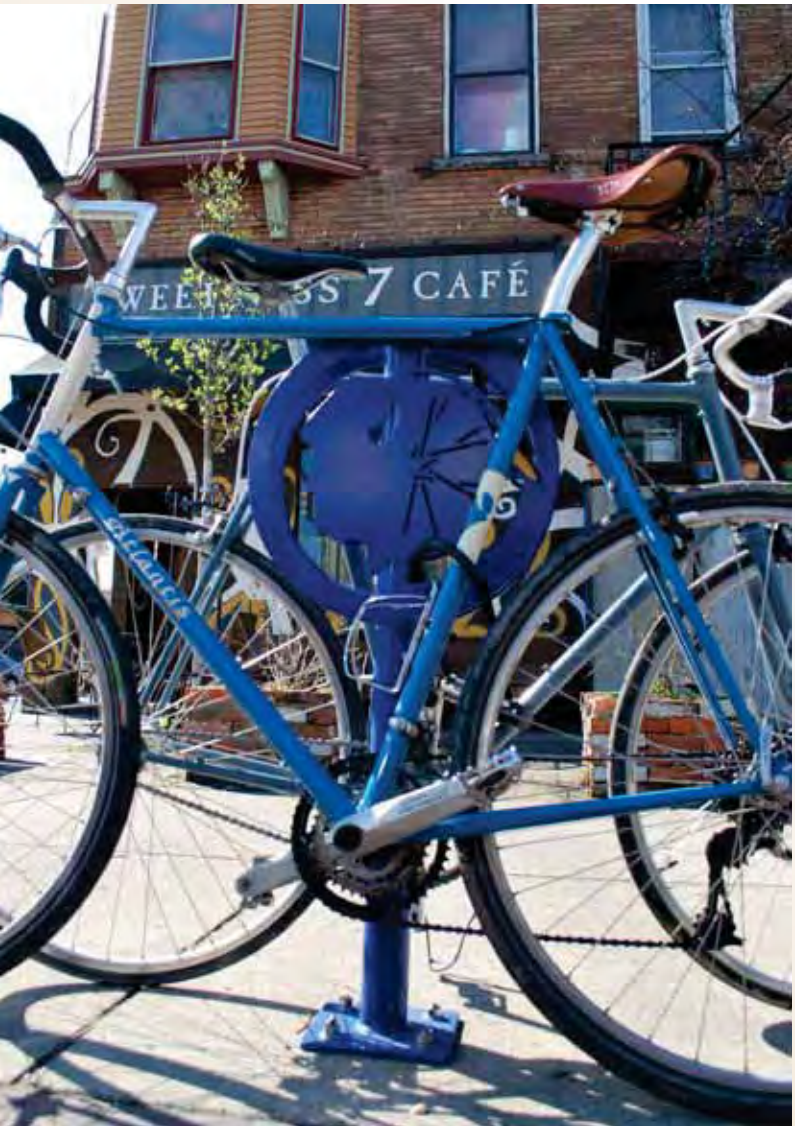
While finding funding can be a challenge for smaller municipalities, partnerships to combine multiple smaller projects into one multi-jurisdictional project hold promise. Several communities in the three southern counties have adopted Complete Streets as a result of a successful Cornell Cooperative Extension program. Limited funding has slowed progress in terms of making proposed changes to sidewalks and roads, so funding will be pursued jointly. Possible funding to supplement the additional costs incorporating these principles into transportation improvement projects include NYSDOT's Safe Route to Schools or through infrastructure improvement funds.

The outcome of the 2011 New York State Complete Streets legislation and the adoption of similar guidelines by NYSDOT in 2010 should be increased activity statewide in terms of physical changes to transportation infrastructure to better accommodate pedestrians, bicyclists, and bus riders. The NYSDOT has a number of programs and policies that support sustainability: GreenLITES (a project ranking tool based on sustainable factors in the project development stages), Complete Street policies, and Smart Growth policies. Regional municipalities and eligible organizations should be proactive in understanding and pursuing limited funding available through NYSDOT and other state and federal sources.

Additional important considerations

Stakeholders also identified several key considerations that did not fall under the goals and strategies but should be considered to fully address sustainability with respect to transportation:

- Education and knowledge-sharing, such as educating highway officials in best practices for culvert design, construction, and maintenance, and ensuring that travelers can easily identify all transportation options.
- Railroads and rail corridors, including responding to opportunities to increase passenger rail speeds and develop the high speed rail Empire corridor; restoring and increasing freight rail service, which offers both economic and environmental benefits (relative to more energy-intensive and expensive truck shipping) especially along the two corridors supported by the Chautauqua, Cattaraugus, Allegany, and Steuben Southern Tier Extension Railroad Authority; and making best use of abandoned rights-of way (ROWs), especially in lengthening and connecting recreational trails adjacent to and between towns and villages.
- Buffalo's port has not been a hub of commercial activity in recent decades, but as with rail, opportunities to move goods and materials efficiently at lower cost and with lower environmental impact will align with the Plan's goals, subject to questions such as "what materials are being shipped and for what purpose?"
- Aviation, which accounts for a small part of regional greenhouse gas emissions but factors into regional economic development plans, such as through the proposed expansion of Niagara Falls International Airport. The stated goals would call for such development to align with smart growth objectives.
- Logistics and Canadian-American Trade, recognizing that the WNY REDC and the Buffalo Niagara Enterprise Economic Development Logistics Council have identified strong growth opportunities via increasing Canadian-American trade, supported by the development of a logistics hub and improved border crossings. The portion of such trade that can be considered "local," in that shipping across hundreds of miles is not necessary, will have a better (smaller) transportation footprint. Related projects and programs should produce positive local impacts such as improved air quality associated with idling vehicles, while improving regional infrastructure to support increased freight activity.
- Highway and road maintenance and construction, such as the expansion of Route 219 as a four-lane highway, construction of a Route 219 bypass around Ellicottville, and restoring problematic sections of Interstate 86 to a state of good repair. Understanding the local context and the fuller scope of such projects can show how they fit into smart growth, economic development, and social and environmental plans and objectives. New road construction that is best understood as sprawl would not, however, align with the goals.



City of Buffalo Bike Racks, Erie County

5.3 Sustainability Targets

Sustainability targets were established for selected indicators. These targets are intended as reasonable quantifications that the WNY region should strive to achieve as it implements the projects associated with this sustainability plan. For further information about the targets and associated indicator is provided in *Appendix D*.

TARGET **The region's target is to reduce vehicle miles traveled by 3% through 2020.**

The strategies outlined above to achieve all the Transportation Goals will work to decrease VMTs throughout the region. It is important to set a target for reducing VMTs because it is a key indicator of the successful implementation of the transportation strategies outlined in this Plan.

Total regional vehicle miles traveled have remained relatively flat over the last five years while the long term trend over the last several decades has been a significant increase. A reduction of 3% in regional VMT per capita is attainable based on increased travel by alternatives to driving alone and more residents selecting housing located closer to employment centers and other common destinations, but it is important to note that this indicator is affected by a number of factors such as the price of gas, demographics such as net population change and age distribution, major land use and development decisions, etc.

5.4 Sustainability Actions

The implementation of the strategies associated with increasing alternative transportation options, encouraging more efficient use of vehicles, and implementing complete streets throughout the region will have a direct impact on the regional economy as well as providing direct and indirect reductions in GHG emissions. Implementation of the strategies will improve regional transportation options for urban and rural residents, thus improving the ability of the existing workforce, particularly the low-income workforce, to access job opportunities located throughout the region. In addition, the adoption of complete streets initiatives throughout the region would enhance the overall attractiveness of the WNY region to employers, thus providing opportunities for additional economic development.

GHG emissions associated with transportation account for 37% of the total emissions generated in the region. Therefore it is critical that the region pursues the goals and strategies discussed here, not just because of their positive economic benefits but for the added need to reduce our carbon emissions in the region.

A summary of identified sustainable transportation projects that align with the goals and strategies of this Plan is located on *pages A-10 through A-20 in Appendix A.*

Rainbow Bridge, International Crossing, Niagara Falls, Niagara County

Maple Sugar Shack, Allegany County

6 Agriculture and Forestry

Sustainability as it pertains to agriculture and forestry in the region includes the incorporation of agricultural best management practices (BMPs) that minimize soil erosion and runoff and that allow flexibility in production systems to be able to respond to changing economic conditions, markets, regulations, environmental conditions, and climate. Because of the diversity of the region, sustainability strategies need to consider how urban, suburban, village/hamlet, and rural communities provide economic growth and a high quality of life. The following were considered in the development of the region's agriculture and forestry goals and strategies set forth in this Plan:

- Identify ways to strengthen the economic viability of agriculture and forestry enterprises;
- Consider ways to increase efficient uses of energy inputs;
- Evaluate the feasibility of using agricultural and forest industry by-products for energy production;
- Consider short-term, medium-term, and long-term strategies that will improve surface water quality through land management changes designed to improve energy efficiency or energy production; and
- Evaluate costs, potential energy savings, and related GHG emission reductions for each strategy.

Vineyards, Chautauqua County

The agriculture and forestry industries in the region provide multiple economic and environmental benefits. These activities provide access to local food and forestry products for residents of the region as well as a significant source of employment. Additionally, land that remains in farming—agriculture or managed forest—can provide scenic, recreational, and/or tourism benefits while avoiding the costs of **urban sprawl**.

Sustainable agriculture, as defined by the Food and Agriculture Organization of the United Nations (FAO) is "[that which] conserves land, water, and plant and animal genetic resources, does not degrade the environment, and is economically viable and socially acceptable."

All identified strategies for Agriculture and Forestry work to strengthen the economic viability of this sector.

6.1 Sustainability Indicators and Current Trends

The agriculture and forestry indicators discussed below are a measure of the baseline conditions for the region. These were used to inform the goals established for agriculture and forestry in the region. Additional detail on the sustainability indicators is provided in the Indicator Memo in *Appendix D*.

INDICATOR Acres of Harvested Cropland

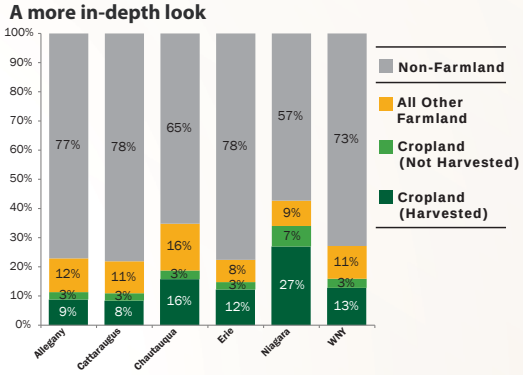
In 2007, the most recent published National Agriculture Census, the WNY region had 406,719 acres of harvested cropland, which includes lands used in orchards, Christmas trees, vineyards, nurseries and greenhouses. The total acreage gives us an indication of how much of our land is actually being used for productive farming purposes. Current trends have seen reductions in active cropland acreages; therefore as these areas are protected from encroachment by development and agriculture is made more economically viable, these areas continue to be productive.

