Appendix 3-2

North Country
Regional Sustainability Plan

OUR ECONOMY

North Country Regional Sustainability Plan

prepared for: North Country Planning Consortium, Essex County, May 2013

This Plan is funded through the Cleaner Greener Communities Program, New York State Energy Research and Development Authority

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Executive Summary

The North Country Regional Sustainability Plan (the Plan) was developed under the auspices of the Cleaner, Greener Communities (CGC) Sustainability Planning Program, a statewide initiative to develop sustainability strategies through regional planning. The CGC Program was announced by Governor Andrew M. Cuomo as part of the 2011 State of the State Address. The program is designed to provide a mechanism through which the ten economic development regions of New York State can identify, fund, and implement "smart development" projects. The goal is to improve communities and create economic opportunities while helping improve the environment. The CGC Program is administered through the New York State Energy Research and Development Authority (NYSERDA), with Essex County serving as the regional NYSERDA liaison and contracting manager for the North Country. This Plan is designed to be regional in scope and direction and provide guidance, rather than be prescriptive or regulatory in nature. It is intended to provide a framework for a long-term sustainability vision for the North Country region of New York State, which encompasses the seven northern counties of Clinton, Essex, Franklin, Hamilton, Jefferson, Lewis, and St. Lawrence.

The Plan was created to bring the region together, to create the basis for broader action through increased funding for projects, and formalizes a process to actively promote sustainability within the region. The CGC grant funding provided the opportunity for the North Country to take a comprehensive and consolidated approach to sustainability planning which until this grant program has been undertaken in smaller, less focused efforts around the region. The region has recognized for years that long-term sustainability strategies play an important role in the overall economic and environmental health of the region, this Plan was designed to be complementary to and support the North Country's Regional Economic Development Council (NCREDC) Plan; one of the State's top four winning plans in 2011, and one of the State's top performing plans in 2012. The region already has a number of sustainability initiatives and projects underway, and this Plan demonstrates how current activities can be coordinated across the region to reduce greenhouse gas (GHG) emissions and energy use, increase renewable energy production and consumption of renewable fuels in place of fossil fuels, and enhance economic growth based on stewardship of local resources, clean energy, and effective land-use planning.

THE VISION

"The North Country will foster a robust economy that enhances the quality of our rural communities and sustainably manage our natural resources, becoming a clean energy leader and creating opportunities for present and future generations."

To reach this vision, we commit to:

CLEAN ENERGY	Create the greenest and most self-reliant energy economy in New York State.
VIBRANT TOWNS	Concentrate investment in vibrant and resilient downtowns.
LOCAL ECONOMIES	Grow an innovative local economy and attract the next generation of entrepreneurs, on the foundation of our well managed natural resources and exceptional quality of life.
WORKING LANDS	Cultivate economic opportunities based on sound environmental practices for farming, forestry, and recreation.
TRANSPORTATION EFFICIENCY	Develop lower carbon solutions to our rural transportation challenges.
WATER QUALITY	Safeguard our abundant water resources.
MATERIALS REUSE	Transition from linear waste streams to innovative reuse of materials.
CITIZEN ENGAGEMENT	Foster an informed and invested citizenry.
EMISSIONS REDUCTIONS	Contribute to the state's goal to reduce GHG emissions.
COLLABORATIVE PLANNING	Foster collaboration between regional entities and governments to improve planning, share knowledge, and implement best practices.
RESILIENT COMMUNITIES	Create capabilities to adapt to climate change through proactive planning and infrastructure upgrades.

Planning Process

The planning process was designed to be expansive and inclusive, working to bring existing and new participants to the process. The region was guided by a Consortium led by Essex County, which included 13 county-level representatives from the seven regional counties. The Consortium engaged a series of Focus Area Working Groups made up of over 200 stakeholders throughout the region. Regional goals and objectives were developed by key stakeholders representing all seven North Country counties. They also created guidelines for implementation and recommended projects to help achieve these goals.

The effort was designed to:

1. *Engage and encourage local participation;*
2. *Gather information on the many sustainability, community, and economic development projects and programs already being undertaken in the region and bring that information together;*
3. *Give stakeholders across the North Country, the largest Regional Economic Development Council (REDC) geographic region in the state, a central location to document and showcase new ideas and the strong efforts already underway;*
4. *Give regional stakeholders and residents the encouragement, information, and assistance needed to replicate or expand existing efforts.*

The North Country Plan utilized three groups of members to organize and develop the Plan:

Consortium

A team that included leadership from each of the seven participating counties, the Consortium helped lead the planning effort by providing important local guidance, access to resources and information, and connections to local experts. The Consortium received regular updates about the project and had direct contact with the project management team (defined below), as needed. The Consortium reviewed all final drafts before submission to NYSERDA and was asked for their input at all critical junctures in the planning process.

Focus Area Working Groups

A focus area working group (working group) was developed for each of the primary chapters of the Plan. Over 200 stakeholders were brought together from local and state governments, large and small businesses, special interest groups, military bases, schools, community facilities, and not-for-profit organizations in order to develop regional strategies from the ground up. In addition to the on-going working group members' materials from the planning process were available to the public for review and comment throughout the planning process via the project website, allowing for even the casual stakeholders to be involved.

Project Management Team

The project management team included two organizations that worked closely with the Consortium and Working Groups to develop and produce the plan. Ecology and Environment, Inc. located in Lancaster, NY (with offices in New York City and Albany) provided technical support, developed the primary planning materials, facilitated meetings and data gathering, conducted the greenhouse gas analysis and did the primary writing of the sustainability plan and implementation strategy. The Adirondack North Country Association (ANCA), located in Saranac Lake, NY provided regional involvement, stakeholder engagement, public participation and local media support.

Definitions

The Plan is built around various levels of engagement and participation — from large visionary statements which help guide planning and implementation efforts at the regional level to individual and specific actions meant to address specific goals. The following terms are used:

Vision

A single vision was developed for the North Country. In addition, commitments to reach the vision provide high level regional direction. There is one commitment for each Common Theme and Focus Area.

Common Themes

Five overarching and cross cutting issues critical to regional success. These themes are:

1. *Economic Development*
2. *Education*
3. *GHG Emissions*
4. *Governance*
5. *Climate Adaptation.*

They were selected through stakeholder discussions in each focus area and are woven throughout this plan and its project concepts.

Focus Area Goals

In addition to the single Vision statement for each chapter or focus area, Focus Area goals were developed by the Focus Area Working Groups. These goals expand on the Vision statement and demonstrate the direction the region will take to meet the larger Vision.

Note: The Example Projects provided in this report are representative of the types of projects that Consortium and Working Groups felt would help the region achieve its goals and targets. Example Projects are not approved or prioritized projects for the region, they are intended to provide guidance only. Funding for future projects that contribute to Plan goals, is not subject to their inclusion in the Plan.

Implementation Strategies

A series of structural and programmatic strategies that the North Country will follow to make progress towards reaching goals established in the Plan.

Why Does Sustainability Matter?

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

Why a Regional Sustainability Plan?

Sustainable development strives to enhance environmental, economic, and social well-being without degrading current or future natural, economic, and social resources. The strategies identified by this planning process should improve energy efficiency throughout the community, promote renewable energy, and result in reduced carbon emissions.

What are Smart Growth Practices?

Smart growth practices enable the development of communities that are more socially vibrant, environmentally responsible, and economically sustainable. They include concentrating development in downtown areas, implementing mixed land use, providing varied transportation choices, creating walkable neighborhoods and preserving open space.

The North Country Region

The North Country Economic Development Region is geographically the largest region in the New York State, consisting of seven counties (Clinton, Essex, Franklin, Hamilton, Jefferson, Lewis, and St. Lawrence) and covering 11,420 square miles. The region stretches across northern New York from the eastern shore of Lake Ontario to the western edge of Lake Champlain, and from the international border with Canada through the Adirondacks in the south.

The North Country is home to 238 towns, villages, cities, and unincorporated hamlets, including Plattsburgh, Potsdam, Le Ray, Canton, Watertown, Massena, Malone, Lake Placid, Tupper Lake, and Saranac Lake. These communities serve as hubs of population, culture, industry and commerce, offering many of the business attractions and community amenities of their larger counterparts in other parts of the state. Residents tend to be both pragmatic and resourceful and demonstrate a strong entrepreneurial spirit. Diverse industry and manufacturing, farming, education, ecotourism, and retail activities can be found in many of the villages, towns, hamlets and small cities throughout the seven counties. With 428,000 residents, the North Country is the least populous of the state's 10 economic development regions, and it has the lowest population density (Census 2010). Despite its small population base, the North Country remains a desirable area in which to live. Although population in the region has held steady over the last ten years, a 7% decrease was observed in the population living in the region's cities, villages, and hamlets, which suggests a need to focus on the revitalization of downtown centers.

The region benefits from a fairly high influx of young adults to both Fort Drum and annually to its 10 colleges and universities. These locations are examples of anchor points for economic and community development. This infusion of young adults to the region presents an opportunity to both attract new residents and retain new and existing young professionals and families to the region.

Creating a robust economy in the North Country will be highly dependent upon the availability of affordable, reliable, and renewable energy. The North Country is already a proven leader in these areas. More than 37% of the state's installed wind generation capacity (approximately 700 MW) is located in the region (NYSDEC 2012). Low-impact hydropower has enjoyed a long and productive history in the region, dating back to the use of water-powered mills to process minerals, wood, fabric, and grain. That tradition has been translated into electrical power generation and is well established; the North Country generates more than 2,200 megawatts (MW) of reliable, low-cost, renewable, and low-impact energy for distribution on the grid.

While wind and hydropower are well established in the region, there is ample room for growth in all renewables including thermal heating energy for households and buildings, and for the generation of utility scale energy with biomass. Given existing forest resources, and the potential to use agricultural land to sustainably grow biomass crops, the biomass potential in this region is unparalleled in the state.

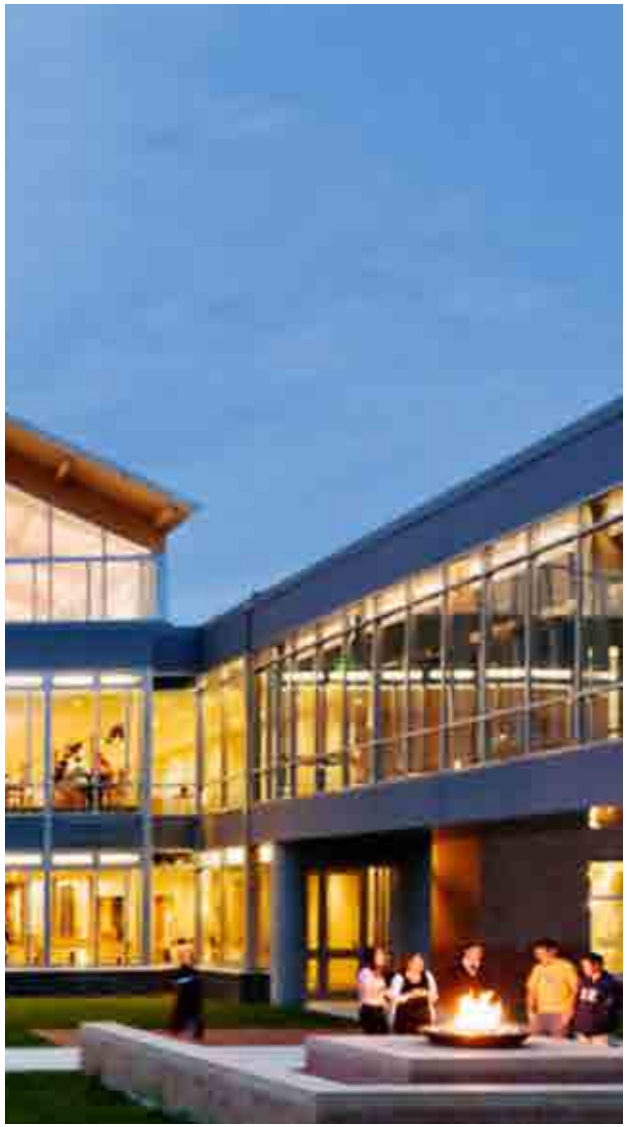
Thirty percent of the region's thermal energy needs are already met by wood. This resource only generates 1% of the GHG emissions associated with heating fuel. With the advent of high-efficiency biomass heating systems, the potential to transition many of our homes, businesses, and institutional buildings from heating with oil to heating with wood—and thereby generate jobs in the forestry, processing, and distribution industries and keep our energy dollars local—is one of the top priorities in this Plan. To fully leverage this local, renewable resource, care must be taken to ensure that forests are sustainably harvested and the full impact is assessed to avoid the mistakes of the past, when deforestation nearly devastated the timber and water quality of this region over a century ago. As the use of high-efficiency, low emission biomass for thermal heating increases it will be important for the region to monitor air quality conditions to ensure that air quality remains high and does not impact residents or the environment.

Farming and agriculture has both a long tradition in the North Country and holds a promising future as market demand increases for value-added products including locally grown, non-genetically modified, and organic food products. With the additional potential to convert underutilized farmland for biomass growth, agriculture is poised to play a prominent role in further invigorating the North Country economy.

The North Country Region *(cont.)*

Many North Country communities retain historical value with unique architecture and cultural sites. Faced with aging infrastructure and sprawling development patterns, communities are embarking on revitalization efforts intended to maintain their local character and charm that is disappearing from many American towns. It is the local character and natural resources that draw countless people annually to visit the region and to stay. Most towns and villages are situated several miles apart, creating centers for economic and human services and cultural activity for the area's rural populations that are sparsely scattered throughout the region.