AGRICULTURE AND FORESTRY
Year: **2007**

Acres of Harvested Cropland

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

A more in-depth look



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 Acres of Timberland

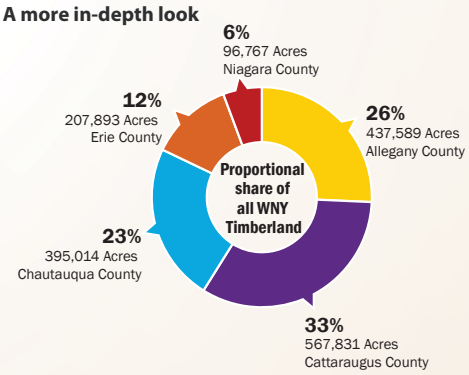
In 2011, there were 1,702,094 acres of timberland; 82% of these are located in Chautauqua, Cattaraugus, and Allegany counties. Timberland, as defined by the USDA Forest Service Forest Inventory Analysis (FIA), is a subset of forest land that is producing or is capable of producing industrial wood crops (at least 20 cubic feet per acre in natural stands) and is not excluded from timber utilization by statute or administrative regulation. As these areas are protected from encroachment by development and are made more economically viable, these areas continue to be productive.

AGRICULTURE AND FORESTRY
Year: **2011**

Acres of Timberland

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

A more in-depth look



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

INDICATOR Right-to-Farm Communities

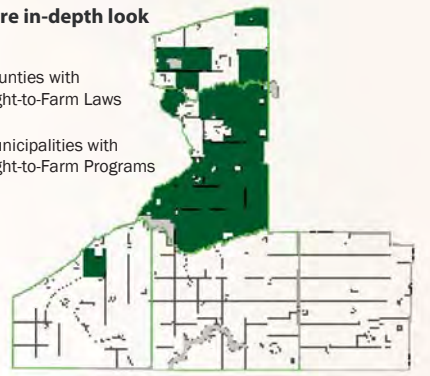
In 2012, 30 individual municipalities also adopted right-to-farm laws. The majority of the right-to-farm communities are located in Erie County (23 municipalities). Niagara County has six and Chautauqua County has one, while Cattaraugus and Allegany counties do not have any right-to-farm communities. Also, four of the five counties have passed right-to-farm legislation. Although Allegany County doesn't currently have a formal right-to-farm law, it does have legislation that serves a similar purpose. Communities that have adopted a right-to-farm law work with and educate farmers, residents, and municipalities about dispute resolution and maintaining a positive agricultural business environment as well as protecting agriculture land from development. In addition, each county has a Farmland Protection Plan that has been adopted. Erie County recently completed an update to their plan in 2012. Allegany and Cattaraugus counties updated theirs in 2006 and 2007, respectively. Chautauqua and Niagara counties plans are older than 10 years and were adopted in 2001 and 1999, respectively. Increasing the number of Right-to-Farm communities as well as counties with updated Farmland Protection Plans will work to preserve farmland in the face of encroaching development.

AGRICULTURE AND FORESTRY
Year: **2012**

Right-to-Farm Communities

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

A more in-depth look



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 Farms with Completed Energy Audits

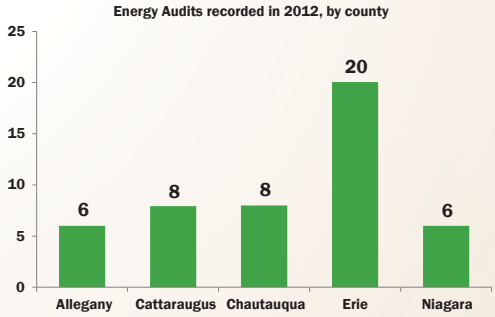
In 2012, 48 farms in the region completed an energy audit through NYSERDA, the U.S. Department of Agriculture–Natural Resources Conservation Service (USDA-NRCS), or a local utility program. Energy audits recommend ways to reduce energy consumption and cost-effective ways to purchase fuel and electricity and install renewable energy. Although energy audits are a good indication of the number of farmers who are interested in managing their energy use more sustainably, the implementation of the recommendations from these energy audits depends on the needs and resources of the specific farmer.

AGRICULTURE AND FORESTRY
Year: **2012**

Farms with Completed Energy Audits

48 Farms in WNY have recently completed energy audits

A more in-depth look



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

6.2 Sustainability Goals and Strategies

GOAL

Agriculture and Forestry Sustainability Goal 1: ***Strengthen the economic viability of agriculture and forestry enterprises.***

Farmers are often caught between the rising costs of production and static or falling prices for farm products. A key method to strengthen the viability of agriculture throughout the region is to identify how farmers can sell their products locally. Increasing access to local agricultural products increases consumption of local food. Consumers are typically unwilling or unable to go out of their way to obtain local foods, which may be more expensive, especially when their grocer provides the same item at a lower cost and a more convenient location. However, local food consumption not only supports the local economy, it can also lower farm transportation costs, thus maintaining the viability of farm activity into the future. Current distribution systems may be better suited to exporting products out of the region than supplying the region with high-quality, locally grown farm products. Increasing intra-regional consumption of food and wood products could have a beneficial impact on the regional economy and the economic viability of farms and forest businesses.

Effective aggregation, processing, and distribution systems that can match the types and sizes of farms in the region to consumer demand would be instrumental to increasing access to and consumption of local foods. Changes that favor both regional farmers and consumers may also provide opportunities to address the existence of "food deserts" in both urban and rural areas of the region. Increasing urban agriculture is a way to connect consumers with the source of their food and educate them about the value of local agriculture. The experiences of other regions suggest the region could provide opportunities to expand markets while improving overall public health.

STRATEGY

Establish a WNY Food Hub or Agricultural Processing Facility.

The region is home to several thousand small farms that are involved in a wide variety of agriculture. The demand for locally sourced food products has increased over the last several years. While the direct-to-consumer segment of farm retail has grown (i.e., farm markets, community supported agriculture), this is still by and large a fragmented system of access to local food. Large sectors of the food economy are unable to access the local products their consumers are demanding (i.e., grocery stores, school districts, institutional buyers) because of gaps in infrastructure (i.e., processing, aggregation, quality assurance, distribution). The creation of a regional food hub would fill in some of these gaps so as to increase access to local farm products and grow our local food economy.

In order to implement this strategy there are two phases that need to be undertaken. The first phase is a feasibility study that would encompass research

to identify the market-based solutions to address bottlenecks and gaps in our current food system infrastructure. Currently, there is very little, if any, information regarding the current supply of local food when it comes to the wholesale sector in our region. The supply analysis will identify what is currently available for wholesale and when, the farm's ability and capacity for scaling up production to meet demand, and the services and infrastructure needed to alleviate market entry barriers. 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 demand analysis will also identify the challenges and barriers food buyers face, on any scale, when purchasing local farm products. Through this market research, the appropriate food hub business-model will be planned and developed to best meet the needs of farmers and buyers in region. The second phase, is the implementation of the business plan that will address processing, aggregation, quality assurance and distribution of local farm products, ultimately increasing access to these products.

There is currently an organization that is seeking funding to implement the first phase, Field & Fork Network, a local non-profit organization dedicated to food system growth in the region. Potential funding for the development of a regional food hub includes a variety of funding options from the United States Department of Agriculture (USDA) Rural Agriculture programs as well as the National Institute of Food and Agriculture; Natural Resource Conservation Service (NRCS) Environmental Quality Incentive programs. Further funding options for the implementation of a food hub in the region are detailed in the USDA's "Regional Food Hub Resource Guide," April 2012.

Niagara Wine Trail, Niagara County

STRATEGY **Develop a mechanism to continue to advocate activities that will help achieve these sustainability goals on a long-term basis. One possible solution would be to create a regional Agriculture Council.**

A regional Agriculture Council could be developed to provide resources and networking with agricultural professionals, economic development professionals and county planners to work on regional agriculture development projects. This could be created by exploiting existing relationships and resources that the Cornell Cooperative Extensions use regularly. It is anticipated that municipal officials, community leaders, farmers, food processors/distribution professionals, as well as economic development agents would be invited to sit on such a council. This could benefit the region as it would provide ideas for local government officials to understand the many economic opportunities that are available and ensure that their policies do not hinder agriculture development.

The development of a regional Agriculture Council would require in-kind funding from the organization that would be responsible for organizing and funding for any conferences or meetings throughout the year. This could be supported by funding from the USDA Rural Agriculture programs and the National Institute of Food and Agriculture, and NRCS Environmental Quality Incentive programs.

STRATEGY **Connect local farmers with markets in new or more effective ways that increase farmers' profit margins through higher prices, value-added products, specialty products in demand by consumers, meeting demand in food deserts, etc., through the establishment of local farmers' and cooperative markets within the region.**

Farmers' markets and cooperative (co-op) markets are opportunities for local farmers to bring their products directly to the consumer, which increases the economic viability of the region's agricultural industry, by providing access to natural, sustainable goods while supporting the local economy through the region's local growers. An example of such a project is the East Aurora Co-op Market, which has been in development since 2010 and has conducted a feasibility study, and is in the process of developing their membership base, siting their location, and building connections with local growers. The market will also have a focus on community education and outreach that promotes a healthy and vibrant community. The East Aurora Co-op is expected to serve a market of approximately 54,000 people and will generate sales of $2.4M per year in the first year, with projections for 13% growth annually. The development of this co-op used resources and technical assistance from the Food Cooperative Initiative, Cooperative Development Services, and the National Cooperative Grocers Association, as well as financial assistance from the Lexington Co-op, located in Buffalo.

The development of farmers' and cooperative markets can be supported through funding through membership campaigns, as well as other potential funding sources including USDA Rural Agriculture programs and the National Institute of Food and Agriculture; NRCS Environmental Quality Incentive programs; NYS Housing and Community Renewal Rural Revitalization Program, Main Street's program, or Community Block Development Grant. Additionally, the development and construction of farmers' markets can be funded through the NYS Farmers' Market Grant program.

GOAL

Agriculture and Forestry Sustainability Goal 2: ***Achieve more efficient uses of energy inputs and maximize utilization of agriculture and forestry by-products for energy production.***

Incorporating energy efficiencies and reducing GHG emissions in agricultural processes can be accomplished by investing in energy-efficient on-farm infrastructure, adopting more energy-efficient crop management methods, improving manure management, increasing feed-conversion efficiency, enhancing local market distribution, and by using agricultural waste products, forest products and by-products, and other low-carbon technologies to produce energy. Providing opportunities to reduce fossil fuel-based energy consumption can reduce GHG emissions of farm equipment and power plants while reducing overall costs for farmers.

STRATEGY

Provide farmers with resources and training for sustainable and energy efficient agriculture production, processing and distribution. One possible solution would be to create a community food training center.

On-farm energy audits or an Agricultural Energy Management Plan quantify energy use by assessing the various components of farm operation and provide recommendations for changes in equipment and management that will save energy while accomplishing the same or greater production. On-farm energy audits are available to individual farmers through the NRCS Environmental Quality Incentive Program. However, it is important to educate farmers on the availability of these types of programs and provide assistance implementing the findings of the audits.

One solution to provide these resources to farmers is through the creation of a community food training center which would be a one-stop for agriculture-based workforce development, community research and education, and new linkages and training for local farmers. A community food training center would house training space for sustainable rural and urban agricultural production, processing, distribution and marketing; a teaching kitchen; a resource library; and be a resource for linking young people and immigrant populations with emerging employment and training opportunities.

Potential funding resources to assist with the development of a community food training center could be through USDA Rural Agriculture programs and the National Institute of Food and Agriculture; and NRCS Environmental Quality Incentive programs.

STRATEGY

Implement energy generation projects that use agriculture and forestry by-products as fuel sources.