Businesses and institutions that have located in the region drive innovation in clean energy technology and other product development. For example, Plattsburgh boasts some of the fastest growing businesses in transportation efficiency, and Watertown's Fort Drum military base has already dramatically reduced their own energy footprint by transitioning to very efficient or renewable energy systems. The 10 colleges and universities that call the North Country home are also economic engines for the region, graduating talent and hosting research that further drives innovation and supports entrepreneurship. As the use of high-efficiency, low emission biomass for thermal heating increases it will be important for the region to monitor air quality conditions to insure that air quality remains high and does not impact residents or the environment.



five common themes

Five overlapping themes were identified in the development of the Plan that cross through each of the six focus area chapters. These five themes are: economic development, education, greenhouse gas (GHG) emission reduction, governance, and climate adaptation. Economic development was originally designated as a focus area chapter, but was later integrated as a common theme due to its connection to all aspects of the Plan.

1. Economic Development

Local economic growth: *Grow an innovative local economy and attract the next generation of entrepreneurs, on the foundation of our well-managed natural resources and exceptional quality of life.*

The North Country economy was and will continue to be built on access to its natural resources and its strategic location providing multiple industrial transport and energy options. Existing large employers, which are located primarily along the historically strategic positions of the St. Lawrence and Champlain valleys, and the region's higher education and technical training institutions remain fundamental to the future economic health of the region.

In addition to these foundational economic engines, efforts to reduce energy use and provide low-cost, renewable energy sources will retain more dollars in the local economy. Collaboration across the region to increase ride-sharing alternatives and investment in transportation infrastructure systems will reduce transportation costs and better connect workers to jobs and rural residents to much needed services and products.

Clustering development along existing town centers will fill in and create more vibrant downtown areas, a critical component for attracting visitors, businesses, and year-around residents. Nurturing the growing local food economy is already attracting young farmers and artisan food manufacturers to the region, and other innovators are identifying opportunities to create businesses around distribution and processing. Expanding the forestry industry to include biomass production is creating local jobs and investment in research to ensure the sustainable harvesting of our forests. All economic development activity should take into consideration the unique beauty and irreplaceable value of the region's natural resources. By ensuring the high quality of our abundant streams and lakes and maintaining the vitality of our vast expanses of forests, these resources will continue to be economic drivers for this region and ensure the viability of its future.

five common themes

2. Education

Citizen engagement: *Foster an informed and invested citizenry.*

The North Country boasts a population of innovative and ambitious citizens who are taking the initiative at the grassroots level to develop projects and sustainability education on many levels. During the course of the planning process, it was recognized that some municipalities, schools, businesses, and institutions are adopting cost-effective and innovative technologies and implementing simple changes that can be replicated across the region. Enhancing and building on both formal and informal education avenues will transform our region.

Local education initiatives range from school vegetable gardens and composting systems to large-scale facility retrofits to replace oil heating systems with high-efficiency low-emissions biomass heating systems. The Wild Center Youth Climate Conference is an annual event that engages high school and college youth to address climate change in their schools and lives. Finally, the rapidly expanding presence of Sustainability Coordinators on campuses across the region and the investment by our schools and universities in green technology development and training for employment in energy-related fields are just a few examples of how education systems and facilities at all levels are integrating sustainability concepts into their curricula, programs, and facilities.

five common themes 3.

Greenhouse Gas Emission Reduction

Emissions Reductions: *Contribute to the state's goal to reduce GHG emissions.*

The North Country's GHG emissions profile already represents a large contribution toward achieving the state's GHG reduction targets. Although the region represents 26% of the state's land area (Census 2010), it produced only 3% of the state's total GHG emissions in 2010, an average of just over 13 metric tons of CO_2e per resident. However, the region's per capita emissions are higher than the state average, primarily due to high transportation-related emissions (40% of total North Country energy consumption) and reliance on fuel oil as a primary heating source (35% of emissions by stationary fuel type). New and existing projects, programs and policy directions in these areas offer opportunities for innovation and incentives to dramatically lower per capita emissions and help meet state goals.

Over 94% of the electricity generated in the North Country comes from renewable sources, demonstrating that we are and will continue to be suppliers of low-emissions energy to the state. The North Country will continue to be an exporter of clean electrical energy from renewable sources such as wind and hydro, and, to a small degree, biomass well into the future. Additional opportunities may exist as offshore wind technology is explored on Lake Ontario. Our tremendous biomass resources represent significant opportunities to reduce local GHG reductions and play an important role in statewide reduction goals.

Currently, several institutions and private homeowners are realizing the economic benefits of converting from oil, propane, and electric to biomass heating systems. The Plan calls for continued study of the biomass resource to ensure it is developed in a responsible way through support for programs and funding sources that seek to promote additional conversions from oil and electric to biomass.

One of the most significant opportunities for reducing building-related GHG emissions is through energy efficiency building improvements and retrofits. Programs that reduce energy use often serve to also preserve existing building stock, enhancing the overall quality of life for occupants and improving the image of the surrounding area. By reducing energy demand, an array of small-scale, on-site renewable energy sources also become more economically viable.

Addressing transportation-related GHG emissions in this sparsely populated, geographically vast region will best be accomplished through ride sharing and other strategies to reduce vehicle miles traveled along with opportunities for fuel switching.

five common themes **4.**

Governance

Collaborative Planning: *Foster collaboration between regional entities and governments to improve planning, share knowledge, and implement best practices.*

A recurring theme throughout the sustainability planning process was a call for improved inter-governmental cooperation. A number of the focus area chapters identified strategies to improve communication and knowledge sharing between entities. For example, the Transportation chapter recommends an annual meeting to discuss regional transportation issues. It also identifies the need to remove barriers preventing inter-county bus service, and for better coordination between municipalities and the New York State Department of Transportation (NYSDOT) in order to carry out road improvement projects that are both in line with community plans and NYSDOT standards. These recommendations tie directly into a goal of the Livable Communities and Land Use chapter which calls for updated region wide comprehensive plans. By routinely updating comprehensive plans, communities are able to establish and clarify their long term goals for items such as street designs, infrastructure, and business needs.

The creation and enhancement of comprehensive plans encourages development that reflects the needs of the populace and avoids the unnecessary cost of expanding and maintaining new infrastructure. With only 52% of North Country villages and towns having comprehensive plans, there are many opportunities for communities to assess their priorities and implement the strategies put forth in this Plan.

In addition to comprehensive plans, open lines of communication between communities allow them to work together to share best practices, promote complementary tourism and business opportunities, and share resources where appropriate. Additional examples reflected in plan chapters include Water Management, which recommends planning on a watershed level rather than a jurisdictional level. The Energy chapter provides a project example of how shared resources between municipalities can result in the cost-effective installation of renewable energy.

five common themes 5.

Climate Adaptation

Resilient communities: *Create capabilities to adapt to climate change through proactive planning and infrastructure upgrades.*

Climate change is occurring globally at an alarming rate. It has manifested itself in the North Country by way of increased extreme weather events such as high winds, tornadoes, and flooding, increased prevalence of disease and pests in agricultural crops, extended and unpredictable growing seasons, shorter ice-in periods, fewer snow-covered days, increased prevalence of invasive species, and warmer water temperatures. While some of these changes may be beneficial, most of them are detrimental to regional infrastructure, economies, and entire ways of life that are based on a northern climate. Without appropriate planning for future changes, the region stands to suffer by way of lost tourism revenue, infrastructure damage, and losses of agricultural production and natural resources.

The Plan identified nine key recommendations for communities to adopt in order to mitigate and adapt to the impacts of climate change. These recommendations call for the development of strategies to diversify winter-dependent entities, increased and improved monitoring of weather trends, and collaborative community planning that continually assesses current infrastructure assets and integrates adaptation into the planning process.

six focus areas

1. Energy

Six technical focus area chapters were developed for which to establish sustainability goals and strategies throughout the region. These are: energy, livable communities and land use, materials management, transportation, water management, and working landscapes.

To ensure that this planning process moves from theory to action, working group members developed goals and targets that were measurable through a series of indicators. To achieve these targets, each working group focus area chapter identified a series of specific implementation strategies that were associated directly with focus area goals. A summary of each strategy is included in the chapter information that follows.

The complete list of strategies can be found in each chapter and in table form in the Appendix. In addition to the strategies in each chapter the Plan concludes with an implementation chapter which describes five structural and programmatic principles that will allow the North Country to move the Plan from paper into action.

Clean energy: *Create the greenest and most self-reliant energy economy in New York State.*

Goals:

1. *Increase the local generation and distribution of renewable energy*
2. *Increase energy efficiency of the region's building stock*
3. *Reduce energy use through consumer decision-making and behavioral changes*

Priority Strategies:

- *Perform a resource and lifecycle assessment to evaluate the quality and quantity of the North Country's biomass resources and determine the capacity for regional biomass expansion and adoption.*
- *Provide and increase training opportunities for local contractors for renewable energy installations.*
- *Facilitate an increase in solar installation using successful models of residential and community-based solar power, including solar thermal.*
- *Promote the use of NYSERDA's ongoing programs to enhance the rate and scale of energy retrofits.*
- *Establish incentives for energy efficiency and green building projects.*
- *Develop guidance for small-scale power economics.*

six focus areas

1. Energy *(cont.)*

As a national leader in renewable energy production, the North Country Plan focuses on advancing its renewable energy production, reducing its per capita consumption of energy, and transitioning to locally-produced thermal biomass as a source of stationary fuel used to heat buildings. The biggest challenges we face in achieving these goals are our harsh winter climate, the relative age of our building stock, inconsistent enforcement of building codes, widespread dependence on fuel oil as a heating source, and lack of a policy framework and strong incentives to proceed toward a renewable energy economy. It is imperative that as forests are harvested for biomass production, sustainable management practices are put in place to support biomass as renewable strategy. It is also essential for high-efficiency boiler technology to replace older wood heating systems that emit greater amounts of harmful air pollutants.

Opportunities to support renewable energy are found through incentive programs and currently available resources for energy efficient improvements to housing and building stock. These are driven by strong individual and business motivation to decrease energy-related costs. The increasing numbers of people taking advantage of the newly available high-efficiency wood boiler systems, many of which are manufactured in New York, are demonstrating the financial and quality of life impacts these heating systems can achieve. Advances in solar and solar thermal technology, and the demonstrated benefits of these systems in northern climates, are also laying the groundwork for more widespread use of these technologies. Many communities are additionally exploring the potential for community-based renewable energy production, including solar for electricity and biomass for district wide heating systems.

six focus areas 2.

Livable Communities & Land Use

Vibrant towns: *Concentrate investment in vibrant and resilient downtowns.*

Goals:

1. *Revitalize Main Streets and town centers to reduce the cost and impacts of sprawl development.*
2. *Create and update comprehensive plans and zoning ordinances as a means to improve sustainable practices.*
3. *Improve the resiliency and adaptability of communities to climate-related impacts.*
4. *Include public health in land use planning and sustainability initiatives to encourage healthy communities.*
5. *Develop sustainability programs in local schools and colleges; develop, instill, and demonstrate concepts of sustainable land use practices.*

Priority Strategies:

- *Implement pilot projects for Main Street redevelopment. Use successful outcomes as the basis for future projects.*
- *Provide funding and staffing resources to support the development of local planning, including Hazard Mitigation Plans and Comprehensive Land Use*
- *Establish programs that provide infrastructure and economic resiliency to climate related impacts.*
- *Encourage healthy communities through nutrition awareness and providing healthy local food choices.*
- *Promote educational opportunities and develop knowledge networking to connect schools and enable them to share sustainability projects and programs across the region.*

six focus areas 2.

Livable Communities &Land Use *(cont.)*

The North Country's small hamlets and rural towns are deeply rooted in the history of the surrounding forested, mountainous, and agricultural landscape and serve as an emblem of the resilience of the people that live and work here. Residents are strongly connected to the working lands that support them, including the abundant recreational activities these lands provide year-round. This Plan focuses its strategies on implementing the most effective and sustainable use of lands within and outside town centers. A key priority is halting the trend that often leaves downtowns without investment while development happens outside the center. Land use planning, tax, and zoning codes that encourage development within the vital downtown and Main Street areas of communities are important. A return to the early design elements of our communities is recommended, with walkable streets and amenities close at hand, including allowable mixed-use developments.

Early housing stock in the region was generally solidly built and can be revitalized rather than replaced. Barriers include out-of-date zoning codes and tax structures that favor investment outside the community cores. Poorly enforced building codes also can be an issue. At the same time, the opportunities are abundant. Agri-, eco-, and cultural tourism are on the rise, and the North Country is rich in all three experiences. Our communities are charming, historically interesting, and uniquely meld 21st century technologies (e.g., broadband, which is becoming more widely available across the region) with the experience of community-based life where villages and Main Streets are the vibrant centers of commerce and cultural activities.

The connection between public health and land use planning is addressed in the Plan, as is the connection between public health and access to grocery stores. In many areas of the North Country, residents have to drive long distances to get fresh food. Community food hubs, innovative distribution systems, more community and home-based gardening programs need to be supported.

six focus areas

3. Working Landscapes

Working Lands: *Cultivate economic opportunities based on sound environmental practices for farming, forestry, and recreation.*

Goals:

1. *Support the development of the agricultural and forestry industries*
2. *Increase local food and forest product processing and sales within the region*
3. *Increase the use of sustainably harvested biomass to meet the thermal energy needs of the region and beyond*
4. *Promote tourism and recreation based on the region's natural resources while providing for the long-term maintenance of the region's recreational resources*
5. *Enhance forest management through increased use of best management practices*
6. *Upgrade and maintain existing farming infrastructure to improve energy efficiency and reduce farm operating costs*

Priority Strategies:

- *Capitalize on existing forest industry infrastructure to make greater use of forestland and underutilized farmland for biomass development.*
- *Support research and development of dedicated energy crops for thermal applications, such as shrub willow, switchgrass, and miscanthus.*
- *Expand availability of local food by encouraging new farmers, while connecting local growers with local markets, including year-round and seasonal residents, schools, institutions, and tourists.*
- *Establish visitor information hubs with concierge-style services in tourist destinations that coordinate outdoor excursions with transportation for visitors.*
- *Educate forestland owners on the financial and resource benefits of using the services of professional foresters to manage and develop their resource.*
- *Improve the production capacity of commodity and specialty crops and assist farms with diversification (including agri-tourism) and new business startups.*
- *Incentivize energy audits, upgrades of farm equipment, and methods to enable farmers to achieve production goals using less energy.*

six focus areas 3.