Implementation of energy generation projects that use agriculture and forestry by-products require further studies and collaboration to identify potential opportunities for this type of energy generation in the region. An example is a proposed project through the Alfred State College in partnership with SUNY College of Environmental Science and Forestry (ESF) and private sector partners, in the planning and development of an innovative bio-refining and bioenergy production facility that will utilize wood waste projects and low value trees for energy production. The New Forest Economy program led by project partner ESF is currently demonstrating state of the art clean technologies using hot water extraction for the manufacture of fuel, bio products and bio chemicals using wood. Part of ESF's research and commercialization plan calls for the development of 5 strategic pilot facilities across New York State; the Wellsville site is one of these sites. Potential funding support for this and similar project could come from NYSERDA's Biomass Heating R&D and Biomass Resources programs.

GOAL

Agriculture and Forestry Sustainability Goal 3: ***Increase support from government officials and the public for the protection of farmland, continued use of farmland for agricultural practices, and for strengthening the business climate for agriculture and forestry in the region.***

Land use plans and policies need to be coordinated among towns and counties and revised where needed to more effectively discourage sprawl and bolster the tenure of farm and forestry businesses. In some localities, land conservation that results in permanent easements restricting future development may be useful. Such easements can be established with the cooperation of willing landowners by purchase or transfer of development rights or donation of conservation easements. This process may be a useful way to enhance the viability of farming in the region while maintaining the economic, environmental, and quality of life contributions of farms and forests in the region and beyond. In addition, regional land use planning should consider ensuring continued use of farm land and forest land for production of food and fiber.

This would discourage sprawl and develop solutions that give due consideration to the value to the region of agricultural and forestry economic activities.

STRATEGY **Update existing farmland protection plans that include protection of timberland at the county level, with the leadership from the cooperative extensions and farm bureaus, encourage plan development at the local level, and support implementation of plans where they already exist.**

This strategy was discussed in Section 4.2 for the Land Use and Livable Communities Goal 5 - "Preserve, and protect and enhance the viability of agriculture, including agricultural lands and urban agriculture," and works to address this goal as well.

STRATEGY **Educate the general public, youth, and public officials on the importance of local agriculture, including promoting farmer markets and purchasing local produce.**

Educational outreach programs that promote the availability of farmers' markets as well as educate the public on the benefits to the local economy and their health when purchasing local produce can be accomplished through outreach from local non-profit organizations, such as GrowWNY.org, Buffalo First, or the Field & Fork Network, that are currently working to promote such activities. These groups are currently working to engage the public to buy local and promote farmers' markets and co-ops throughout the region. These organizations should continue to expand their efforts and reach. Additionally, local farms such as the Massachusetts Avenue Project, which is an urban farm, regularly invite students and volunteers into their farm. This is a great way to promote local farms while also educating the public and gaining awareness throughout the region.

STRATEGY **Promote and preserve agricultural enterprises through farmer recruitment programs and innovation and entrepreneurship programs for small farms.**

A crucial part of protecting farmland for agricultural use is ensuring that there is a younger generation of farmers that can replace an aging workforce. Historically, farming has been a trade handed down from generation to generation, requiring a lifetime

Grazing Cows, Chautauqua County

of learning to develop a successful product. Some sustainable practices require a shift in the techniques that farmers have spent generations perfecting while others may require the use of new technology. In order to obtain region-wide adoption of sustainable practices it will be necessary to provide farmers and aspiring farmers with access to teaching programs and training facilities in order to bolster that knowledge transfer.

It is important that the region identify and implement strategies that attract young people to work and stay in agriculture and forestry businesses. This can be accomplished through work with secondary and post-secondary education programs to incorporate farming and forestry into their curriculum and certificate and degree programs. Additional measures include:

- Encouraging adequate and sustained financial support to continue existing educational programs on farming and industry that have been used in elementary education;
- Identifying opportunities for farm employees to take on equity positions in agricultural operations, where the traditional practice of family transfer to the next generation is unlikely;
- Addressing the need for qualified and willing seasonal farm workers. This affects farmers during the time-sensitive harvest and cultivation season; and
- Addressing the need for a qualified workforce for full-time, year-round farm and forestry work. When younger family members choose not to continue in the family farm and forest businesses, business owners often are left with few options for growing or even continuing their businesses.

The farmer recruitment program could be taken on by the Cornell Cooperative Extension and potentially funded through the NYS Department of Agriculture and Markets Agriculture Development Program or Farmland Protection Program; and USDA Rural Agriculture programs.

GOAL

Agriculture and Forestry Sustainability Goal 4*: Promote environmentally sustainable management systems for the agriculture and forestry sector.*

Farmers and forest managers shape the region's environment by deciding how the large majority of our natural environment is used. Farmers and forest managers have choices when deciding what to grow and how to grow it, decisions that affect businesses and the environment. The methods and technology of managing crops, livestock, and forests is complex. This requires farmers and forest managers to weigh multiple interacting factors while caring for our shared environment and also making sound business decisions. Requirements for environmental management have the potential to disrupt business needs with the result that farmers and foresters can lose money when trying to comply with regulations. Regulatory agencies need to provide flexibility in how environmental needs are met so that farm and forest managers can use methods that achieve the desired environmental outcome and that are also economically sustainable.

STRATEGY

Facilitate adoption by large and small farms of variable rate application technologies that can reduce the use of pesticides and fertilizers without reducing production.

The latest agricultural methods and technologies have been developed to help farmers grow and protect their crops while minimizing negative impacts on the air and water we share. Not all technologies are as easily adopted by all farm operators. Sometimes the need for training in these new technologies can present barriers to adoption; sometimes the initial investment in equipment presents a barrier, even if the technology ultimately is economical to use.

Potential funding is available to local farms to implement these programs including the USDA's Agricultural Water Enhancement Program and NRCS Environmental Quality Incentive programs. Since these types of project require individual farmers to implement, the key is conducting outreach directly to farmers on the benefits and opportunities of the projects, such as through the community food training center discussed previously.

6.3 Sustainability Targets

Sustainability targets were established for selected indicators. These targets are considered reasonable quantifications that the WNY region should strive to achieve as it implements this sustainability plan. Further information regarding the targets and associated indicators is provided in Appendix D.

TARGET

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

The strategies outlined for all the Agriculture and Forestry goals work to retain and make more viable the acreage of cropland currently being harvested. It is important to set a target associated with the acres of harvested cropland as it is a prime indicator for the success of the implementation of the strategies outlined in this Plan.

This target is important in order to measure the success of the efforts to continue the use of agricultural land for productive farming purposes. Cropland numbers fluctuate from year to year depending on weather and markets, but according to the Census of Agriculture, in the ten years between the 1997 and 2007 harvest cropland acres in the five western New York counties declined 1.3 percent. Between 1987 and 2007 there was an 11.4 percent decline of harvested cropland in the same region. Since the long-term trend for acres of harvested cropland has been one of decline, keeping the acres of harvested cropland consistent will be showing progress toward meeting the goals of the Plan. Maintaining the harvested cropland base would demonstrate the economic vitality of farms and ability of farm businesses to withstand economic pressures that have tended to force land out of agricultural production.

Massachusetts Avenue Project, Aquaponics Tilapia Farm and Greenhouse, Buffalo, Erie County

6.4 Sustainability Actions

Implementation of the strategies associated with sustainable agriculture and forestry will strengthen the economic viability of the agriculture industry while directly and indirectly reducing GHG emissions. Agriculture is an important industry in WNY, accounting for one in seven of our local businesses. The implementation of these strategies will support small to medium-sized farms through local distribution of their products, opportunities for value-added products, and allowing farmers to share costs, receive marketing assistance, and recruit additional workers/operators while also identifying opportunities for efficiencies in their agricultural processes. These strategies would work together to make the local agricultural industry more economically viable while reducing direct and indirect GHG emissions.

GHG emissions associated with agricultural operations (applying nitrogen fertilizers, manure management, and livestock digesting their feed) accounts for 2% of the total emissions generated in the region. Additional GHG emissions are associated with the energy use of managing and operating farms. The goals and strategies discussed in the Plan would reduce the carbon footprint of our local farm operations in addition to benefiting the economy. Additionally, our significant forested lands should be managed in sensible ways so as to protect their function as a carbon sink for our region.

A summary of identified sustainable agriculture and forestry projects that align with the goals and strategies of this Plan is located on ***pages A-28 through A-30 in Appendix A***.

7 Water Resources

Sustainability as it pertains to water resources in the region includes addressing water infrastructure needs as well as ground- and surface water quality, investments in water management systems (both water supply and wastewater), improving water use efficiency or reuse, preservation of the region's water resources, and reduction of energy use and GHG emissions. Infrastructure needs include the delivery or distribution of clean drinking water and collection of wastewater. The following were considered in the development of the region's water resources goals and strategies set forth in this Plan:

- Evaluate impacts of water delivery, transportation, and housing infrastructure projects on surface water quality;
- Consider how investments in water management systems can increase efficiency and improve water quality;
- Consider the development of programs and practices to improve water use efficiency or appropriate reuse of water;
- Identify ways to implement green infrastructure practices to improve water quality and reduce storm water flows
- Evaluate ways to preserve the quality and quantity of the region's water resources;
- Evaluate power production through sewage treatment; and
- Identify ways to reduce energy use and GHG emissions associated with movement of water.

In developing a sustainability plan that addresses water resources in the region, it is critical that previous and current efforts are integrated with this planning process. Examples of other relevant plans and efforts include the Buffalo Sewer Authority's Long Term Control Plan, ongoing efforts of the WNY Stormwater Coalition, the Great Lakes Restoration Initiative (GLRI), **Great Lakes Compact** (Great Lakes-St. Lawrence River Basin Water Resources Compact), Southern Tier West Watershed/ Stormwater Task Force, the Lake Erie Watershed Protection Alliance (LEWPA), as well as the WNY Regional Economic Development Council.

Consistency with other regional initiatives is a prominent issue that was stressed throughout the planning process. Stakeholders emphasized the importance of looking to the larger Great Lakes region for consistency with the GLRI and the Great Lakes Compact and the major initiatives within each of those that can be brought to the local level. An important aspect of the implementation of this Sustainability Plan will be leveraging funding sources common to these efforts and also creating partnerships that help to advance the goals of all three efforts.

Green infrastructure seeks to introduce built systems that mimic natural systems by capturing rainwater and maximizing infiltration. Examples of green infrastructure include green roofs, rain gardens, porous pavement, and other practices.

NFTA Green Roof Bus Shelter, Buffalo, NY

7.1 Sustainability Indicators and Current Trends

The water resources indicators discussed below are a measure of the baseline conditions for the region. These were used to inform the goals established for water resources in the region. Additional water resources indicators were considered but due to lack of data at the date of this plan were not included. Additional details on the sustainability indicators are provided in the Indicator Memo in *Appendix D*.

INDICATOR Acres of Conserved Land

In 2012, the WNY region had 215,248 acres of conserved land, areas that are protected from development and that help to improve water quality throughout the region. The lands conserved included NYSDEC 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 which, as a result, contribute to water quality and management efforts in the region.

WATER MANAGEMENT
Year: **2012**

214,757 acres of land are conserved in WNY

Data Sources
N.Y. Office of Cyber Security. 2010. *NYS Public Land Boundaries.*

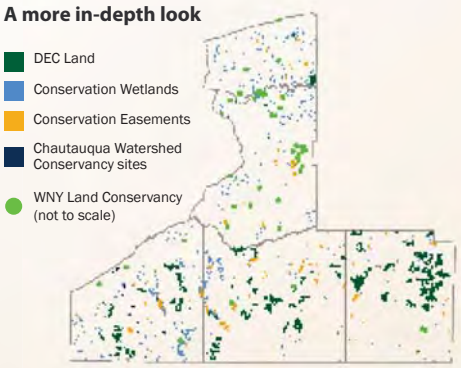
N.Y. Department of Environmental Conservation. 2012. *New York State Regulatory Freshwater Wetlands.*

Western New York Land Conservancy. 2012. *List of Protected Properties.*

The Conservation Registry. 2012. *National Conservation Easement Database.*

Acres of Conserved Land

A more in-depth look



INDICATOR

Linear Miles of Shoreline with Public Access

In addition, 107 miles of publically accessible shoreline regional waterbodies are listed on the New York Environmental Protection Funds list of coastal and inland waterbodies. This represents 22% of all the shorelines in the region. Public access to the region's waterways is critical to improve the region's tourism and economic development assets and to improving the water quality through incorporation of appropriate land uses along such waterways.