Working Landscapes *(cont.)*

The North Country's working lands and waters are the foundations of the region's economy. Its agricultural lands produce food, wood products, and biomass crops; the region's abundant waterways provide renewable hydro-power, abundant clean water, and access to unparalleled recreation experiences; and the wild landscapes offer peaceful solitude in a crowded and harried world.

The North Country region is blessed with a high level of bio-diversity. Most of the forested areas fall within the Adirondacks, and a majority of the agricultural lands are in the surrounding valleys of the Champlain, St. Lawrence, and Tug Hill regions. This situation is ideal for developing an arrangement by which the greater Adirondacks serve as the region's "wood basket" and surrounding valleys serve as the region's "food basket." However, timber harvesting is not allowed on State Forest Preserve lands. This arrangement would promote greater self-sufficiency but could significantly reduce GHG emissions through an efficient regional transport model.

Recent technological advances and societal changes, such as interest in locally grown foods, increased demand for specialty dairy products, and growing investment in biomass-based energy appear to favor the farms and forests of the North Country. Recent investments in North Country Regional Economic Development Council (NCREDC) projects are expanding the ability of the region to draw visitors to its extensive wilderness recreation offerings, which, in terms of variety and quality, are unique in the Northeast. Together, these trends create a draw for young people and young retirees seeking a high quality of life and growing entrepreneurial options.

This Plan emphasizes the importance of sound planning practices that ensure a balance between economic, social, and ecological roles of these lands, encouraging growing investment in local food systems, including processing and distribution, using locally sourced fiber for efficient heating systems, ensuring that sustainable practices are applied in forest management and harvesting, and better capitalizing on the abundant recreation opportunities throughout the region to attract both visitors and residents.

six focus areas 4.

Transportation

Transportation efficiency: *Develop lower carbon solutions to our rural transportation challenges.*

Goals:

1. *Expand and promote the use of region wide alternatives to single-occupant vehicle travel for residents and tourists.*
2. *Reduce trip lengths and improve transportation and fuel efficiencies.*
3. *Preserve and improve aging transportation infrastructure.*
4. *Concentrate freight and manufacturing development and shipping at prioritized intermodal sites to support sustainable business development.*

Priority Strategies:

- *Update transportation codes to encourage intra-county bus services. Investigate new ways of increasing transportation or commerce options in North Country.*
- *Expand and complete broadband installations within the region and identify and adopt strategies to reduce transportation demand and improve commerce.*
- *Expand existing public transit services and establish new inter- and intra-county bus routes. Provide better connections from regional passenger rail stations and airports to hamlets and cities.*
- *Develop publically available informational services and educational opportunities including a regional transportation website that links residents and visitors to transportation options and services.*
- *Improve regional coordination of transportation infrastructure and services for residents, visitors and commercial interests.*
- *Improve freight operations and include freight shipping and distribution strategies in county comprehensive plans and local industrial development plans as they are updated.*

six focus areas

4. Transportation *(cont.)*

The North Country's large size and lack of many transportation alternatives poses possibly the most challenging impediment to reducing the GHG emissions associated with single-occupant vehicle transportation, which is the region's largest source of emissions (40%). With 15,800 miles of paved roadways, limited public transit options such as rail and bus, and often limited employment and food availability within communities, residents must drive long distances to work and shop. These challenges have led to a car-dependent region. The region's transportation network is also used heavily by economic sectors such as agriculture, forestry, and tourism. Thus, a comprehensive strategy to reduce GHG emissions, such as increased rail access, ride sharing, and van pooling programs, can help these sectors to minimize transportation-related costs.

Given the substantial task of decreasing transportation-related GHG emissions, the Plan has identified many opportunities for progress, including the call for a transportation summit to analyze, develop, and implement identified strategies. These include infrastructure-level strategies such as expanding broadband into all communities, which would lead to an increase in telecommuters; improvements in rail and air linkages to encourage greater connectivity for tourists; the inclusion of recommendations in comprehensive plans to promote walkable communities; the promotion of carpooling through online resources; improvements in regional public transit opportunities; and improvements in rail infrastructure to provide alternatives for moving people and freight.

Transportation poses the most significant hurdle of all future sustainability-related efforts, given the geographical and socioeconomic constraints and the scant number of existing projects that are in alignment with achieving the goals identified in the Plan.

six focus areas

5. Water Management

Water Quality: *Safeguard our abundant water resources.*

Goals:

1. *Maintain adequate water supply for future needs*
2. *Promote watershed management planning on a regional or watershed scale*
3. *Maintain and/or improve the quality of the region's water bodies and supply sources*
4. *Reduce the energy used for water supply, distribution, and treatment*

Priority Strategies:

- *Implement programs to reduce system losses and conserve water supply*
- *Support energy-efficient upgrades and encourage the use of renewable energy sources for water infrastructure*
- *Support the development of watershed management plans*
- *Reduce pollutant loads and non-point source impacts to water quality*
- *Reduce the impacts of invasive species.*
- *Evaluate locations where engineering solutions may be needed to mitigate frequent flooding.*
- *Identify water management strategies needed to support the growth of businesses, industry, and recreation within the region.*

six focus areas 5.

Water Management *(cont.)*

Water sustains the region's ecosystems, serves as a recreational resource, and is relied on by residential households, agriculture, hydro-power facilities, and other industries. The abundance of water in the North Country sets the region apart from many other areas of the United States, where this resource is becoming increasingly scarce. According to the NCREDC vision statement, pristine water is listed first among the five pillars of abundant natural capital on which future economic development of the region is based.

While the North Country boasts abundant clean water, challenges exist in maintaining this quality in the face of pressures from invasive species such as the Asian clam and Eurasian watermilfoil, non-point source run-off from agricultural practices, contamination from leaking septic systems, contamination from improper medication disposal, and damage from road salt run-off. The Plan identifies several strategies to address these issues, including the encouragement of conservation measures such as leak detection programs, universal water metering, improved zoning requirements to address aging septic infrastructure, improvement and implementation of watershed management plans aimed at monitoring and managing water quality, encouragement of agricultural and road salt run-off mitigations (e.g. bioswales), and continued support for aggressive monitoring and mitigation provided by regional invasive species programs.

An additional concern for water management in the North Country includes excessive energy costs associated with water treatment. Given the region's large amount of open space, opportunities exist for alternative water treatment programs such as reed beds, minimizing the amount of energy needed for treatment. One of the most promising energy-reducing strategies presented in the Plan includes the construction of anaerobic biodigesters to be fuelled from organic matter in waste water. The electricity produced from this process would help power the treatment facility, while limiting the amount of waste needing to be treated through conventional processes.

From the St. Lawrence River and Lake Ontario to the thousands of lakes, rivers, and streams of the Adirondack Park, North Country waterways play a vital role in the region's economic, recreational, agricultural, and cultural identity, and provide potable water for the region's residents. It can be said that, in conjunction with forest resources, abundant high-quality water will form the backbone of the North Country's robust economy. Maintenance of this resource, particularly in light of projected global water shortages, remains one of the highest priorities in the implementation of the Sustainability Plan.

six focus areas

6. Materials Management

Materials Reuse: *Transition from linear waste streams to innovative reuse of materials.*

Goals:

1. *Reduce the amount of solid waste generated*
2. *Increase the percentage of materials recycled or reused*

Priority Strategies:

- *Conduct regional research on material management contracting and disposal fees to help determine best practices that can be shared regionally to improve local decision-making for material management.*
- *Encourage counties and planning units to adopt single-stream or zero-sort recycling.*
- *Increase the number of composting and digester facilities to reduce the volume of food and yard waste sent to landfills, and to create a useable product (fertilizers).*
- *Explore and promote market opportunities for recyclable and recovered materials.*

six focus areas 6.

Materials Management *(cont.)*

Many communities in the North Country region are undergoing a transformation in how they perceive, manage, and dispose of their unwanted material. What was once considered just waste, which required collection, transportation, and disposal for a fee in a landfill, has now become the raw material for other uses with opportunities for re-use, sales, job creation, and cost savings. This shift in how we perceive our waste creates the basis for the two materials management goals identified in the Plan, while encouraging and promoting economic growth through job and raw material creation. Great strides are already occurring in the region through zero-sort materials management systems and the development of anaerobic biodigesters designed to remove organic materials from waste streams while providing a renewable energy source.

While recent advances in materials processing have increased the North Country's capacity for recycling, the region still falls far behind state goals... Given that re-processed paper, organics, and plastics comprise 27%, 24%, and 17%, respectively, of the region's waste stream, strategies encouraging re-processing of these materials can help contribute to recent progress. These include expanding efforts to educate the public about recycling opportunities, developing regional markets for recycled materials, and providing financial assistance to local haulers to update equipment and processes. Anaerobic biodigesters and composting systems have been installed in select locations in the North Country but can be promoted widely throughout the region by funding efforts to educate communities regarding their benefits and application.

Appropriate materials management strategies pose a substantial opportunity for the North Country to reduce high economic, social, and environmental costs associated with conventional landfill methods of waste disposal. Existing zero-sort programs and anaerobic biodigestion installations are proving to not only reduce the costs of waste disposal, but also to create economic growth by way of job creation and reduced costs of disposal. Continued economic and outreach support will support and expand existing efforts in the region toward achieving the goals of reducing the amount of waste generated and increasing the amount of materials recycled and/or reprocessed.

Implementation Guiding Principles

Integration with the NCREDC

Great effort was taken to ensure that this planning process closely aligned with the goals and processes of the NCREDC. The Plan used the previous two winning NCREDC plans as the foundation upon which to develop its strategies. In an effort to further integrate the two processes, an NCREDC sustainability working group has been identified and will be meeting regularly to promote the implementation phase. Additionally, work will be done to provide support in the consolidated funding application (CFA) process to ensure that funding is available to as many projects as possible.

Knowledge Sharing

A favorable outcome of this process included the opportunity for stakeholders across the region to convene in a collaborative manner. The potential for an annual collaborative gathering would allow stakeholders to continue to develop relationships that were formed during the collective working group meetings. Additionally, several annual events throughout the region, including the Clean Energy Conference and the Common Ground Alliance Forum, can be used as venues for future discussions and presentations of Plan updates. The creation of an online database is also proposed as a regional best management practices reference source.

Building Governance Infrastructure

As identified above, one of the most important governance steps to be taken includes the updating and/or creation of comprehensive planning and zoning laws. Additionally, tax structures were identified as a leading contributor to sprawling development by dis-incentivizing town-centered living. Municipalities will also be encouraged to continue to serve as models for energy efficiency upgrades and conversion to renewable energy sources such as solar electric and biomass heating. Municipalities have the opportunity to provide leadership for implementing alternative transportation options, municipal solid waste reduction and recycling, and water infrastructure and resiliency related improvements.

Guidance and Oversight of Plan Objectives

In order to ensure consistent and thorough oversight of the Plan's implementation, the Sustainability Working Group, will schedule a review of the Plan with stakeholder groups from each county on an annual basis to discuss the Plan's progress. This working group will also identify funding sources to be made available, potentially to Consortium members, to cover costs associated with the tracking and monitoring of progress.

Support of Education and Public Outreach

An Education Working Group is in the process of being formed. Its goals include the promotion of sustainability and environmental literacy to youth in grades K-12 and continued opportunity for lifelong learning. It will support sustainability education through a wide variety of non-academic educational opportunities, including museums, home tours, conferences, media campaigns, and not-for-profit outreach efforts. While educational initiatives do not directly result in economic growth or reductions in GHG emissions, they play the crucial role of serving to educate and motivate the populace regarding sustainability initiatives.

In Conclusion

This Plan was created by the people of the North Country, based on their extensive knowledge of the region and their commitment to improving their economies in innovative ways while ensuring that the unique natural assets of the North Country—renowned wild areas, pristine waters, productive agricultural lands, and abundant forests—are recognized, protected and enhanced for future generations. It was created for the people of the North Country as a road map to help grow new businesses, stronger communities, and more localized economies, while leveraging the value of the region's natural assets. It is also built on the inherent character and strengths of the people and communities that make up this unique area of New York State—entrepreneurialism, self-reliance, independence, and an ability to make important things happen.

Bright Ideas for Cutting Municipal Energy Bills *(a case study)*

CHALLENGE:

North Country municipal governments get big energy bills, and the bill has been rising in recent years. Because they have limited sources of new revenue to offset costs, governments are hard-pressed to afford the costs of converting to new energy sources even if they could gain long-term savings.

OPPORTUNITY:

Innovative financing from the private sector could help offset the capital costs of new energy infrastructure, allowing North Country municipalities to save money in the long-term without the upfront costs.

ACTION

Chester puts up a solar system

Fred Monroe, the 20-year Supervisor of the Town of Chester, New York, knew he was getting a good deal when he heard the costs being requested for his town to host a new 200-kW solar photovoltaic system. "No upfront costs," he was told by installers from Edge Design & Consulting, Inc. in Plattsburgh. His highway crew helped to dig two short trenches to bury power lines, and the deal was done.