WATER MANAGEMENT
Year: **2010 and 2012**

Linear Miles of Shoreline with Public Access

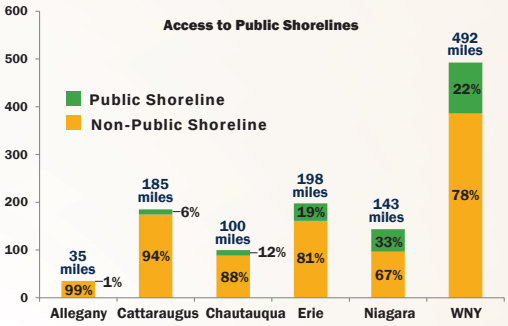
107 of the 492 miles (22%) of shoreline along major regional water bodies are publicly owned

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.

A more in-depth look



INDICATOR

Miles of Impaired Streams

In 2010, there were 781 miles of streams in the region that were classified as impaired by the NYSDEC. Impaired waters are waters that do not fully support the designated uses as established by the state's water quality standards. As strategies are implemented that improve water quality, the miles of impaired streams should decrease.

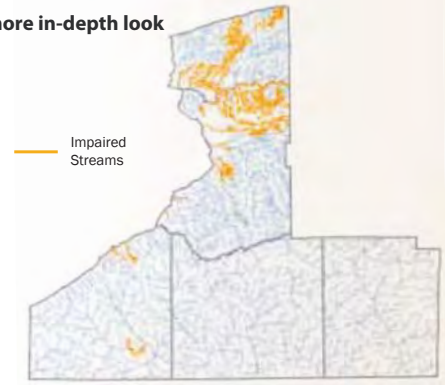
WATER MANAGEMENT
Year: **2010**

Miles of Impaired Streams

781 miles of WNY's streams are classified as impaired

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

A more in-depth look



INDICATOR

Miles of Trout-Classified Streams

There are 1,352 miles of trout-classified streams within the region. Trout streams are waters that provide habitat in which trout can survive and grow within a normal range on a year-round basis. Trout waters are typically indicative of higher or better water quality because trout are a more sensitive aquatic biota. Therefore as the miles of impaired streams are reduced due to improved water quality it is anticipated that miles of trout-classified streams may increase as a result.

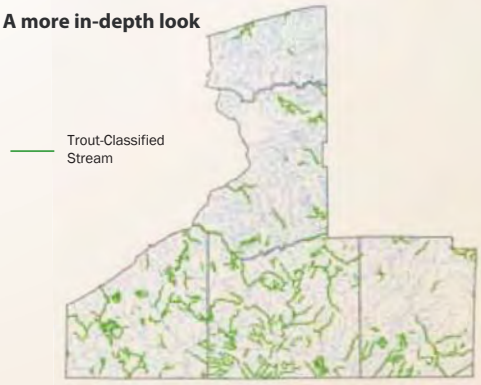
WATER MANAGEMENT
Year: **2010**

Miles of Trout-Classified Streams

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

Data Sources
N.Y.S. Department of Environmental Conservation. 2010. NYS Water Quality Classifications Data Set.

A more in-depth look



INDICATOR Combined and Sanitary Sewer Overflows

As a measure of inefficiency of the existing wastewater infrastructure, in 2011 there were 88 **Combined Sewer Overflows (CSO)** and 29 facilities that generate **Sanitary Sewer Overflows (SSO)** throughout the region. The excessive storm water runoff and snowmelt in CSOs and SSOs cause untreated waste water to be released into the region's waterways, negatively affecting the water quality of the region. As measures to decrease the amount of runoff that enters these systems are implemented, through green infrastructure as well as improvements to wastewater infrastructure, the number of CSOs and SSOs will decrease, resulting in improved regional water quality.

WATER MANAGEMENT
Year: **2012**

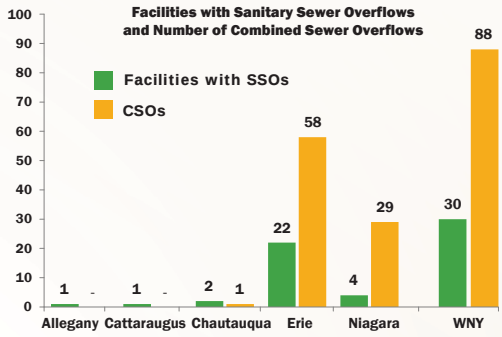
Combined and Sanitary Sewer Overflows

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

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.*

A more in-depth look



CSOs are those discharge points that 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 cause a number of system errors, inefficiencies, or defects .

INDICATOR Water Usage per Capita

The region uses 1,116 gallons of water per person per day accounting for public supply, domestic, irrigation, livestock, aquaculture, industrial, mining, and thermoelectric power use. Increasing the efficient use of water in residential, commercial, and industrial processes will save water and the energy used to process and treat wastewater.

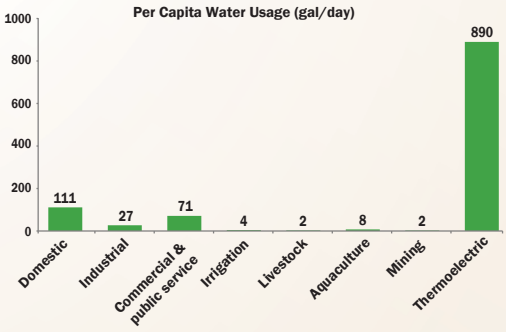
WATER MANAGEMENT
Year: **2005**

Water Usage Per Capita

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

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

A more in-depth look



7.2 Sustainability Goals and Strategies

GOAL

Water Resources Sustainability Goal 1: ***Improve regional water quality through a focus on the identification and management of pollution sources and protection of healthy watersheds.***

Improving the region's water quality is a key focal point for water management sustainability because good water quality affects different facets of the region – the economy (fishing, water-related tourism, etc.), recreation, and the health of the watershed. Existing sources of degraded regional water quality need to be identified and solutions developed to address them. Primary sources of degraded regional water quality include non-point source pollution, especially in the rural areas of the region, as well as CSOs and SSOs.

STRATEGY

Educate the public on the ways that they impact and/or improve the health of local watersheds, reduce stress on water management infrastructure, and promote water conservation through public education programs and demonstration projects.

The importance of educating local residents and stakeholders on the role that they play in achieving the region's sustainability goals was a common theme that impacts all the strategies outlined for water resources. Providing education for residents that explain how they impact water quantity and quality is a major first step in achieving a decrease in non-point source pollution. Providing education on water conservation practices is critical in achieving more efficient water use; residential household and potable water use; and commercial facility and industrial water use, including industrial processes and treatment of drinking and wastewater. Therefore, each strategy or project implemented as part of this Plan should include an educational component.

An example within the region is Buffalo Niagara Riverkeeper, which is actively involved in water resources education in Erie and Niagara counties. Among other educational programs they are developing a Storm Drain Identification program that includes attaching metal medallions to curbside storm drains that read "No Dumping Drains to Waterway." An educational outreach program such as this, is highly visible and works to increase public awareness against dumping into stormwater drains. Additionally, the implementation of pilot projects throughout the region that demonstrate green infrastructure in public places such as county parks or along road medians, along with signage, increase public awareness about different types of green infrastructure and how it works to improve water quality in the region.

Educational outreach programs can be implemented by local non-profits, such as the Buffalo Niagara Riverkeeper, or through municipal and county departments. Funding for public demonstration projects can come from in-kind municipal funding and supplemented through such programs as the United States Army Corps of Engineers Infrastructure Improvement funding.

STRATEGY

Implement targeted sewer infrastructure improvements for pollution sources known to impact impaired waterbodies in the WNY region.

The region's existing sewer infrastructure system is inadequate and is not equipped to handle excess wastewater, which result in CSOs and SSOs that discharge untreated wastewater directly to the region's waterways. As mentioned earlier, in 2011 there were 88 CSO events and 29 facilities that generated SSOs. This infrastructure needs to be upgraded and maintained to reduce these direct discharges that result in the impairment of the region's waterbodies. An example of this is Chautauqua Lake, which is currently being impaired by an adjacent sewage treatment plant that is contributing

20% of the phosphorous load to the lake. As a result Chautauqua County is proposing upgrades to this plant and septic systems within 1,300 feet of the lake in order to improve the lake's water quality. Potential funding sources for such upgrades could be through the United States Army Corps of Engineers Infrastructure Improvement program or the USEPA's Clean Water State Revolving Loan Fund program.

STRATEGY **Identify and implement green infrastructure practices (i.e., permeable pavement, raingardens, bioretention ponds, etc.) that reduce excessive storm water flows and runoff, which are a leading source of non-point source pollution.**

The region should identify and implement green infrastructure practices that reduce excessive stormwater flows to alleviate the flows to the sewer systems as well as runoff directly to waterways. Such practices as permeable pavement and raingardens are proven methods that reduce rain runoff by allowing storm water to filtrate directly into the ground. They types of projects can be completed by individual municipalities, non-profit organizations as well as local citizen organizations.

An example of a completed green infrastructure project is Buffalo's Pervious Pavement Project. The City of Buffalo, in coordination with the Buffalo Niagara Riverkeeper, installed pervious pavement asphalt on one test road within the city. This asphalt allows rainwater to permeate directly into the ground. This project was completed with partial funding from the USEPA Green Innovation Grant Program. This project is currently being monitored so that the amount of water seeping into the asphalt can be tracked.

Niagara Falls, Niagara County

GOAL

Water Resources Sustainability Goal 2: ***Improve regional water management systems and increase regional water use efficiency.***

Although the region is located within the Great Lakes and Allegany River basin, where there is ample freshwater, the region must consider the importance of promoting wise use of the region's freshwater resources. Addressing existing municipal water and wastewater systems that operate inefficiently is a key step to efficient regional water use. Municipalities have opportunities to increase water efficiency by looking at inefficient, separate systems and by identifying ways to minimize redundancies in their water systems.

STRATEGY

Increase efficiency and effectiveness of water management infrastructure through implementation of system upgrades and consolidation of existing water systems.

Municipalities within the region should work to identify water systems that are in need of upgrades to reduce leaks in the system, as well as identify redundancies in the overall water system that will increase the overall efficiency of the system. In addition, the regional water systems should be monitored and repaired for leaks to prevent water loses, as well as infiltration and inflow (I & I), which is where clean stormwater or groundwater enters the sanitary sewer system though holes, breaks, joints, failures, downspouts and other sources. Assessing these systems for water quality and quantity, as well as water and energy efficiency can result in short-term investments that could result in long term cost savings for the municipality.

An example of a means to improve water efficiency in the region is the Erie County Division of Sewerage Management (ECDSM), a conglomerate of small municipal and private sewer systems, that is proposing to combine individual systems into a larger regional system. The regional system would improve collection and treatment efficiency through the elimination of redundant facilities and the construction of regional gravity systems that can cross municipal boundaries. Projects such as these would work to increase water efficiency, as well as reduce energy demand and associated GHG emissions. Potential funding sources for such upgrades could be through the United States Army Corps of Engineers Infrastructure Improvement program.