In return, the town has a 10-year lease on the system, installed in four sections around the town, with a guaranteed savings of 10 percent off their electricity cost. "We expect the guaranteed savings to be about $5,000.00," said Monroe. "In addition, we are working to reduce demand metered charges by using solar PV power for high electric demand tasks. That proactive power management has the potential to produce additional savings by reducing power company peak grid demand charges," noted Monroe.

Edge Design & Consulting owns the system and captures the federal and state incentives that are available to individuals, but not municipalities. With the tax cap in place for New York State communities, the town could not afford a system on its own, but, it may be able to save towards the purchase of the system before the end of its lease.

RESULT

Savings now, and more savings to come

"The savings are the main benefit of interest, however the side benefit of reducing dependence on fossil fuels and levels of greenhouse gas emissions is attractive as well to many folks in town," said Monroe. The town has conducted energy audits of town buildings, and as a result knows that while the lighting system could be more efficient, the buildings are fairly well insulated so the big way to cut costs for most in the North Country, better insulation, is not available. That made it logical to consider a renewable energy system as a good way to reduce costs. Monroe supports renewable energy in his personal life. He drives a hybrid vehicle and "my wife and I are considering installing solar panels at our home as well and may pursue a roof mounted system or virtual net metering with solar panel located on other property, if New York approves it."

The result of this type of leadership is that Chestertown is the first municipality in the Adirondacks to install a large solar PV array for municipal power. But it will not be the last. Partly due to Chestertown's lead, there are growing numbers of municipalities interested in the technology. The financial model could be replicated in many other small towns around the region. Winslow Moore, President of Edge Design & Consulting, says that he saw a way to mutually benefit both Adirondack towns and Edge Design by providing towns with clean renewable electric power, which saves the taxpayers money that could be directed for other needed projects, and allows Edge Design to use tax credits and depreciations for his business.

"We have hired a consultant to help us evaluate the feasibility of a biomass heating system for our 35,000 square foot town hall. A system similar to the system at The Wild Center will probably be feasible and should produce much more significant savings for us than the solar PV."

I

Introduction

PLAN ORGANIZATION

The Consortium and project management team worked together to adapt NYSERDA guidance on the Plan to best meet the needs of the region. Seven focus area Working Groups were developed at the start of the project and included Economic Development, Energy, Livable Communities and Land Use, Working Landscapes, Transportation, Water Management, and Materials Management. Each of these focus areas became a chapter in the Plan, with the exception of Economic Development, which was later determined to be one of the common themes of the Plan, crossing through all chapters. This document identifies the process taken and strategies developed during the planning effort. It is organized as follows:

Chapter 1: Provides a background of the program, describes the planning process, and identifies the stakeholders involved.

Chapter 2: Discusses the five common themes (Economic Development, Education, GHG Emissions, Governance, and Climate Adaptation) that were incorporated throughout the plan.

Chapters 3–8: Discuss each of the six sustainability focus areas of the plan (Energy, Livable Communities and Land Use, Materials Management, Transportation, Water Management, and Working Landscapes) in terms of current conditions as they relate to a specific topic, provide baseline metrics, and evaluate goals and sustainability targets.

Chapter 9: Provides implementation guidance that can be used by regional stakeholders to pursue the sustainability goals identified in the plan.

NEW YORK STATE CLEANER, GREENER COMMUNITIES REGIONAL SUSTAINABILITY PLANNING PROGRAM

The Cleaner, Greener Communities (CGC) Regional Sustainability Planning Program was announced by Governor Cuomo during his State of the State address in 2011. The program is designed to provide a mechanism through which the ten economic development regions of New York State can identify and fund "smart development" practices. The CGC Program is administered through the New York State Energy Research and Development Authority (NYSERDA) and the process is led in each region by a representative consortium of municipalities.

A competitive grant program was established to encourage communities to develop regional sustainability strategies. These strategies were developed through a planning process that allowed each region to develop its own vision, goals, and objectives for a sustainable future, as well as the activities or types of projects needed to achieve it. Each region had eight months to develop a comprehensive sustainability plan. the objectives of the program as stated in the NSYERDA CGC guidance document are to:

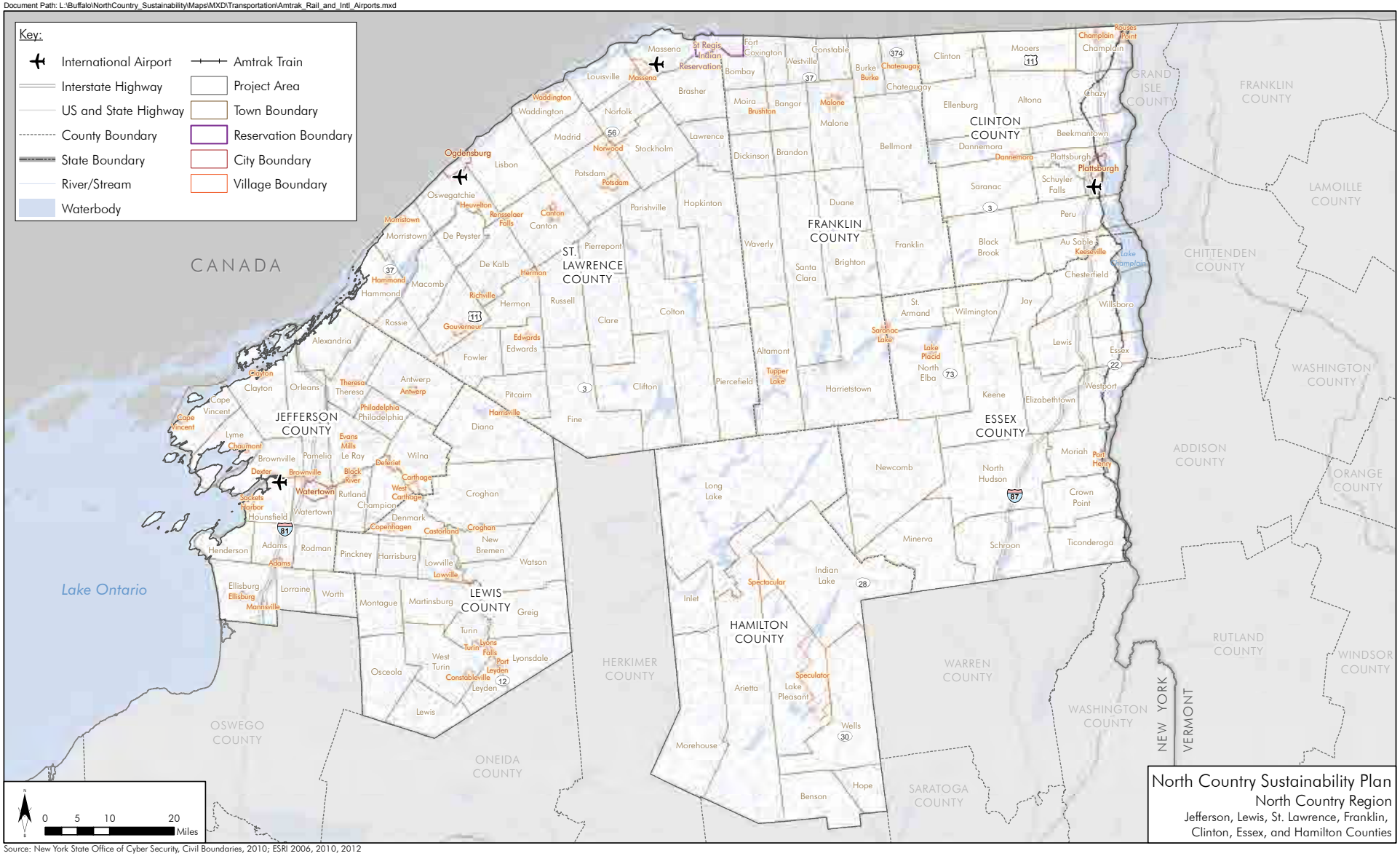
- *Establish a statewide sustainability planning framework that will aid in statewide infrastructure investment decision-making.*
- *Outline specific and tangible actions to reduce greenhouse gas (GHG) emissions.*
- *Inform municipal land use policies.*
- *Serve as a basis for local government infrastructure decision-making.*
- *Help guide infrastructure investment of both public and private resources.*
- *Provide each region with a sustainability plan that will enable them to strategically identify and prioritize the projects that support the region's sustainability goals.*

THE NORTH COUNTRY REGIONAL ECONOMIC DEVELOPMENT COUNCIL

The North Country region includes Clinton, Essex, Franklin, Hamilton, Jefferson, Lewis, and St. Lawrence counties, aligning with the North Country Regional Economic Development Council (NCREDC) *(see figure 1-1 on following page)*. Unlike other regions in the state, the North Country does not have major population centers or dominant metropolitan cities. Instead, the North Country is home to 238 communities that include towns, villages, and several small cities.

In 2011, the NCREDC led an award-winning effort to develop a regional economic development strategy that establishes a vision for the North Country's economic future and provides a framework for implementation. Everyone involved in the CGC Sustainability planning effort set out to leverage the significant effort already underway with the NCREDC Plan by discussing the interconnections of sustainability and economic development. This Plan documents a long-term vision for the North Country to achieve the following:

- *Enhance economic development, community vitality, and environmental stewardship;*
- *Advance the innovations and interests of residents, business, and local governments to reduce their energy costs and improve private and public infrastructure;*
- *Support New York State's long-term goals of reducing GHG emissions.*



Source: New York State Office of Cyber Security, Civil Boundaries, 2010; ESRI 2006, 2010, 2012

figure 1-1

MAP OF THE NORTH COUNTRY REGION

THE PLANNING PROCESS

The CGC Grant Program project was formally launched in the region on April 2, 2012, in Lake Placid with a project kick-off meeting involving NYSERDA and its consultant, TRC, Inc., the Consortium, and Project Management Team (E&E and ANCA). The purpose of the kick-off meeting was to introduce the CGC program and planning process to the Consortium, gather important feedback, and provide a venue for an open discussion among the Consortium and the Project Management Team to set the course for the development of the Plan. At this meeting, priorities, opportunities, and potential barriers were outlined for each county. The meeting set the tone for the entire project and generated several themes that were used to develop the Plan's vision statement.

The goal of the planning process was to create a long-term sustainability vision for the North Country region using the collaborative input of regional stakeholders and public participants. The vision is aligned with the economic objectives of the NCREDC plan. The Sustainability Plan was designed to be representative of many voices throughout the region, and implementation strategies have been developed for hands-on use by regional and local governments, businesses, and residents. Planning discussions centered around three outlying target years: 2020, 2035, and 2050. These time frames were selected based on the understanding that the region, as well as the state, seeks to make long-term commitments and investments to ensure the economic, social, and environmental vitality of the region.

This planning process was intended to take the programs identified in the NCREDC Plan further by evaluating how best to establish economic development priorities within the framework of energy efficiency, emission reductions, and environmental improvements. This approach to economic development will allow the region and New York State as a whole, to provide progressive opportunities for development and enhanced the quality of life for North Country residents.

The result of the planning process is a long-term strategy and a shorter-term implementation road map that will guide local governments, communities, businesses, and organizations in achieving the goals established by the region. It serves as a reference document for grant applications, other funding requests, and business investments and will help the North Country achieve the goals set out in the NCREDC plan. It is, in essence, a guidance document for creating a sustainable future for the North Country.

CONSORTIUM

The effort was guided by a Consortium led by Essex County, which included 13 county-level representatives from the seven county region. The Consortium engaged a series of focus area Working Groups made up of over 200 stakeholders throughout the region. The Consortium helped lead the planning effort by providing important local guidance, access to resources and information, and connections to local experts. The Consortium received regular updates about the project and had direct contact with the project management team (see separate column). The Consortium reviewed all final drafts before submission to NYSERDA and was asked for their input at all critical junctures in the planning process. Consortium members have been active, and many made introductory remarks at the public outreach meetings in their respective counties. Several Consortium members attended the all-working group meeting held on October 3, 2012, in St. Lawrence County.

Project Management Team

The project management team included two organizations that worked with closely with the consortium and Working Groups to develop and produce the plan. Ecology and Environment, Inc. located in Lancaster, NY (with offices in New York City and Albany) provided technical support, developed the primary planning materials, facilitated meeting and data gathering, conducted the greenhouse gas analysis and did the primary writing of the sustainability plan and implementation strategy. The Adirondack North Country Association (ANCA), located in Saranac Lake, NY provided regional involvement, stakeholder engagement, public participation, local media outreach, and assistance with writing the plan.

STAKEHOLDERS AND WORKING GROUPS

The CGC working group selection was based on a number of criteria, including: ensuring representation from the seven North Country counties in each of the working groups; including a broad range of representative interests, from state, regional, and local government to civil servants, businesses, residents, not-for-profits, and academics. Great attention and care were taken to ensure that key players and subject matter experts were included. A number of individuals were recruited by the Consortium and the planning team, while other members were sought based on ANCA's knowledge of already active regional participants and through early public meetings. In addition, the consortium and project management team worked to reach out to regional groups and individuals who had not previously been involved in these types of efforts. An invitation letter was sent out to all potential working group members, resulting in a working group base of approximately 220 people (see Appendix A, Consortium and Working Group Member List). Throughout the ensuing months, several additional individuals were added at the suggestion of existing working group or Consortium members.

The Working Groups concentrated on developing indicators, goals and strategies for the seven original focus areas: Economic Development, Energy, Livable Communities and Land Use, Materials Management, Transportation, Water Management, and Working Landscapes. Economic Development was later integrated as a theme common to all aspects of the Plan instead of a focus chapter, along with four other common themes that were identified and discussed across each focus area. These included Education, Greenhouse Gas (GHG) Emissions, Governance, and Climate Adaptation.