Allegany River, Cattaraugus County

GOAL

Water Resources Sustainability Goal 3: ***Address regional water quantity concerns through a focus on flooding, storm water/runoff, infiltration, and regional water use.***

Regional water quantity issues are regional flooding and the damages that can result in both urban and rural environments, the strong interplay between storm water and flooding, and the importance of land use (developed versus open spaces and functioning natural systems). Flow reduction for the overall region was highlighted as a key priority, as it is tied to water quality issues (CSOs and SSOs) but also to monetary costs for infrastructure and maintenance.

STRATEGY

Assess and seek to remove regulatory and administrative barriers to green infrastructure projects posed by local codes and permitting processes.

In order to increase the use of green infrastructure throughout the region, there is a need for a qualitative assessment of the barriers posed by local codes and permitting processes to green infrastructure requirements. A study such as this is proposed by the Erie County Department of Environment and Planning, in coordination with the WNY Stormwater Coalition. The goal of the study is to identify local administrative obstacles while identifying opportunities to make green infrastructure practices and educational outreach regarding these practices more available to municipal planning and permitting agencies. As these barriers to implementation of green infrastructure are identified and removed, more such practices will be integrated resulting in improved water quality within the region. This study could be funded partially through in-kind county/organizational funding, as well as the USDA's Natural Resources Conservation Small Watershed Program.

STRATEGY

Promote the preservation and restoration of land and natural systems that can be used to naturally manage storm water and runoff.

An important aspect to managing stormwater is the preservation and restoration of land and natural systems that will naturally filtrate water, reducing runoff. Municipalities should evaluate these areas within their communities and identify ways to protect them from development and/or restore them. An example of habitat restoration is the Urban Habitat Project, at the Buffalo Central Terminal. The project demonstrates the benefits of habitat restoration of a 3-acre urban abandoned space adjacent to the Buffalo Central Terminal. The site was planted with large groves of pine trees, hawthorns, native shrubs, and vast meadows of grasses and wildflowers. This restoration resulted in native regional habitats, improved soil quality, and the increase of natural stormwater infiltration, as well as a 320,000 gallon bio-retention pond. In addition, the project is functioning as a living inner-city classroom for schools, community centers, churches and residents.

Potential funding for restorations or preservation projects could come from public land bank or open space funds, The NYS Office of Parks, Recreation and Historic Preservation Community Grant's, as well as private foundation funding.

Urban Habitat Project, Buffalo Central Terminal, Erie County

GOAL

Water Resources Sustainability Goal 4: ***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.***

Coordination with land use planning processes begins at the local level through the integration of regional goals and policies regarding water management and sustainability in local comprehensive plans and zoning. Making sound decisions on where future development is sited can have positive implications for regional water quality and can also increase the efficiency of regional water use by maximizing existing infrastructure. Initiatives at the Great Lakes regional level—namely the GLRI and Great Lakes Compact—can provide guidance and important tie-ins to this planning effort and, therefore, consistency should be maintained between these efforts and this Plan.

STRATEGY **Develop and implement Local Waterfront Revitalization Plans (LWRPs) in all eligible municipalities that include consideration of public access to regional waterfronts for recreation to promote economic development associated with tourism.**

This strategy was discussed in Section 4.2 for the Land Use and Livable Communities Goal 6 – "Encourage, enhance, and coordinate regional park, greenway, and waterfront planning to connect the public and natural resources to each other while promoting economic development and recreational opportunities," and it works to address this goal as well.

STRATEGY **Develop and maintain links between water quantity and quality infrastructure and local land use planning (i.e. future development and land conservation), as well as the GLRI and Great Lakes Compact.**

Managing storm water and run-off should be coordinated with land use planning, especially to ensure that new development adheres to green infrastructure standards, including practices that reduce I & I and the implementation of these practices increase region-wide. As discussed in Section 4.2, there is the potential for the REDC's Smart Growth Work Group proposed "Smart Growth Coordinating Council" to work to build land use planning capacity throughout the region. It would be through this effort that the strategies outlined in this Plan relating to land use all would be integrated into local land use planning efforts. Additionally, the regional initiatives such as the GLRI and Great Lake Compact can provide additional guidance as municipalities are considering water quality and quantity issues in land use planning.

7.3 Sustainability Targets

Sustainability targets were established for selected indicators. These targets are intended as reasonable quantifications that the WNY region should strive to achieve as it implements this sustainability plan. For further information of the targets and associated indicators is provided in *Appendix D*.

TARGET

The region's target is to reduce storm water flow and frequency of CSOs by 40% over a period of 20 years.

The strategies outlined to achieve Water Resources Goals 1, 2 and 3 will work to decrease the number of CSOs throughout the region. It is important to set a target for the reduction of CSOs as it is a key measure of success of the implementation of water quality and quantity strategies outlined in this Plan.

The implementation of region-wide green infrastructure will have a direct impact by reducing storm water flows and frequencies of CSOs. This target was set to be consistent with regional existing plans for reducing CSOs such as the Buffalo Niagara Riverkeeper Draft "Green Infrastructure Solutions to Buffalo's Sewer Overflow Problem" (March 2011), the Alliance for the Great Lake's "Reduce Combined Sewer Overflows in the Great Lakes: Why Investing in Infrastructure is Critical to Improving Water Quality" (June 2012), and the current updates to the Buffalo Sewer Authority's "Long-Term Control Plan."

West side vacant lot regeneration, Buffalo, Erie County

TARGET

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

The strategies outlined to achieve Water Resources Goals 1 and 2 will work to decrease the number of impaired streams throughout the region. It is important to set a target for the number of impaired streams, as it is a key measure of success of the implementation of water quality strategies outlined in this Plan.

In 2010, there were 781 miles of NYSDEC-listed impaired streams within the WNY Region. These waters are classified as not fully supporting the designated uses as established by the state's water quality standards. From 2008 to 2010 three streams were delisted, while from 2010 to 2012 no streams were delisted or added to the list within the region; therefore the water quality within the region is remaining relatively constant. The implementation of actions that will improve water quality within the region include such actions that address CSOs and provide centralized wastewater treatment as well as the installation of green infrastructure that reduces stormwater runoff. These collective efforts will work together to increase water quality within the waterways of the region, resulting in a reduction of miles of impaired streams.

7.4 Sustainability Actions

The strategies associated with water resources will ensure the sustainable use and management of one of the region's most abundant natural resources. The strategies outlined above address water quality and quantity concerns through natural management, improved and efficient water systems, and coordination with regional land use planning. The effect these actions have on the regional economy would be associated with reduced cost for municipalities responsible for maintaining and operating these systems and thus a reduced cost for the taxpayer and the job creation associated with construction and upgrades to these systems. In addition it is critical to acknowledge that these actions can serve to minimize significant negative impacts on the economy associated with erosion and sedimentation, flooding, and water quality issues.

Restoration of the Buffalo Central Terminal, Urban Habitat Project, Erie County

The GHG emissions associated with wastewater treatment resulting from the breakdown of organic materials accounts for 1% of all the GHG emissions in the region. In addition, there are additional GHG emissions associated with the energy used to collect and treat wastewater and distribute public water. Real reductions and avoidance of those emissions can be realized through improving water management systems to reduce redundancy and improve efficiency and, through natural water management, reduce the energy needed to operate these systems.

A summary of identified sustainable water resources projects that align with the goals and strategies of this Plan is located on *pages A-32 through A-38 in Appendix A*.

8 Waste Management

Truly sustainable solid waste management would be zero waste disposal. While currently considered to be impractical, it is still the ultimate goal. To achieve this challenging goal, solid waste management has shifted in recent years to a more comprehensive materials management. This more holistic approach assesses how materials are managed before they become a waste as well as how they are managed once labeled a waste. New York's Beyond Waste Plan (NYSDEC, 2010) addresses the current strategy for solid waste, which is to "reduce demand for energy, reduce dependence on disposal, minimize emission of greenhouse gases, and create green jobs."

The WNY Sustainability Plan evaluates representative solid waste management practices throughout the region to determine strategies to reduce the waste produced and stored in the region and reduce GHG emissions associated with waste management. The following were considered in the development of the region's waste management goals and strategies set forth in this Plan:

- Identify methods to reduce and prevent waste;
- Identify ways to increase recycling of conventional recyclables (e.g., paper, plastic, cardboard, glass, and metal);
- Identify ways to increase recycling of organic materials (e.g., via composting, land application, or anaerobic digestion);
- Consider handling and recycling construction and demolition (C&D) debris;
- Consider alternatives to landfilling;
- Identify and evaluate the feasibility of landfill methane capture and use (landfill-gas-to-energy); and
- Energy recovery from waste incineration (waste-to-energy).

Modern Corporation, Commercial Compost Facility, Niagara County

The real cost of waste management is not just the cost of disposal but is instead a life-cycle cost that also factors in manufacturing, transportation, and environmental and human health. The WNY region consists of municipalities, businesses, and institutions with varying waste management needs depending on their size and proximity to disposal and recycling facilities. It is not expected that each waste management unit will accomplish sustainable waste management in a standardized way. This is especially true since municipalities, businesses, and agencies have limited budgets and resources to collect and track comprehensive data pertaining to waste management.

Regardless of strides in environmental and energy awareness, the majority of waste generated in WNY, the state, and the nation is still landfilled. Landfilling is the lowest priority waste management strategy because it uses valuable land, does not eliminate the waste, and produces the greenhouse gas methane, which builds up in landfills as waste breaks down in the relative absence of oxygen (i.e., anaerobically). Methane is a much more potent greenhouse gas than carbon dioxide. Landfilling is the largest direct contribution to GHGs of any waste management technique.

In the hierarchy of sustainable waste management, the number one strategy is to reduce the overall generation of solid waste to begin with, known as waste reduction or waste prevention. Waste reduction saves energy and resources by reducing the overall amount of material that needs to be handled, processed, manufactured, collected, transported, and disposed of, and consequently also results in less GHG production from that life cycle. Next to waste reduction, recycling (including reuse) is the second most effective waste management strategy to reduce GHG emissions and conserve energy and resources. Recycling avoids the methane generation of landfilling as well as the extra energy, resources, and pollution from manufacturing using virgin materials. In 2010, the 3.7 million tons of municipal solid waste (MSW) materials recycled in New York State helped to avoid more than 12 million metric tons of carbon dioxide equivalent and conserve 99 trillion BTUs of energy (NYSDEC's Beyond Waste Plan, 2010).

This Plan addresses sustainable management of MSW, organic waste, and C&D waste that is eligible for disposal in a landfill or incinerator (the term "disposal" encompasses both landfilling and incineration). MSW includes household and commercial/institutional solid waste, and excludes industrial, separately managed C&D, and specialized organic wastes.

Waste diversion is any method of preventing a waste from being disposed of via landfill or incineration and includes recycling, composting, and other reuse.

The majority of active MSW landfills in WNY capture a portion of the landfill gas (methane) and use it for electricity, amounting to 233,000 megawatt-hours (MWh) in 2010. This practice derives a useful commodity (energy) from waste disposal while at the same time helps to mitigate the contribution of landfills to GHGs. One large area landfill (the Republic/Allied Waste landfill in Niagara County) does not collect landfill gas because the landfill does not routinely accept biodegradable waste. Because the majority of regional landfills that can reasonably collect landfill gas are already doing so, the stakeholders determined that landfill-gas-to-energy was not an effective area of emphasis for waste management for this Plan.