In addition to the core working group members and the Consortium, public outreach efforts were undertaken to identify stakeholders within the region at large. Broadcasts on North Country Public Radio were made on several occasions to notify stakeholders of public outreach meetings and provide periodic updates. Draft plan materials and notifications were posted on the Plan's website (http://www.adirondack.org/green/), and notices were also posted in local newspapers such as the Adirondack Enterprise. Due to the large geographic area of this region, meetings were held at least once in each county throughout the region in order to increase the participation level of public stakeholders.

Despite these efforts, it was a challenge to bring all stakeholders together at a single venue due to the distances members have to travel. To help improve communications, stakeholders were allowed to participate in group meetings via conference call. The range of in-person attendance highlighted the importance of web-based communications to keep everyone engaged. The highest attendance level at any single meeting was at The Wild Center on January 23, 2013, where webcast technology facilitated the participation of over 150 persons (50 on-line) in the final public meeting, despite cold January temperatures.

Developing a Regional Baseline

A baseline inventory of sustainability indicators was prepared as part of this Plan and can be found in Appendix B. The inventory is organized by the focus areas of Energy, Land Use and Livable Communities, Materials Management, Transportation, Water Management, and Working Landscapes. It identifies the metrics (indicators) that will be tracked in order to measure progress towards Plan goals. Each indicator describes what it measures, includes the data sources used in the baseline inventory, and calculations, where applicable.

A Regional Success In Recycling

(a case study)

CHALLENGE:

Communities want to recycle more of their waste to decrease disposal costs and to build systems so materials can get used multiple times, creating efficiencies at every stage of the waste stream. The problem is that much of the burden for recycling materials falls on consumers and business owners who each need to do the work of hand-sorting all their waste so the right kind of plastic goes into one bin, paper goes in another, and on and on.

OPPORTUNITY:

Since hand-sorting was seen as the major obstacle to better recycling, getting rid of that problem looked like it would increase participation.
But how?

ACTION

Lake Placid and Plattsburg Try Zero-Sort

Technology is at the heart of a recycling system that lets consumers and businesses put all their recycling into a single bin. Rollers and conveyors at sorting plants carry the unsorted material through a series of churning, sifting screens that separate out glass, paper, and cardboard, past air that blows shredded paper into its correct hopper, and under magnets that attract tin and repel aluminum.

There is still manual sorting by employees, who separate plastics and other recyclables at warp speed as they pass along the conveyor belt, tossing them into chutes which take them to their proper place. Zero-Sort, the name Casella Resource Solutions, the family-owned recycling company that serves much of the North Country, gives to its single bin system, maximizes the automated sorting so that workers can focus on certain types of materials that the machines can't mechanically identify.

RESULT

A Huge Jump in Recycling

"With no consumer sorting you see dramatic improvement in participation and volume," said Abbie Webb, Senior Environmental Analyst for Casella. "For example, one community increased its recycling rate from 13% to 42% in a matter of months."

"CVPH (Champlain Valley Physicians Hospital) here in Plattsburgh have decreased their waste by 40%," said Bill Meyers, Division Manager for the hauling division of Casella in Lake Placid and Plattsburgh.

That decrease in waste has to do with more people putting more of their recycling in the single bin because it's easier, but also because Casella is actively working to find ways to recycle hard-to-recycle items. In the case of CVPH, Casella found a way to recycle the blue wrap that hospitals use and throw away by the boatload.

Zero-Sort can also streamline hauling operations by eliminating inefficiencies. Under the system where consumers had to sort their own materials, individual compartments for certain recycled categories on hauling trucks could fill up before others, and trucks would have to return half full to empty those containers. In some cases the growth of recycling has cut trash pick ups from once a week to to every other week, thereby saving gas and time. "That gives us and our customers cost benefits," said Meyers. "And we save greenhouse gases and emissions."

II

Common Themes

five common themes

1. Economic Development

In addition to the six focus areas identified by the Planning Consortium, the working groups were asked to consider five overarching themes while developing sustainability goals, setting targets, and identifying projects. These themes are (1) economic development, (2) education, (3) GHG emissions, (4) governance, and (5) climate adaptation. They were discussed by stakeholders in each focus area and are woven throughout this plan and its project concepts.

The effort was designed to:

1. *Promote the local economy by encouraging the use of local products, incentivizing local processing of materials and goods, and increasing local jobs.*
2. *Promote a year-round economy that highlights seasonal activities and is adaptable to possible future variations in climate patterns and economic changes.*
3. *Encourage community identity through localized and regional branding to support economic growth and tourism. Focus on expanding tourism to broader areas.*

The project launched with a Working Group focused on economic development. It was realized early that economic development was a common theme in each of the other six focus areas; therefore, the initial effort by this Working Group was incorporated into the other focus areas. Three distinct goals were identified through working group discussions that connect sustainability planning initiatives with economic development. These goals were kept in mind when the working groups developed specific focus area goals. Education and outreach, considered to be of equal importance to economic development by regional stakeholders, were also incorporated as common themes and should be regarded as an essential component of many projects supported by this Plan.

This plan supports the region's economic development plan by integrating economic development with environmental stewardship and sustainability strategies intended to enhance communities and improve markets throughout the region. In order to identify methods and areas where sustainability and economic development could be integrated, the Planning Team conducted a "mind mapping" exercise with all the Working Groups to identify where and how sustainability factors interconnect with economic development. For example, effective transportation infrastructure was seen as a way to support economic growth; the re-use of disposed organic materials presents opportunities for energy production through the use of anaerobic digesters; and increased agricultural production has direct impacts on revenue and jobs. In order to systematically integrate the issues and opportunities, each focus area working group held a mini-brainstorming session with the other groups to identify patterns of interconnection.

five common themes

2. Education

Advancing knowledge on ecological and sustainable community development in the North Country is a goal that permeates every aspect of this sustainability plan. Educational strategies have the ability to not only inform but to empower North Country citizens to take personal and community-wide action. Raising awareness and education can take many forms, including institution-based learning, community outreach events and programs, public service announcements, and stories told through local media.

The North Country boasts a population of innovative and ambitious citizens who are taking the initiative at the grassroots level to develop projects and sustainability education. Education was discussed among stakeholders as an activity of key importance across all focus areas. Some of the ongoing education initiatives in the region include: elementary schools growing their own vegetables, starting composting systems, and promoting recycling; the Wild Center Youth Climate Conference, which seeks to empower High School and College youth to address climate change; museums such as the Wild Center, the American Maple Museum, and the two regional Visitor Interpretive Centers; NYSERDA's energy efficiency outreach programs; the Local Living Venture; and the rapidly expanding presence of Sustainability Coordinators on campuses across the region. Rural skills are also being cultivated through an informal but burgeoning neo-homesteading movement.

Participants in this movement range from retired farmers to young urban transplants. The intergenerational nature of this movement serves to encourage cooperation and rural skills building around issues of sustainability. While many may think sustainability is a new movement, many North Country residents have been practicing sustainable life styles for decades out of both economic necessity and adopted simple living lifestyles. Whether it be hanging the laundry outside to dry, planting backyard gardens, or repairing items for reuse rather than disposal, there is much to be offered by generational exchange and learning. While much is being accomplished, a broader level of support by way of increased funding for projects and the creation of an organization to actively promote sustainability and self-reliance education for all ages and demographics will encourage the development of a populace who will make informed economic, social, and environmental decisions.

five common themes 3.

GHG Emissions

In 2008, New York State emitted approximately 254 million metric tons of carbon dioxide equivalent (CO_2e) GHGs, for an average of a little more than 13 metric tons of CO_2e per resident. New York's per capita GHG emissions are approximately 43% below the U.S. average (NYSDEC 2010b). The "New York State 2050 Vision" outlined in the New York State Climate Action Plan Interim Report calls for an 80% reduction in GHG emissions from 1990 levels. This will require substantial changes across the economy, with no single sector or opportunity able to meet this aggressive goal. Energy efficiency and reduction in energy consumption will have large parts to play, but developing and improving infrastructure, improving land use patterns, efficient building design through better construction methods and materials, and innovations in transportation will all play roles. Cultural measures, including education and providing incentives to residents, municipalities, and businesses to incorporate sustainability into their decision-making (e.g., through the use of clean energy technology), will also play a decisive role (NYSDEC 2010b).

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. To establish a uniform method for developing regional GHG inventories, NYSERDA established the GHG Inventory Protocol Working Group, which was assigned to develop the NYS GHG Protocol for the CGC Program. The Protocol Working Group also developed 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. The completed North Country NYS GHG Protocol Template is provided as Appendix C of this plan.

The North Country's GHG profile presents a unique opportunity to achieve New York State's GHG reduction targets. As calculated in the North Country's Regional GHG Inventory, the North Country's 2010 GHG emissions amounted to 6.7 million metric tons of CO_2e; approximately 3% of the state's total *(see figure 2-1 on following page)*. In 2010, GHG emissions per capita in the North Country amounted to 15.5 metric tons of CO_2e, which is above the state average and due largely to the low population density in the region, but also due to average per capita industrial building energy use and transportation emissions higher than other upstate regions. Higher per capita transportation emissions result from more off-road mobile source uses, truck traffic, and personal vehicle use. The region's, high average vehicle miles traveled (VMT) per capita can be attributed, in part, to the limited availability of public transit and the rural and spread out nature of the region. Residents often have to travel long distances to work, school, and shopping. However, from a landmass perspective, at 11,420 square miles, the region covers approximately 24% of the state, while generating only 3% of the state's emissions. As the coldest region in New York State, residents also generate GHG emissions to heat their homes and businesses. Oil is still the primary fuel, and 39% of residents rely on oil for home heating. In addition, many buildings are older and not well insulated. The following paragraphs provide a summary of the results of the North Country's Regional GHG Inventory, and more details can be found in the specific sector chapters and Appendix C.

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 North Country uses only 31% of the electricity it generates, and 94% of the electricity generated in the North Country comes from renewable sources, producing an average of 81 pounds of CO_2e/MWh. Since 2010, the only coal and petcoke plant left in the North Country Region has been closed, and the plant is now being refurbished to convert biomass to electricity(see ReEnergy Black River case study), improving the lbs/MWh number associated with energy generation in the North Country. The North Country is and will continue to be a major supplier of low-emissions energy to New York State.

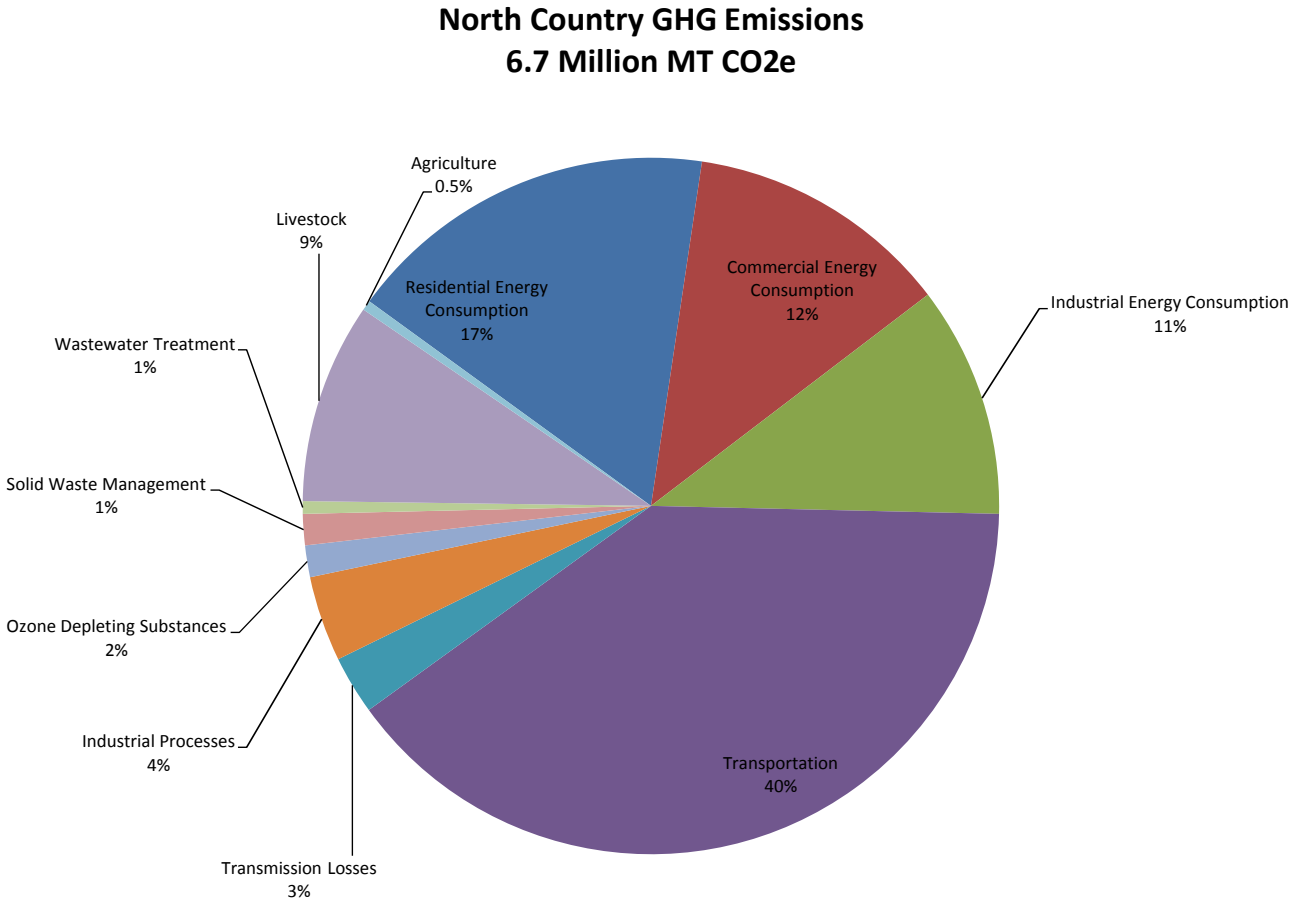


figure 2-1

NORTH COUNTRY 2010 GHG EMISSIONS

Understanding C02 Equivalents

Because Green House Gases (GHGs) vary in their ability to retain heat, GHG emission inventories and projects are discussed in terms of carbon dioxide equivalents (CO_2e). CO_2e expresses any GHG's global warming potential as a multiple of the potential of carbon dioxide (CO_2). As an example, methane has a CO_2e of approximately 22, meaning that methane in the atmosphere produces about 22 times as much warming as the same weight of CO_2.