The WNY area contains one of 10 municipal waste combustion (MWC) facilities in New York State. That facility (Covanta in Niagara County) generated more than 240,000 MWh of electricity in 2010 and is one of the largest MWCs in the state. WNY also has a waste-to-energy incineration facility for tires and selected C&D wastes. A waste-to-energy operation derives a useful commodity (energy) from waste disposal, avoids the methane generated by landfilling (although incineration generates some GHGs during combustion), and boosts metals recycling by actively separating out metals from the waste stream prior to incineration. MWC is a viable disposal technique for waste that cannot otherwise be prevented or recycled and, from a climate standpoint, NYSDEC considers it to be preferable to landfilling. Because WNY has an operating MWC facility, the stakeholders determined that waste-to-energy was not an effective area of emphasis for waste management for this Plan.

8.1 Sustainability Indicators and Current Trends

The waste management indicators discussed below are a measure of the baseline conditions of the region. These indicators were used to inform the goals established for waste management for the region. Other waste management indicators might be applicable in the future as sustainable waste management practices evolve over time and better data pertaining to waste management are collected. Additional detail on the indicators is provided in the Indicator Memo in *Appendix D*.

INDICATOR Municipal Solid Waste (MSW) Disposed of per Capita

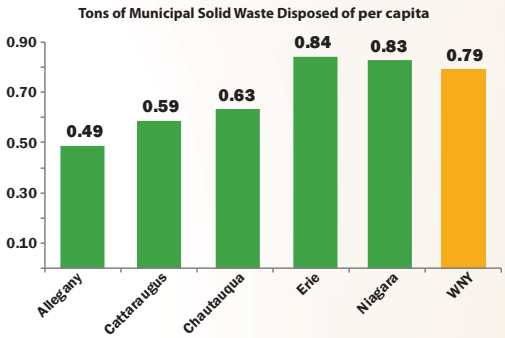
Landfills are currently the primary destination for waste disposal in the region. In 2010, the WNY region disposed of 0.79 tons per person of MSW via landfill or municipal waste combustion. MSW consist of household and commercial/institutional solid waste. It excludes industrial, separately managed construction and demolition, and specialized organic wastes. The status of this indicator is inversely related to MSW recycled, assuming the amount of waste material being produced remains constant, as efforts are made to increase MSW recycled this indicator will decrease respectively.

WASTE MANAGEMENT
Year: **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

A more in-depth look



Data Sources
NYSDEC. 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 Municipal Solid Waste (MSW) Recycled per Capita

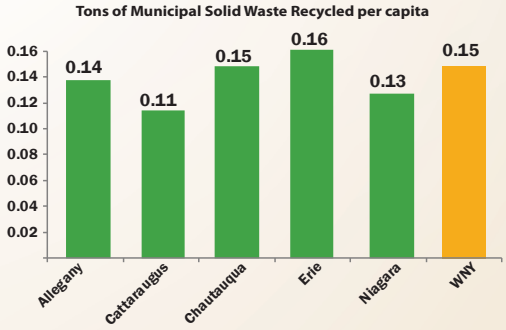
In 2012, approximately 0.15 tons per person of MSW was diverted from landfills, by recycling. MSW recycled consists of conventional household and commercial/institutional recyclables like paper, cardboard, metal, glass, and plastic. They exclude industrial, separately managed construction and demolition, and specialized organic recyclables. The status of this indicator is inversely related to MSW disposed of, assuming the amount of waste material being produced remains constant, as efforts to increase recycling within the region increase the MSW disposed of will be reduced.

WASTE MANAGEMENT
Year: **2010**

Municipal Solid Waste (MSW) Recycled Per Capita

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

A more in-depth look



Data Sources
NYSDEC. 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 Construction and Demolition (C&D) Waste Disposed of per Capita

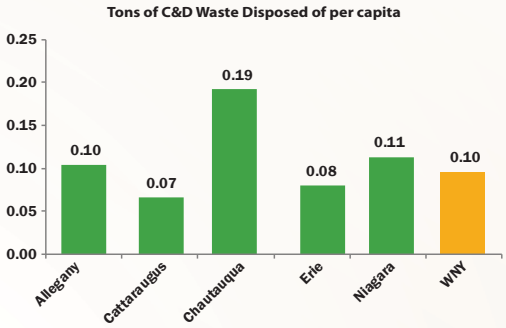
In 2010, approximately 0.10 tons per person of C&D waste from WNY were disposed of in a landfill. C&D waste consists of building materials like concrete, wood, metals, plate glass, asphalt, and other building components. The status of this indicator is inversely related to C&D waste recycled, as efforts to increase C&D recycling, the amount of this waste that ends up in landfills will be reduced.

WASTE MANAGEMENT
Year: **2010**

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

In 2010, **0.10 tons** per person of C&D waste from WNY were disposed of

A more in-depth look



Data Sources
NYSDEC. 2010. Annual landfill reports submitted for key facilities.

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

INDICATOR Construction and Demolition (C&D) Waste Recycled per Capita

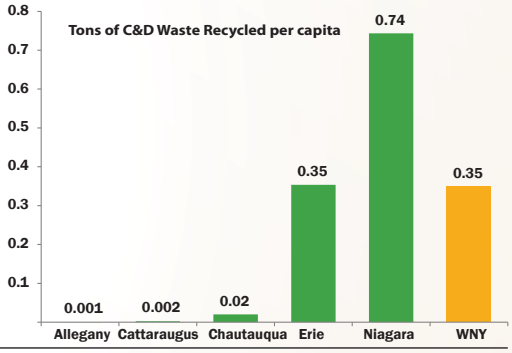
In 2012, approximately 0.35 tons per person of C&D waste were diverted from the landfills by recycling. Implementing strategies to reduce waste and increase recycling in the region will reduce the amount of waste that is disposed of. C&D waste consists of building materials like concrete, wood, metals, plate glass, asphalt and building components, much of which is recyclable. The status of this indicator is inversely related to C&D waste disposed of, as efforts to increase C&D recycling, the amount of this waste that ends up in landfills will be reduced.

WASTE MANAGEMENT
Year: **2010**

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

In 2010, **0.35 tons** per person of C&D waste from WNY were recycled

A more in-depth look



Data Sources
NYSDEC. 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 Organic Waste Recycled per Capita

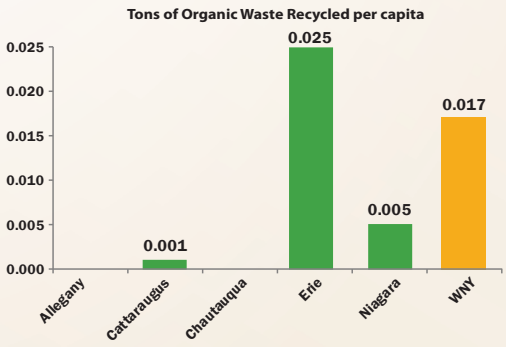
In 2010, 0.017 tons per person of organic material from the region were recycled. The amount of organic waste that was disposed of is unknown because this information is not tracked, but it is thought to be substantial based on typical waste composition profiles. Recycling and reuse of organic materials is an obvious opportunity for reducing the amount of waste ending up in landfills, as well as GHG reduction.

WASTE MANAGEMENT
Year: **2010**

Organic Waste Recycled Per Capita

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

A more in-depth look



Data Sources
NYSDEC, Division of Materials Management. 2011. *Biosolids Management in New York State*, Table 5, Part 360 Permitted Biosolids Beneficial Use Facilities. Data are for year 2010.

NYSDEC. 2010. Part 360 Permitted Composting Facilities. List dated September 28, 2010.

NYSDEC, 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 **Waste Transport Vehicles that Use Alternative Fuels**

In 2012, there were at least 33 alternative-fuel vehicles in privately operated waste collection fleets in the region, and as yet, no such vehicles in municipal fleets. Increasing the number of waste collection trucks that use alternative fuels will decrease regional GHG emissions associated with waste and recyclables collection and transport.

WASTE MANAGEMENT
Year: **2012**

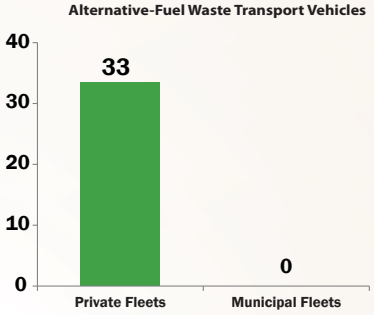
Waste Transport Vehicles That Use Alternative Fuels

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

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.

A more in-depth look



8.2 Sustainability Goals and Strategies

GOAL **Waste Management Sustainability Goal 1:** ***Reduce the amount of MSW that is disposed of (via landfills or incineration). Accomplish this by reducing waste generation and/or increasing recycling.***

In their Beyond Waste Plan, NYSDEC states that New Yorkers send 4.1 pounds per person per day (0.75 tons per year) of MSW to disposal facilities. This Plan estimates the amount for WNY to be about 4.3 pounds per person per day (0.79 tons per year). NYSDEC has set a disposal reduction goal of 0.6 pounds per person per day (0.11 tons per year) by 2030.

Although there are active MSW recycling programs throughout the region, still too much of that material is landfilled that otherwise could be recycled, and more needs to be done to divert recyclable materials from disposal. The statewide MSW recycling rate is estimated to be about 20%, which is short of the national average of 33%.

According to NYSDEC's Beyond Waste Plan, on a per-ton basis, anywhere from four to ten jobs can be created to process recyclable materials and prepare them for market for every one job in disposal, and the jobs ratio is higher when the recycled materials are in turn used in manufacturing.

C&D Waste Recovery

STRATEGY Educate the public, government, businesses, and institutions 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.

In order to achieve real progress in reducing waste and increasing recycling in the region, education and awareness are needed across all sectors (residential, business, institutional, government) regarding sustainable waste management practices and their economic and environmental benefits.

Municipalities should provide public outreach to their businesses and residents regarding the costs and benefits of sustainable waste management. Education outreach can take many forms, including:

- Distributing flyers and mailings to the public and businesses with tips for reducing waste and increasing recycling;
- Public service announcements;
- Holding educational seminars for municipal governments, businesses, and institutions regarding waste management best practices and the positive economic impact of sustainable waste management; and
- Addressing good waste management practices in K through 12 school curricula.

These types of programs could be implemented by municipalities through municipal budgets; however, the money saved from decreasing waste and increasing money received from recycling could end up compensating for the initial costs. Other options such as educational outreach from non-profit organizations such as the Buffalo Recycling Alliance could work to supplement municipal outreach. Additionally the Green Business Roundtable discussed in Section 3.2 would be a means of educating business and industry within the region on best practices regarding waste reduction, including recycling and composting.

STRATEGY Institute more Pay-as-You-Throw programs and every-other-week trash pickup, which incentivize waste reduction and recycling.

Municipalities throughout the region should work to incorporate Pay-as-You-Throw programs so that the residents or businesses within the municipalities have an incentive to reduce their waste. In addition, reducing trash pick-up to every other week would save fuel costs from collecting waste. These types of changes save money but would require public outreach and support from the community in order for successful implementation.

STRATEGY Increase MSW recycling operations (collection, recovery, and processing) in WNY and the use of recycled MSW materials in goods produced in the region.

The majority of MSW recyclables collected in WNY are shipped out of the region. They typically are not used in manufacturing streams or processes in the region, meaning that their secondary-market value and energy-savings value are realized elsewhere. As the MSW recycled increases in the region through public outreach and the implementation of Pay-as-You-Throw programs, there is a need to increase the number of facilities that process this material and incorporate it into goods being produced in the region.