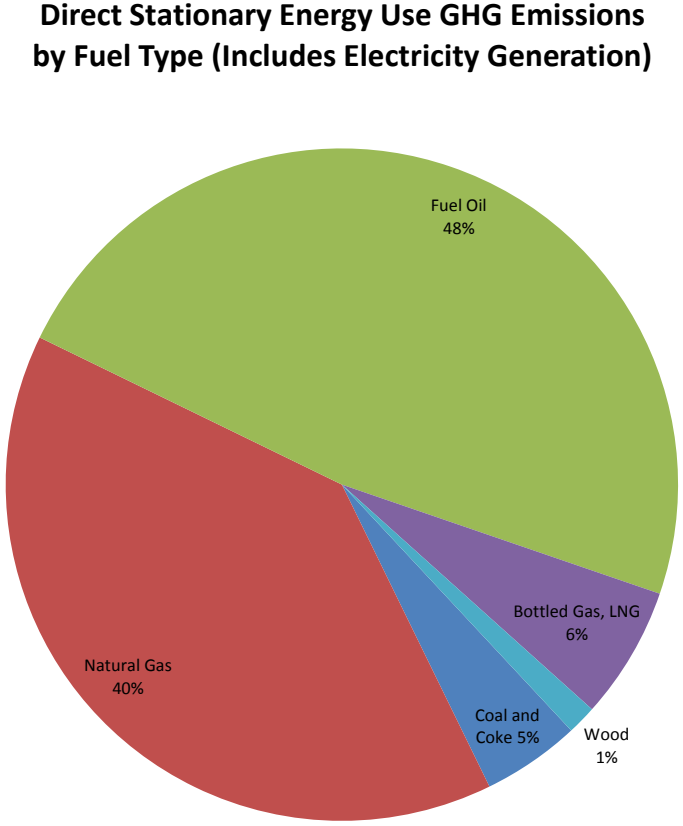


figure 2-2

GHG EMISSIONS FROM DIRECT STATIONARY ENERGY USE IN THE NORTH COUNTRY REGION, 2010

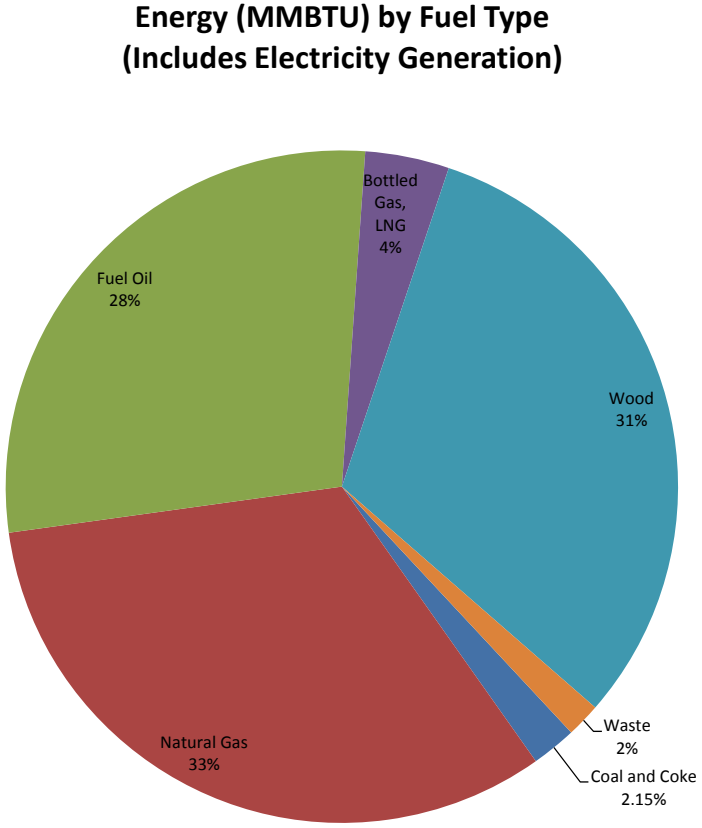


figure 2-3

TOTAL ENERGY USE, MMBTU DIRECT STATIONAL ENERGY USE IN THE NORTH COUNTRY REGION, 2010

GHG emissions are attributed to the region based on electricity consumption and direct stationary fuel consumption in buildings and facilities. Direct stationary fuel is mainly used to heat buildings and comes in the form of fuel oil, natural gas, bottled gas (such as propane), coal, or wood and wood products. Each type of fuel produces GHG emissions when it is burned, but in different amounts depending on the fuel type. *Figures 2-2* and *2-3* show a comparison of total GHG emissions and energy use (in MMBTUs) for the region, by fuel type. As shown on *figure 2-1 (on previous page)*, building energy consumption and the resulting GHG emissions are categorized by sector—Residential, Commercial, or Industrial. Chapter 3 of this plan and Appendix C provide further discussion of energy and resulting GHG emissions.

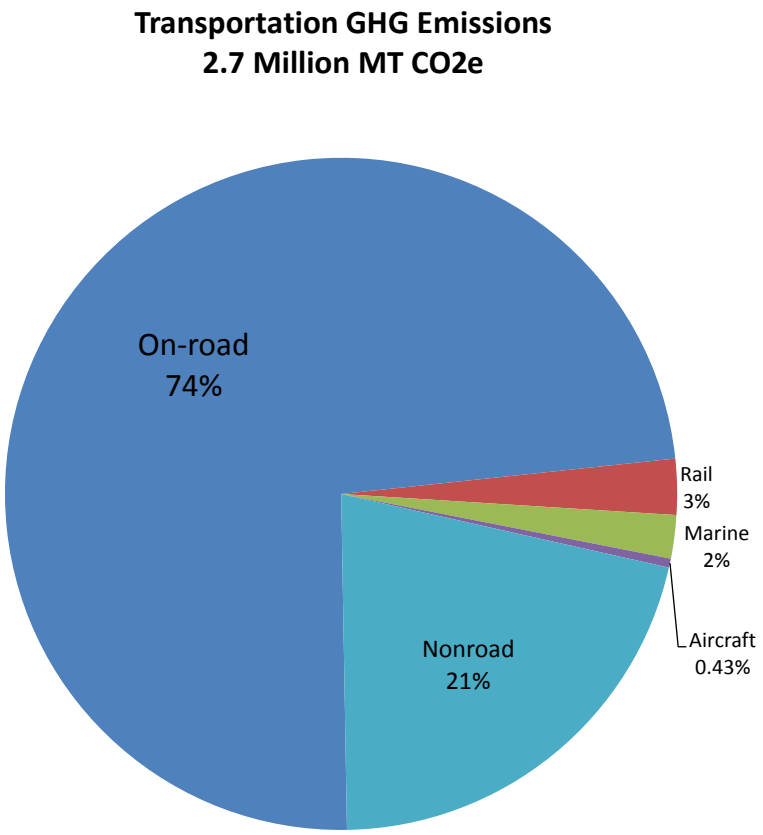


figure 2-4

NORTH COUNTRY ESTIMATED ANNUAL TRANSPORTATION GHG EMISSIONS

Transportation emission sources, which produce 2.7 million metric tons of CO2e, or 40% of the region's GHG emissions, include on-road transportation, off road transportation, as well as rail, aircraft, and marine vessels *(see Figure 2-4)*. Transportation is further discussed in Chapter 6. The GHG Inventory also includes emissions from energy transmission losses, industrial processes, agriculture, forestry, and solid waste and wastewater management, which are detailed in Appendix C. Within each chapter of this plan, various goals, indicators, and implementation strategies have been selected and designed to address GHG emission reductions in the region.

five common themes **4.**

Governance

The North Country Working Groups identified regional governance to mean local government collaboration and networking. The groups recognized that the size of the region can be a limiting factor for establishing communications, and that a useful outcome of this plan would be to provide ways of improving communication between local governments. Knowledge sharing will enable communities and governments to discuss best practices and collaborate on securing resources while also working to duplicate successful projects and programs.

Strengthened communications among townships, municipalities and counties will improve opportunities to support changes in policy and other governance mechanisms. For example, when a bridge is built on a federal or state road, local communities need to be able to inform designers and engineers of their own development expectations over time, which could have an impact on permeable surfaces upstream of the bridge and on the volume of runoff that could impact the structural integrity of the bridge, either directly through flow or through added river-damaging scouring.

Flexible governance strategies that consider downstream impacts from proposed projects, or changes in infrastructure or planning requirements, are very important for communities seeking to maximize their economic development opportunities while reducing their vulnerability to unexpected events. Standard practices and standardized, regulated requirements, often established to span communities without localized input, need to become adaptable and open to localized negotiation and change.

five common themes

5. Climate Adaptation

A wide selection of public and private sector agencies and organizations will need to develop initiatives for adaptation to evolving weather patterns, including:

1. *Identify changing trends in local weather patterns, including increased frequency and intensity of storms, changing seasonal time frames, and emerging interactions among different factors.*
2. *Establish and maintain an inventory of built assets such as roads, municipal buildings, and parking areas, etc., including surface area used and critical value to the community, upstream, downstream, and locally;*
3. *Characterize risks to built assets from weather events involving flooding and wind, and assess potential losses to the community;*
4. *Establish initial adaptation strategies for existing assets, and integrate these adaptations into engineering requirements;*
5. *Coordinate resources to invest in resiliency upgrades to existing assets, and to plans for new assets;*
6. *Create and periodically update flexible adaptation strategies that are linked to short- and long-term planning and infrastructure investment and development cycles;*
7. *Implement resulting action plans, prioritized by risk, cost, and time frame;*
8. *Monitor progress through periodic reassessment of success and post-event review of costs avoided/incurred; and*
9. *Convene active discussion among communities that depend on winter snow cover to develop innovative strategies to expand the basis for their winter economies.*

Climate adaptation in the North Country focuses on the importance of protecting and planning for the safety of infrastructure, the improvement of land use zoning and decision-making, and adaptation strategies for weather-dependent economies such as agriculture and winter tourism. Climate impacts are unpredictable, and weather-related events such as extreme storms, flooding, drought, and temperature increase can adversely affect the regional economy in a number of ways. For example, transportation infrastructure is susceptible to flooding in certain locations; increased road maintenance in response to more intense weather events is an added expense; wastewater infrastructure may not be sufficient to handle high storm water runoff, resulting in overflows being discharged into nearby streams and lakes; and farmland subject to drought, severe weather impacts, and temperature changes may result in additional costs and less revenue. Communities that are dependent on snowfall must consider expanding winter recreation options. A recent report by the Natural Resources Defense Council and 'Protect our Winters' shows that 38 states have lost about $1 billion and 27,000 jobs as a result of decreased snow fall.

The report's authors say the outlook will get worse if state and federal lawmakers don't take action to address the causes of climate change. This Plan addresses these actual and potential impacts throughout the objectives discussed in each focus area. The cost to individuals and communities from extreme weather events is high and growing. These costs result both from recovery and repairs, but also from lost opportunities to use certain locations over time. A review of historic events, and the costs associated with response, recovery, and rebuilding, will give an idea of the actual costs of events, even though they may not accurately reflect the extent of community-absorbed costs. In reviewing the changing frequency of weather-related events, which are proving to be more frequent and more intense, it is possible to do a simple economic impact analysis on how strategic preparedness planning and project implementation can pay for itself over a relatively short time by investing in adaptation rather than reacting to loss.

As infrastructure upgrades need to be done, it may be less expensive to invest in new construction, relocate key structures and other engineering innovations rather than simply repair infrastructure in vulnerable areas. Replaced infrastructure should be safely demolished following project completion.

Integrated and coordinated governance strategies are very important in effective adaptation to the effects of climate change on local communities and economies. Some areas may be affected more than others; for example, roads that pass through flood-prone areas will need various strategies along the entire roadway. Structures that are consistently damaged by extreme weather events may need to be moved or demolished, with replacement infrastructure built in less susceptible locations. Downstream impacts also need to be considered and adequately planned for. Actions to adapt to climate change must be done in collaboration with upstream and downstream neighboring communities, as well as between communities and economies that are interconnected.

Getting School Budgets Off of the Oil Price Rise *(a case study)*

CHALLENGE:

Schools are open during the expensive heating season in the North Country. Keeping buildings warm all winter has a significant impact on the budgets of area schools. Using oil heat means that costs are hard to predict, adding a further strain for planners whose budgets can be wrecked by a spike in oil prices.

OPPORTUNITY:

Turning off oil heat would get rid of a big drain on local budgets. Using wood-based biofuels could create local jobs and reduce greenhouse gas emissions with a payback period for the newest generation of boiler systems of just 5-7 years.

ACTION

Converting to wood-based fuel

The South Lewis Central School in Turin, New York used to run on oil. It converted to a wood-product boiler system in 2011. "We did it just to save money," said Richard Poniktera, Supervisor of Buildings and Grounds, when speaking of the district's new boiler. "That was our primary goal."

RESULT

A Huge Jump in Recycling

"We're saving about $100,000 per year," said district Business Manager Barry Yetty. "You can save a teaching position and a half with that money." Almost as important as the savings is the predictability of cost for the creation of the district budget. Oil prices are notoriously variable. "We wanted to reduce our dependence on petroleum products," said Yetty. "The cost of oil and the fluctuations in prices can really kill our budget."

"We've decreased our usage of oil by about eighty percent," added Yetty. "And we're dealing with a lot less variation in pricing."

The wood comes from local timber companies, supporting the local economy. "Besides us realizing the savings that we do, we're a good neighbor too," said Yetty. "This is a nice bit of business for the local timber companies."

Not only is the new system saving money and making the budgetary process easier, it is also easy to operate. "Overall we don't have to spend much time on it," said Poniktera. "There is no time allotted for its maintenance," added Yetty. "During its operational season we probably have a custodian check it for about twenty minutes for every eight hour shift. It's so computerized, you'd be shocked how little labor is involved in running this. It's crazy."

The boiler, which was manufactured by Messersmith Manufacturing in Michigan's Upper Peninsula, is also surprisingly clean. "We burn about four to five truckloads of chips per week during the cold season, and our byproduct is about a half a garbage can of ash," said Yetty. "We just bag it up and put it out with the rest of our trash."

And, while cost savings was the motivation behind the district's switch from oil to wood chips, people are noticing the environmental benefits too. "I like the concept of it," concluded Poniktera. "It produces no toxins or anything like that, and overall it's a very green means of heat."

III

Energy

CREATING THE GREENEST AND MOST SELF-RELIANT ENERGY ECONOMY IN NEW YORK STATE

The North Country region is strategically positioned to achieve the NCREDC's established goal of creating the "greenest energy economy in New York State." Expanded development of renewable energy generation, transitioning from fossil fuels such as oil and propane to locally produced biofuels, and improving the efficiency of our buildings and industrial processes are all part of this dynamic energy future for the region. The region boasts a strong innovative presence through technological and engineering programs at Clarkson and SUNY Canton that will help spur development of cutting-edge renewable energy technologies. And through the creation of new business models based on renewable energy, the growth in jobs associated with clean energy, and money saved from the use of renewables or from energy efficiency retrofits, countless North Country residents are already realizing the benefits of a cleaner energy economy.

The Renewable Portfolio Standard (RPS) developed by the New York State Public Service Commission has established a statewide target for 30% of electricity generation to come from renewable resources by 2015. As of 2010, the state had reached 22% of grid-tied electric power generation from renewable energy resources. One-third of this renewable electricity came from the North Country Region. Currently, 94% of electricity generated in the region is from renewable sources such as hydro, wind, and biomass (E & E 2012).

Despite these successes, there is significant room for improvement as North Country households and businesses deal with cold winters, aging and inefficient buildings, and limited energy choices. Support for improved energy efficiency, effective retrofit programs, increased use of thermal biomass, and incorporating innovative community cooperative energy agreement s could reduce costs and energy use while improving the economy, environment, and quality of life.

The North Country is a national leader in renewable energy — as of 2010, over 94% of electricity generated in the region comes from renewable resources; and recent changes continue to improve this percentage.

As part of the North Country Regional GHG Inventory, electricity is categorized and tabulated in two separate ways—generation and consumption (E&E 2012). Generation refers to the electricity created at generating facilities in the region, and the direct GHG emissions are calculated based on the specific type of fuel used to generate electricity. Consumption refers to electricity used in the region; 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, provides an estimate of electricity that is exported, and therefore consumed, outside the region.

ENERGY GENERATION

As described in the NCREDC Strategic Plan, electricity generation is and will continue to be an important component of the North Country's economy. The GHG Inventory reported that the region generated 11 million MWh of electricity in 2010. The North Country produces most of its commercial electricity through hydropower and wind, with small amounts of electricity generated from a variety of both renewable and non-renewable sources, as presented in *table 3-1 and figure 3-1 on following page*. Small "behind-the-meter" generation sources, such as solar and small wind generators, are not included in these totals.

In 2010, approximately 94% of the grid-tied electricity commercially produced in the North Country came from renewable sources: hydropower - 78.5%, wind - 12.8%, and biomass -2.36%. A majority of hydropower comes from the Robert Moses Power Dam in St. Lawrence County, which generated 6,611,236 MWh in 2010, or 76% of the total hydropower generated in in the region. The remainder of hydropower generation (over 2 million MWh) was generated by over 70 smaller hydro facilities throughout the region. Wind-generated electricity comes from the region's five large wind projects. Biomass electricity comes from facilities in Essex and Franklin counties, and in 2013 will also include the converted ReEnergy Black River Facility located in Jefferson County, which is projected to provide 400,000 MWh of electricity each year.

In 2010, non-renewable electricity in the region was generated from a mix of sources, with the largest source, natural gas, generating almost 4% of total non-renewable electricity supply. The shutdown of the ReEnergy Black River Facility eliminates the use of coal, petroleum coke, tires, and most fuel oil used for electricity in the region (based on total 2010 EIA 923 data reported for the region and by Black River Generation, LLC in 2010).

The high contribution from renewable electricity generation in the North Country far exceeds the statewide goal of 30% energy generation from renewable sources by 2015. This places the region in a unique position: it is able to make a substantial contribution to this statewide goal while fully providing for its own electricity needs and generating large quantities of renewable electricity for export to surrounding regions.

ELECTRICITY CONSUMPTION

Electricity is supplied to residents, businesses, and organizations in the region by two investor-owned utilities—National Grid and New York State Electric and Gas (NYSEG)—and seven municipally owned utilities in Lake Placid, Tupper Lake, Massena, Philadelphia, Plattsburg, Rouses Point, and Theresa. Electricity consumption data for 2010 was provided by these utilities and categorized by county and by sector.

It is estimated that approximately 3.4 million MWh were consumed in the region in 2010 and 7.6 million MWhs of electricity were exported to other areas of the state, after accounting for transmission and distribution losses within the region.

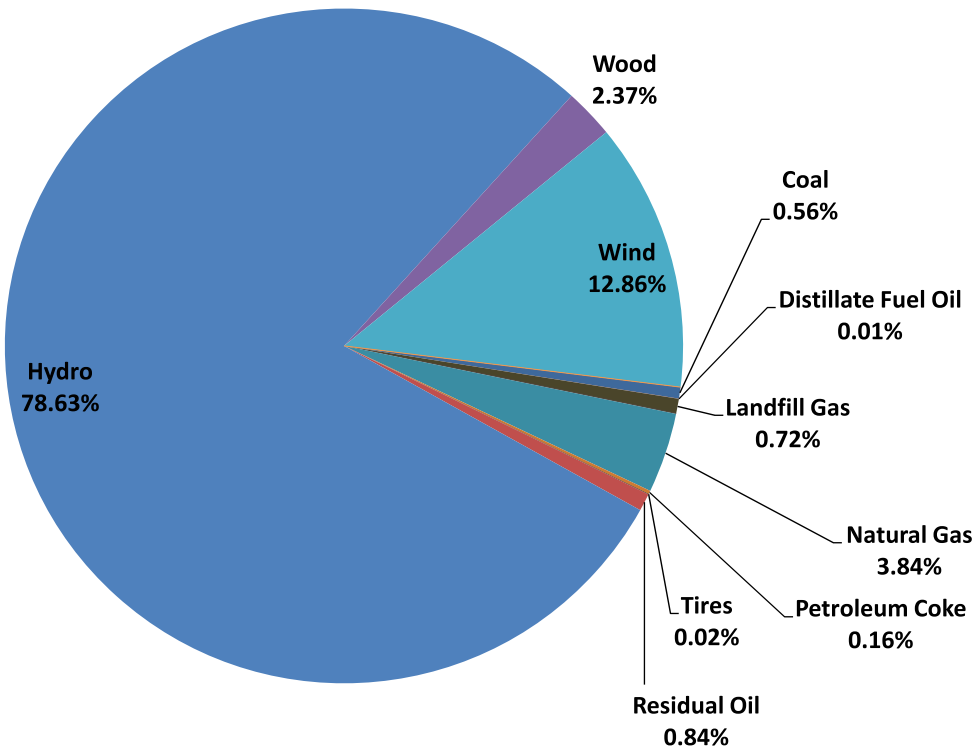


figure 3-1

ELECTRICITY GENERATION, BY SOURCE, IN THE NORTH COUNTRY REGION

Generation Source	*MWh (2010)*	*% of Total (approx.)*
Hydropower	8,638,596	78.5
Wind	1,413,122	12.8
Wood	259,923	2.36
Natural Gas	421,902	3.84
Residual Oil	92,051	0.84
Landfill Gas	78,935	0.72
Coal*	61,044	0.55
Petroleum Coke*	17,768	0.16
Distilled Fuel Oil (No.1, 2, or 4)	720	0.006
Tires	2,467	0.02
TOTALS	10,986,526	100

table 3-1

ELECTRICITY GENERATION IN THE NORTH COUNTRY REGION

Source: USEIA 2010

**In 2010, the remaining coal and petroleum coke electricity facility in the region, (formerly Black River Generation), was shut down, and its current owner, ReEnergy, announced it would convert the facility to use wood-chip/wood by-products as a fuel source when it reopens in 2013 (Source: ReEnergy representative).*

DIRECT STATIONARY FUEL USAGE

Direct stationary fuel usage refers to energy used in buildings and facilities throughout the region, primarily for heating. The energy is generally provided by fuel oil (or kerosene), natural gas, coal, wood, or bottled gas (i.e., propane or liquid natural gas). Regional use of these fuels have been estimated for the GHG Inventory using 2010 state-wide fuel use data from the EIA State Energy Data System and allocated to each county in the residential, commercial, and industrial sectors using different allocation methods, chosen to best represent energy usage at the regional level throughout the state (USEIA 2012). Forty-two million MMBTUs are consumed per year in stationary sources in the region. *Figure 3-2 (on following page)* provides the percentage of this total, broken down by energy type.

While natural gas provides nearly a third of the heating energy consumed in the region, its supply is limited to parts of Clinton, Essex, Jefferson, Lewis, and St. Lawrence counties. Fuel oil is the primary source of heating fuel in the North Country and is often supplemented by the use of wood and electricity. *Figure 3-3 (on following page)* provides a breakdown of household fuel use, by type, in the region.

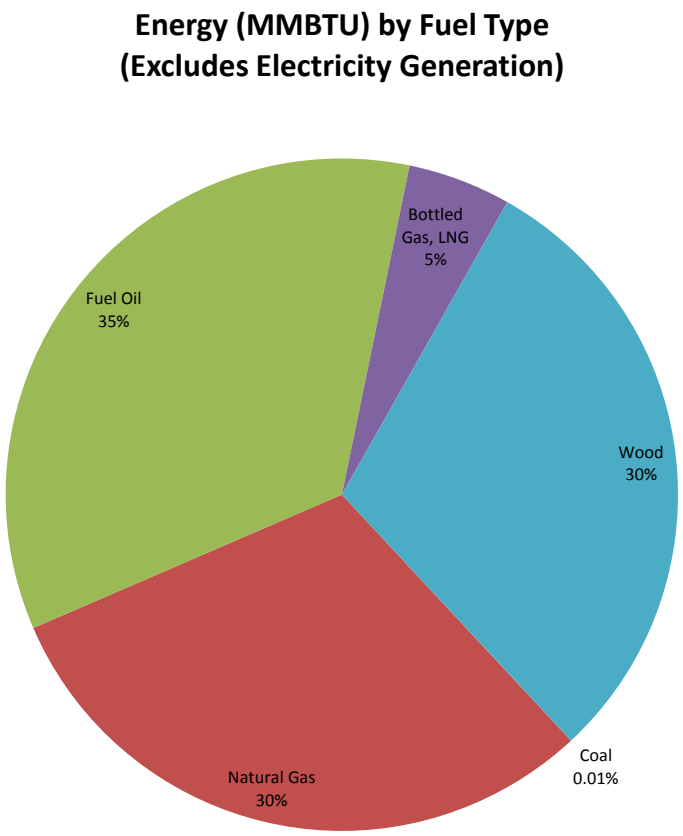


figure 3-2

DIRECT STATIONARY FUEL USAGE, BY FUEL TYPE, 2010

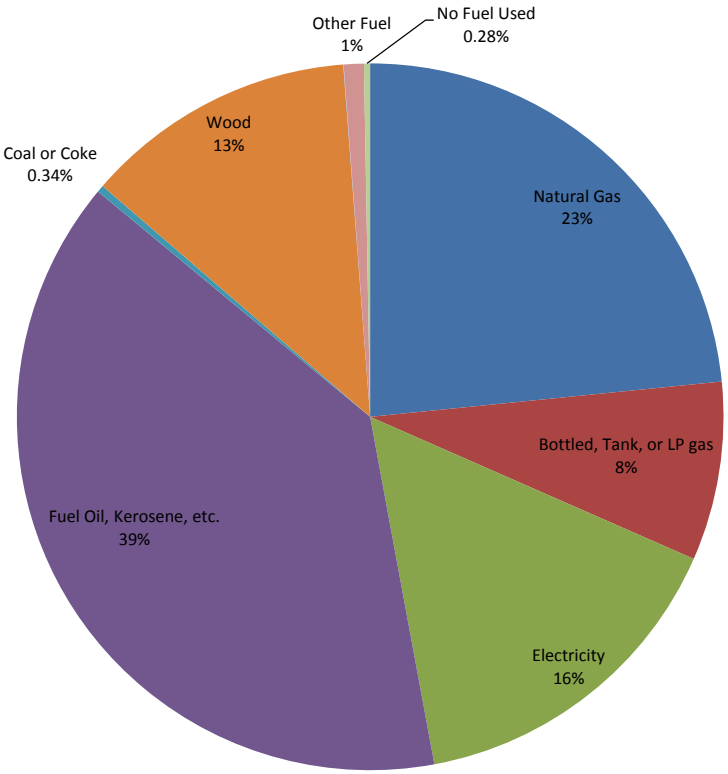


figure 3-3

HOUSEHOLD FUEL USAGE, BY TYPE, IN THE NORTH COUNTRY REGION

THE ENERGY WORKING GROUP

Goals:

1. *Increase the local generation and distribution of renewable energy*
2. *Increase energy efficiency of the region's building stock*
3. *Reduce energy use through consumer decision-making and behavioral changes*

Priority Implementation Strategies:

- *Perform a resource and lifecycle assessment to evaluate biomass resources, develop sustainable practices, and determine the capacity for regional biomass expansion and adoption.*
- *Pilot high-efficiency, low-emission biomass-based community projects, including district heating; neighborhood pellet systems, and innovative fuel distribution approaches.*
- *Provide and increase training opportunities for local contractors for renewable energy installations.*
- *Facilitate an increase in solar installation using successful models of residential and community-based solar power, including solar thermal.*
- *Promote the expansion of NYSERDA's and other ongoing programs to enhance the rate and scale of energy retrofits.*
- *Establish incentives for energy efficiency and green building projects.*
- *Develop guidance for small-scale power systems.*

Several factors are essential to the realization of these goals, including increased awareness of conservation measures, expansion and improvement of existing efficiency programs, and increased development of renewable sources of energy through innovation, investment, increased market demand, and legislation. With proper support, existing efforts will continue to expand, allowing the region to fully realize its position in leading New York State in its green energy transition.