The development of such facilities will require an entity such as an Industrial Development Agency (IDA) to lead a targeted market development study. Once the study is conducted the agency can incentivize the development through tax abatement, IDA incentives, and low-cost power as well as other private and public financial assistance and funding sources.

STRATEGY Encourage product stewardship that considers the life-cycle of the product for goods produced in WNY. As necessary, enact related legislation.

Product stewardship considers a product's life cycle, from manufacture to disposal, has responsibility for the environmental impact of the product, and is important

to sustainable waste management. NYSDEC's Beyond Waste Plan calls product stewardship a key strategy for both waste and GHG reduction. According to the EPA, 42% of the national GHG inventory is influenced by the energy consumed in the production, use, and management of the materials that become waste. Key concepts of product stewardship are reducing product packaging; using recyclable product packaging; and requiring manufacturers, distributors, and retailers to be involved (financially and otherwise) in the final disposition of the product.

Encouraging manufacturers to adopt product stewardship in the region could be another goal of the Green Business Roundtable that was discussed in Section 3.2. Businesses and industry meeting and sharing ideas about best practices that are already being implemented and how much they cost or even save will encourage others to adopt such practices. Additionally, state and federal government can enact legislation that requires product stewardship.

GOAL

Waste Management Sustainability Goal 2: ***Maximize the diversion of organic waste from disposal facilities (landfills and incinerators) and the beneficial reuse of the organic material***

Organic waste includes yard waste, food residual waste, food processing waste, wood waste, and biosolids (sewage treatment sludge). Composting, recycling, or other reuse of organic wastes is not widespread, and the majority of those materials are currently landfilled. In addition to improving waste diversion, recycling of organics is an opportunity to reduce GHG emissions since organic material is highly degradable and contributes readily to landfill gas.

STRATEGY **Improve the infrastructure for effectively recycling organic material (commercial, institutional, and residential) in WNY.**

In order to remove organic material from the waste stream there is a need for more infrastructure to effectively recycle this material. There are several methods that could be implemented through the region to increase the recycling of this material, such as:

- Municipalities conducting public outreach and assistance to residents, businesses and farms to assist in utilizing backyard or bin composting for both food and yard waste;
- Increasing the number of industrial composting facilities in the region through IDA incentives;
- Municipalities instituting routine organics collection for residences and businesses; and
- Increasing the use of anaerobic digesters for food waste and biosolids. In addition to increasing waste diversion and reducing GHGs, anaerobic digestion systems also typically recover methane for energy.

These methods to increase recycling material would have to be a combination of increasing the number of commercial composting facilities along with instituting municipal organic collection for the community. Similar to MSW recycling operation, the development of such facilities will require an entity such as an IDA to lead a targeted market development study. Once the study is conducted, the agency can incentivize the development through tax abatement, IDA incentives, low-cost power, and other private and public financial assistance and funding sources. In addition to the work from the local IDA, this would require a commitment from the local municipality to collect such wastes, and ultimately to be successful it would require public education as to how to collect and sort organic wastes.

GOAL

Waste Management Sustainability Goal 3: ***Reduce the amount of C&D waste that is disposed of by reducing waste generation and/or increasing recycling.***

C&D waste consists of bulky materials like concrete, wood, metals, plate glass, asphalt, and building components, much of which is recyclable. Similar to MSW, although there are active C&D recycling and recovery programs throughout the region, much of that material that otherwise could be recycled is landfilled and more needs to be done to divert recyclable C&D materials from disposal. Also similar to MSW, the majority of C&D recyclables collected in WNY typically are not used in enough local manufacturing streams or processes.

STRATEGY

Increase C&D recycling operations (collection, recovery, and processing) in WNY and the use of recycled C&D materials in goods produced in, and processes conducted in, WNY.

Similar to MSW recycling operation, the development of such facilities will require an entity such as an Industrial Development Agency to lead a targeted market development study. Once the study is conducted there agency can incentivize the development through tax abatement, IDA incentives, low-cost power, and other private and public financial assistance and funding sources.

STRATEGY

Encourage building deconstruction and subsequent material reuse and recycling, as opposed to building demolition.

In order to encourage building deconstruction and subsequent material reuse, there needs to be a processing facility, as well as market for those recycled materials. The work currently being done by Buffalo ReUse is an example of how to make this type of strategy financially viable. Buffalo ReUse has developed a business model for building salvage and deconstruction that facilitates the reclamation of quality building materials and preservation of the architectural heritage of buildings that would otherwise be destroyed. The materials are then sold at their store as low-cost building materials that are used to enhance the structural and aesthetic quality of existing homes in the city. As this type of strategy becomes more cost effective, more contractors within the region will work with existing programs or develop new programs to deconstruct and reuse construction materials.

Recycled Materials Sorting

GOAL

Waste Management Sustainability Goal 4: ***Increase the number of waste transport vehicles that use alternative fuels.***

As discussed in the transportation section of the Plan, many municipalities and private companies recognize the potential cost and GHG savings of converting their fleets to alternative fuels such as CNG, ethanol, or biodiesel. Waste and recycling haulers are particularly well served by converting their fleets to CNG, given the higher amount of idling, slower speeds, and slower acceleration of their vehicles. Using alternative fuels for waste transport vehicles will reduce GHG emissions and fuel costs. The conversion to alternative fuels will require upfront investments by haulers for fueling station infrastructure, alternative-fuel vehicle purchases, and conversion of existing fleets. An added benefit for the region would be installing additional fueling infrastructure that could be made available for public use.

Modern Corporation, CNG Fueled Waste Truck

STRATEGY **Encourage the conversion of waste transport vehicles, both municipal and private, to alternative fuels, such as CNG.**

A complicating reality is that the goals of reducing waste, greenhouse gases, and waste management costs are not necessarily compatible on a case-by-case basis. For example, the high cost of transportation often makes it cheaper in the short term to dispose of waste rather than recycle it, especially if recycling facilities are not local or convenient. Therefore it is important to find ways to reduce fuel costs associated with hauling waste, e.g., the conversion to CNG fueled vehicles. Making this cost-effective for the municipal waste management companies to make this conversion will require providing financial incentives. Potential funding to assist with the investment would be through NYSERDA's Alternative Fuel Vehicle Program.

STRATEGY **Implement projects such as fueling and charging stations that would increase the number of CNG and electric-powered vehicles through private and public programs.**

As discussed in Section 5.2, this strategy would work to increase the number of CNG fueling stations that could be used for waste collection vehicles and also serve as a public fueling station. Specifically, for waste collection fleets, it would be the responsibility of the waste collection company to install the CNG fueling station to fuel their fleet as well as for potential public use. Potential funding to assist with the investment for the CNG fueling station would be through NYSERDA's Alternative Fuel Vehicle Program.

8.3 Sustainability Targets

Sustainability targets were established for selected indicators. The targets are intended to be reasonable quantifications the WNY region should strive to achieve as it implements this Plan. Further information about the targets and associated indicator is provided in Appendix D.

TARGET

Reduce municipal solid waste (MSW) disposal to 0.11 tons per person per year (0.6 pounds per person per day) by 2030.

The strategies outlined to achieve Waste Management Goals 1 through 3 focus on reducing the amount of MSW that is disposed of through the diversion of waste products that can be recycled or otherwise reused. It is important to set a target for MSW disposed of as this shows how the successful the implementation of the strategies detailed are at reducing the overall MSW disposed of within the region.

This target is consistent with the statewide goal in NYSDEC's Beyond Waste Plan. Reducing MSW disposal would be achieved from some combination of waste reduction and recycling, both of which would benefit the region environmentally and economically.

8.4 Sustainability Actions

By following the sustainable waste management hierarchy and implementing waste reduction and recycling best practices, the region would conserve energy and resources, benefit economically, and reduce GHG emissions. Investments and initiatives to inform Western New Yorkers about sustainable waste management and increase the recycling infrastructure will be key strategies. By encouraging more recycling throughout the region and incentivizing the market for recycled materials, municipalities and businesses would experience reduced landfill fees and increased revenue from the recycled materials. As well, recycling creates more jobs when compared with waste disposal alone, especially if the recycled materials are in turn used in the area in manufacturing or other processes. Actions to increase recycling in the region and close the market loop would generate employment and economic opportunities. Manufacturers that use the recycled materials in their processes and recyclers that sell the collected materials would find it attractive to operate in the region.

Solid waste management accounts for 1.8% of the GHG emissions attributed to the regional GHG inventory. Those emissions are associated with landfill gas (methane) that will result from waste generated in 2010 that is not captured for energy. Additional GHG emissions are associated with the manufacture of products and materials and the energy required to collect and manage waste. The region would reduce GHG emissions by reducing waste, increasing recycling, and converting waste transport vehicles to alternative fuels.

A summary of identified sustainable waste management projects that align with the goals and strategies of this Plan is located on ***pages A-35 to A-38 in Appendix A***.

9 WNY Sustainability Plan Implementation

Implementation Strategy

The focus of the regional sustainability planning process has been the creation of broad goals and strategies to create a more sustainable region and to improve opportunities for economic growth. Project ideas that would help meet the region's sustainability goals were solicited from stakeholders region-wide. The project ideas were evaluated by the Consortium for project readiness, applicability to the sustainability goals, GHG emissions impact, and economic development. These projects are listed and described in Appendix A. One way in which the region will implement this Plan will be through the implementation of those individual projects which will move us closer to one or more of the sustainability goals included in the Plan.

The Sustainability Projects table (Appendix A) 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. The projects that were compiled through this process would help to achieve the sustainability goals and strategies identified in the Plan and 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. It is anticipated that this list of projects will change over time as projects are completed, new projects are identified, and priorities or opportunities change. In addition, the projects were categorized in order to provide a better understanding of how each project would impact 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 does not have any GHG impacts but meets one or more regional sustainability goals.

This categorization is meant to provide a better understanding of how a project could impact the region and what funding streams might be potential fits for implementation. Projects that would have significant and measurable GHG impacts (categories 1 and 2) may be potential candidates for funding under the anticipated CGC Implementation Phase, which will be administered by NYSERDA in 2013. Each individual project proponent is responsible for implementing the project, including seeking funding for that project. In addition to the CGC Implementation Phase Funding, a variety of other funding streams should be considered by project proponents. These include other NYSERDA programs, other programs run by state agencies such as the NYSDEC as well as federal funding streams administered by the USEPA and others. There are also projects that would require private funding for implementation or that might require public-private partnerships.

In addition to the implementation of individual projects by the project proponents, it will be necessary for the WNY region as a whole to reassess progress toward its goals and to measure the specific targets set for various sustainability indicators. As such, it is intended that the WNY REDC's Smart Growth Work Group assist the region with this process.

The WNY REDC's Smart Growth Work Group is a standing body that is well poised to take action in monitoring the implementation of this Plan, assess progress toward established targets, and conduct reanalysis of planning indicators where necessary. The implementation of this Plan fits within the Core Strategies of the REDC's Plan to Implement Smart Growth, which include assistance in the implementation of not only NYS Smart Growth Public Infrastructure Act but the WNY Regional Sustainability Plan.

The sustainability planning team sought to include projects that not only advanced the stated sustainability goals but also met the three threshold questions used by the WNY REDC to evaluate projects:

1. Does it create, retain, or fill jobs?
2. Will it maximize return on investment?
3. Is the project ready for implementation?

While not all projects included in this Plan can answer all 3 questions in the affirmative, many can. This information is noted in the "Advances Key REDC Goals" column of the projects table in Appendix A.

The work of actually implementing the specific projects and actions included in this Sustainability Plan is in the hands of the project proponent agencies and private entities that are listed. It will be these project proponents who build the partnerships and identify and acquire the funding needed to make their projects a reality. The Smart Growth Work Group, which continues to meet in the course of the execution of the duties of the WNY REDC, will monitor the implementation of specific projects from the Plan, as well as evolving regional priorities and changing opportunities for funding. As projects are implemented and goals are achieved it will be the work of the Smart Growth Work Group to update the list of projects and actions included in this Plan and to set new bars of achievement that reflect regional goals for sustainable development in the region.

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
2 **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										
3 **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.										
1 **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.										
1 **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.										

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

[1]Represents the goal number as listed in the Plan | 1 Regionwide, Measurable GHG Impacts | 2 Local Measurable GHG Impacts | 3 Not Significant or Measurable GHG Impact | 4 No GHG Impact

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
		Energy	Land Use and Livable Communities	Transportation	Water Resources	Waste Management	Agriculture and Forestry			
2 **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.										
1 **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.										
1 **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 though existing Department of Energy programs.										
2 **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 though existing Department of Energy programs.										

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

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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
			Energy	Land Use and Livable Communities	Transportation	Water Resources	Waste Management	Agriculture and Forestry			
1	**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
	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. **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.									
1	**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
	Engage the City of Buffalo to support neighborhood revitalization on the city's distressed east side though an 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. **Additional Considerations/ Potential Funding Sources:** Matching funds for the target area of Fillmore Avenue could be in the range of $350,000.									
2	**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
	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 mad a full conversion to LED street lighting. **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.									
3	**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.									

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

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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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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
		Energy	Land Use and Livable Communities	Transportation	Water Resources	Waste Management	Agriculture and Forestry			
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
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. **Additional Considerations/ Potential Funding Sources:** Casella is actively working with contractors to fully explore the cost and magnitude of this project.										
2 **Tifft 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
The proposed project will allow for the expansion of 30 years of quality environmental education by the Buffalo Museum of Science at Tifft 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. **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.										
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
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.										
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
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. **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.										

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2	**Market Street Art Center Solar Energy Project** Lockport, Niagara County	**Private Infrastructure** Market Street Art Center	2	3					Direct Avoidance, and Indirect Avoidance	**Yes** Direct Job Creation (Temporary)	$1,000,000/$1,000,000
	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. **Additional Considerations/ Potential Funding Sources:** Currently seeking funding from private,in-kind and foundation sources to match public funding.										
2	**Renewable Energy projects for Allegany County Municipally owned public works** Alfred, Allegany County	**Planning** Alfred University	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
	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.										
1	**Allegany County Landfill Methane Gas Collection System** Town of Angelica, Allegany County	**Planning/ Public Infrastructure** Allegany County Department of Public Works	2						Direct Reduction	**No** **Supports Indirect Job Creation and Retention**	**$750,000/ $750,000**
	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. **Additional Considerations/ Potential Funding Sources:** The County will provide support required matches and provide in-kind service.										
1	**Daemen College Alternative Energy/Geothermal Technologies Demonstration Project: Historic Patricia Curtis Hall Building Systems Upgrade** Amherst, Erie County	**Private Infrastructure** Daemen College	2	3					Indirect Reduction and Avoidance	**Yes** Direct Jobs (Temporary); Support Indirect Jobs Creation and Retention	
	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. **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.										

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1	**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.										
1	**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.										
3	**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.										
3	**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.										
1	**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.										

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		Energy	Land Use and Livable Communities	Transportation	Water Resources	Waste Management	Agriculture and Forestry			
1 **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.

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Land Use and Livable Communities Focus Area Sustainability Projects

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			Energy	Land Use and Livable Communities	Transportation	Water Resources	Waste Management	Agriculture and Forestry			
4	**Northern Chautauqua Local Waterfront Revitalization Plan (LWRP)** Northern Chautauqua County	**Planning** Chautauqua County Office of Planning and Development/Chadwick Bay Regional Development Corporation.		1•3•4 5•6		4		1•3	Through Education	**Yes** No Direct Jobs; Supports Indirect Job Creation	$90,000/ $45,000

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.

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.

4	**Allegany Plateau Working Landscape Assessment** Erie, Chautauqua, Cattaraugus, Allegany Counties	**Planning/Education** Alfred University, Edgewood GIS Consulting, Allegany County		1•2 5•6		1•4		3	No Reduction of GHG Emissions	**Yes** No Direct Jobs	$55,000/TBD

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.

3	**Zoning Template for Complete Streets Principles and Technical Assistance Education** WNY	**Planning/Education** Cattaraugus County Department of Economic Development, Planning and Tourism; Chautauqua County Department of Planning and Economic Development		1•2•4	1•3	1•3			Through Education and Policy	**Yes** No Direct Jobs	TBD

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).

3	**Competition Transmission Remediation** North Tonawanda, Niagara County	**Adaptive Reuse** Riviera Theatre and Organ Preservation Society Inc	1	1•3					Direct and Indirect Avoidance	**Yes** Direct and Indirect Job Creation	$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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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
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
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
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

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.

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

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.

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.

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.

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.

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.

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.

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.

Energy | Land Use and Livable Communities | 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
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
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** Buffalo, Erie County	**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
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** Buffalo, Erie County	**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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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
Community Main Street Revitalization Fund Chautuaqua County	**Adaptive Reuse** Chautuaqua County Land Bank Corporation		1•3•4		1•3			Direct and Indirect Reduction and Avoidance	**Yes** Direct and Indirect Job Creation (Temporary)	$250,000/ $100,000
Urban Street Apartments Buffalo, Erie County	**Adaptive Reuse** Broadway-Fillmore Neighborhood Housing Services	1•2	1•3 4•5	1	1•3		1	Direct and Indirect Reduction and Avoidance	**Yes** Direct and Indirect Job Creation (Temporary)	$1,359,000/ $1,359,000
Allegany Bicycle-Pedestrian Connector Trail Allegany, Cattaraugus County	**Planning/Infrastructure** Town of Allegany		1•4 6	1•3				Direct and Indirect Reduction and Avoidance	**Yes** Direct and Indirect Job Creation (Temporary)	$592,000/ $40,000

The Broad-Fillmore Neighborhood Housing Services, Inc. is in the process of facilitating a purchase of a historic late 19th century brewery on Fillmore Avenue, just off Broadway for a micro-brewery. While the purchase price is relatively modest, the cost of repairs and putting the facility back on-line as a micro-brewery will require investment. There are three strong related considerations: 1) the building may qualify as a historic landmark at the state or national level based on the historic art work/murals by Johannes Neilson on the interior; and 2) the project would create an estimated ten (10) much needed jobs in the community, and 3) proximity of this building to the Broadway Market and Central Terminal would support the Boardway-Fillmore Corridor as a destination for local and regional tourism. Funding for upgrades to this building would also include energy-efficiencies and solar panels, use of locally grown agricultural products, composting of organic waste, access to public transportation options, collect excess rainwater from the green roofs, and surface water from the parking lots and open production areas minimally to a bio-retention pool behind the brewery.

Additional Considerations/Potential Funding Sources: Project may qualify for additional NYS Office of Parks, Recreation and Historic Preservation funding for restoration of the historic structure.

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.

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.

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 fitration 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.

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.

Additional Considerations/Potential Funding Sources: Project requires full funding.

The Project is the construction of a multi-use bicycle/walking trail that will connect the Village of Allegany with the Allegany-Limestone Middle and High Schools on the Five Mile Road in the Town of Allegany. 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 Allegany 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.

Additional Considerations/Potential Funding Sources: In-kind services from the town of Allegany, Village of Allegany and Cattaraugus County Department of Public Works. Additional funding may be available through the "Safe Routes to Schools" program for construction.

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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 **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.										
4 **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.										
4 **Marilla Agriculture and Farmland Protection Plan** Marilla, Erie County	**Planning** Town of Marilla		1•5				1•3	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.										
4 **Update of Chautauqua County Farmland Protection Plan** Chautuaqua County	**Planning** Chautauqua County Department of Planning and Economic Development		1•3 5		4		1•3	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.										
3 **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.										

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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 **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.										
4 **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
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.										
3 **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
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.										
4 **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
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]: Energy	Land Use and Livable Communities	Transportation	Water Resources	Waste Management	Agriculture and Forestry	GHG Emission Impacts	Advances Key REDC Goals (Create/Retain Jobs)	Project Cost/ Required Funding
1	**Re-establish Passenger Rail Service in Dunkirk** Dunkirk, Chautauqua County	**Private Infrastructure** Chautauqua County Department of Planning and Economic Development in conjunction with the City of Dunkirk.		1•3•4	1•2				Indirect Reduction and Avoidance	**Yes** Direct and Indirect Job Creation	$20,000/ $15,000
1	**Enhanced Niagara Street Next Generation Sustainable Transportation Corridor** Buffalo, Erie County	**Public Infrastructure** NFTA, City of Buffalo	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
2	**Buffalo Niagara Medical Campus Vanpool Program** Buffalo, Erie County	**Private Infrastructure** BNMC		4	1•2				Direct Reduction and Avoidance, and Indirect Reduction and Avoidance	**Yes** Supports Indirect Job Retention	$600,000/ $500,000

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.

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.

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:

- New solar powered, green roof bus shelters with next bus notification technology throughout the corridor;
- Establishment of the NFTAs 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.

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.

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.

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.

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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
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
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. **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.										
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
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. **Additional Considerations/Potential Funding Sources:** Pending funding from the Seneca Nation of Indians to fund a portion of infrastructure costs (approximately $2,500,000)										
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
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. **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.										
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
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.										

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Transportation Focus Area Sustainability Projects

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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
	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. **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.									
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
	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 WNYs public transportation system through the savings generated by CNG-fueled vehicles. **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.									
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
	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. **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.									
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

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
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 Syncronization** 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.										

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
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
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
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
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 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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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 **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
3 **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
3 **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

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.

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

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 ½-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.

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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
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
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

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.

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Transportation Focus Area Sustainability Projects

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3 **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.

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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
2	**WNY Mobile Meat Processing Unit** Allegany County, Cattaraugus County, Chautauqua County, Erie County, Niagara County	**Private Infrastructure** Allegany County		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.										
4	**Farmer Recruitment Program** Chautauqua County	**Public Infrastructure** Chautauqua County Planning and Economic Development		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.										
4	**Small Farm Innovation and Entrepreneurship Program** Allegany County, Cattaraugus County, Chautauqua County, Erie County, Niagara County	**Public Infrastructure/Education** Center for Organic and Sustainable Agriculture (COSA) at Alfred State College		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										
2	**WNY Small-Scale Food Processing Center** Allegany County, Cattaraugus County, Chautauqua County, Erie County, Niagara County	**Public/Private Infrastructure** Allegany County	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.										
3	**WNY Food Hub Project** Allegany County, Cattaraugus County, Chautauqua County, Erie County, Niagara County	**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.	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										

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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
2 **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 a 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 it's 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 it's 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.											
4 **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
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.										
4 **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
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.										
3 **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
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.										

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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
4 **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 4	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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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 **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.										
4 **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
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.										
4 **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
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										
4 **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
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.										

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3 **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										
2 **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.										
3 **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.										
3 **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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			Energy	Land Use and Livable Communities	Transportation	Water Resources	Waste Management	Agriculture and Forestry			
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 AWTF 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

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

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

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.

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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 unserviced 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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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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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
	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
	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
	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
	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
	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.										

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