Sustainability goals and indicators related to energy were developed with input from the Energy Working Group. The 47 members of the Working Group were drawn from around the region and included representatives from municipal and county planners, development authorities, NYSDEC, NYPA, a number of educational facilities (SUNY Canton, SUNY Plattsburgh, Clarkson University, Cornell Cooperative Extension, St. Lawrence University, and the North Country School), private firms (Fourth Coast, ReEnergy, Yellow Wood Associates, Azure Mountain Power, Crest Solar, Greenway Energy Solutions, Honeywell, Lyme Timber, and Kruger Energy), community facilities (The Wild Center), and special focus groups, including the North Country Clean Energy Conference, New York State Tug Hill Commission, St. Lawrence Seaway Energy Task Force, Alliance for Clean Energy New York, Adirondack North Country Association (ANCA), Northern Forest Center, and the Community Power Network of New York State.

Group discussions were held to identify areas of key opportunity and barriers to achieving sustainable energy generation, supply, and consumption in the region. The goals that emerged were used to develop implementation strategies for energy sustainability and to provide the tools necessary to measure progress and establish targets. A number of implementation strategies are highlighted in this chapter, including programs and practices to improve the efficiency of energy use in the region, contribute to energy conservation, and support the implementation of community- and local-scale renewable energy generation, particularly biomass.

Energy Goal 1: increase the local generation and distribution of renewable energy

With 94% of electrical generation from renewable sources, hydropower (78.5% of electrical generation), wind (12.8% of electrical generation), and biomass (2.36% of electrical generation) present themselves as the leading Main Tier renewable electrical generation opportunities in the region. Technologies such as small wind, solar, and biomass (including anaerobic digesters) facilities as electric and thermal energy sources at the Customer-Sited Tier provide opportunities not only for increased renewable energy generation, but also for expansion of local businesses and long-term cost savings for residents, business owners, and governments. Expanding the markets for these resources will support local economic development while supporting New York State's goals to increase generation from renewable sources and reduce GHG emissions. The rich forestlands of the North Country provide the opportunity for conversion to renewable biomass heating opportunities. Schools, municipalities, and residents across the region are converting to pellet, wood chip, and cordwood heating sources.

Energy Goal 1: increase the local generation and distribution of renewable energy

OPPORTUNITIES

There is widespread support for the expansion of biomass energy production in the North Country, as indicated in the North Country's Economic Development Plan and the Clean Energy Conference and confirmed by the Energy Working Group, and by numerous existing projects, policies, and programs throughout the region. The production of energy from biomass presents a unique opportunity for the North Country to replace non-renewable energy sources with renewables. Many of NYSERDA's recent research efforts on biomass have been supported by the North Country. Clarkson University, the Wild Center in Tupper Lake, SUNY Canton, and the Adirondack Museum are a few of NYSERDA's research partners, and their findings are supporting the development of high-efficiency, low emissions biomass heating market within the region, and nationwide. The region's cold winter climate and number of older, low-efficiency wood heating systems, make it imperative that the expansion of biomass move forward only with high-efficiency and low emission technology. Wood smoke is a prime contributor to wintertime air pollution in rural areas. High particulate matter, nitrogen oxides, and other hazardous air pollutants (HAPs) emitted from low-efficiency wood heating systems can impact public health even over short-term durations.

New energy conversion technologies, such as high-efficiency wood boilers, furnaces, and combined heat and power systems, offer tremendous promise in using biomass for thermal energy, with the potential to mitigate air pollution concerns. Fuel from biomass is generally price competitive, with thermal heating from wood chips and wood pellets often less expensive than natural gas, fuel oil, propane, and geothermal, and the technology can be implemented at residential or industrial scales.

Other renewable energy sources could also offer substantial environmental and economic benefits if implemented at the distributed-generation/community-scale in the region. Solar power offers an opportunity for locally scaled renewable energy generation, and could be implemented at the residential scale as a replacement for fuel oil heating/water heating systems. NYSERDA has incentive programs for residential and commercial solar (thermal and photovoltaic) systems. Distributed wind power also offers an opportunity to expand renewable energy at the community scale. Small-scale hydroelectric power projects already exist and could be expanded, as could geothermal projects. Community-based virtual net metering is key to distributed power generation within a local community.

The NYSERDA Renewable (Energy) Portfolio Standard (RPS) employs two programs as the principal means of obtaining additional renewable resources. The bulk of the electricity needed to reach this goal is obtained from competitive procurements of renewable resources (the Main Tier), meaning large-scale, grid-tied supply from hydro, landfill gas, and large wind and biomass facilities. In the complementary program for "behind-the-meter" applications of renewable generation, customers directly participate (the Customer-Sited Tier) with on-site generation using smaller wind, solar, and biomass systems that replace grid supply at the point of use.

Energy Goal 1:
increase the local generation and distribution of renewable energy

BARRIERS

The development of biomass for fuel in the North Country, and indeed within the Northeastern U.S., is hampered by a lack of specific regional policies targeting the growth of thermal renewable energy, and biomass thermal energy in particular (BTEC et al 2010). Thermal energy is not currently a focus of regional or state energy policies, no specific goals have been identified for increasing its implementation (BTEC et al 2010), and a comprehensive public education campaign has not been developed. And as more biomass is harvested, it is also imperative that forests in the region be managed sustainably, preserving their unique capacities to protect watersheds and sequester carbon. To address these challenges, policy planning needs to be continued and expanded at the national and regional levels to develop and implement an effective vision for thermal biomass energy (BTEC et al 2010).This could be supported by a public education campaign. At the local level, a range of policies could support the thermal biomass sector, including amendments to local procurement policies to encourage the use of biomass heating in public buildings, the creation of a stove and fuel oil burner replacement program to assist residents with replacement of old, inefficient wood stoves and gas and oil heating systems, and the implementation of a renewable heat standard similar to the state's Renewable Portfolio Standard for electric power.

The biomass energy market is growing slowly in the region. Although it has significant environmental and economic benefits, expanding the residential biomass energy market will be challenging. Many households already use wood to provide primary and secondary heat, and may not see the value of an investment in high-efficiency, low-emission furnaces capable of reliably and efficiently burning biomass fuels. The region would require an expansion of private sector businesses that manufacture and distribute bulk materials and provide regular residential delivery. Appropriate residential systems are available but are not well-known. These systems can have high initial capital costs; thus, widespread adoption would require a subsidy or incentive/offset program. The Northern Forest Center is one organization evaluating the feasibility of engaging the Town of Tupper Lake in the creation of a cluster of 40 residential conversions to determine the economic, social, and environmental impact of widespread residential adoption. Low- and moderate-income residents and those in housing built 30 or more years ago are likely to be in particular need of such support. The Town of Indian Lake is also exploring the potential to develop a biomass heating district that would include the school and municipal and commercial buildings. In addition, and due to the potential for unintended environmental harm caused by swift increase in regional biomass heating systems, proposed biomass projects should undergo emissions analyses prior to implementation. Emissions of GHG's, particulate matter, nitrogen oxides, carbon monoxide, and other HAPs should be evaluated for their potential environmental impacts. A best practices guide for high-efficiency, low-emissions biomass heating will be available on NYSERDA's website by mid-2013, and can be used to guide the planning and implementation of new biomass installations in the region.

Energy Goal 1:
increase the local generation and distribution of renewable energy

INDICATORS

The following indicators were selected to measure local scale renewable energy generation in two areas: thermal energy or heat, and electricity.

1. ***Number of public buildings that have installed a renewable thermal energy fuel source to replace or supplement fossil fuel use.***

This indicator measures the growth of renewable heating projects on a per building basis. Public buildings such as municipal offices or college campus facilities, were selected because they are often more prominent in a community, and in many cases projects are registered with NYSDEC. Residential scale renewable heating installations can be difficult to track and may not be feasible to measure over time.

2. ***Kilowatt-hours of electricity produced from renewable energy and percentage of total electricity generated in the region***

This indicator measures the implementation of renewable electricity generation projects within the region. Focus will be made during implementation on capturing data for Customer-Sited Tier projects, to promote on-site generation using smaller wind, solar, and biomass systems that replace grid supply at the point of use.

Energy Goal 1:
increase the local generation and distribution of renewable energy

BASELINE ASSESSMENT

Number of public buildings that have installed a renewable thermal energy fuel source to replace or supplement fossil fuel use:

Table 3-2 (on following page) provides a list of regional facilities using biomass as a thermal energy source. 12 active installations were found. Two additional are planned. This list was developed through available NYSDEC data and stakeholder discussions and may not be comprehensive. Data on solar thermal installations was not consistently found, although The Wild Center in Tupper Lake was identified as one facility using solar thermal (in addition to biomass). One solar thermal installation has been funded through the New York State RPS in Lewis County (see table 3-3 on p. 65), although information on the facility was not available.

Kilowatt-hours of electricity produced from renewable energy and percentage of total electricity generated in the region:

SUGGESTED TARGETS:

- Increase thermal energy (heat) generation from renewable sources to 20% of the region's public and commercial buildings by 2020, 35% by 2035, and 50% by 2050. Focus on the conversion of buildings currently using fuel oil for heat to the use of high-efficiency and low emissions biomass, solar (thermal), or geothermal as appropriate. Consider environmental impacts and heating system economics of all proposed new installations.

- Increase Class 2 and Class 3 renewable electricity generation to 45% of in 2020, 55% in 2035, and 60% 2050. Energy facilities are described as follows: Class 1 - large commercial/utility scale; Class 2 - light commercial applications (town office, municipal centers); smaller commercial/institutional and distributed generation; and Class 3 - residential/small business.

Table 3-3 provides a list of funded renewable energy projects that show progress towards increasing the generation of renewable energy in the region.

Facility Name	*Type*	*Description*	*County*	*Status*	*Fuel Type*
Ausable Valley Middle/HS	Heat	Public School	Clinton	Active	Chips
Keeseville Elementary School	Heat	Public School	Clinton	Active	Chips
International Paper Co.	Heat/Power	Paper Manufacterer	Essex	Active	Chips/Roundwood
The Wild Center	Heat	Museum	Essex	Active	Pellets
North Country School	Heat	Public School	Essex	Active	Chips
Town of Saranac Lake	Heat	District System	Essex	Planned	Chips/Pellets
Petrova Elementary/Middle School (Saranac lake)	Heat	Public School	Essex	Active	Pellets
Village of Tupper Lake	Heat	District System	Franklin	Planned	Chips/Pellets
Malone Middle School	Heat	Public School	Franklin	Active	Pellets
South Lewis CSD	Heat	Public School	Lewis	Active	Chips
Edwards-Knox Central School	Heat	Public School	St. Lawrence	Active	Chips
Clarkson University, Walker Center Arena	Heat	Higher Education	St. Lawrence	Active	Pellets
SUNY College of Environmental Science and Forestry, Ranger School	Heat	Higher Education	St. Lawrence	Active	Chips

table 3-2

FACILITIES USING BIOMASS FOR THERMAL ENERGY PRODUCTION

Source: NYSDEC

New York State Facilities using low-grade/underutilized timber products and wood residue products; Biomass Energy Resource Center; regional stakeholder input.

County	*Main Tier Sources*	*Customer-Sited Tier (CST) Installations of Wind, Fuel Cells, and Anaerobic Digesters*	*Solar Photovoltaic Installations*	*Solar Thermal Installations*
Clinton	4 Wind Farms, 1 Biogas	1 Wind Turbine	21	None
Essex	None	None	32	None
Franklin	1 Wind Farm, 1 Biomass	None	8	None
Hamilton	None	None	2	None
Jefferson	1 Biomass, 1 Biogas	2 Wind Turbines, 1 Anaerobic Digester	18	None
Lewis	1 Wind Farm, 1 Biomass, 3 Hydro	None	3	1
St. Lawrence	9 Hydro	3 Wind Turbine	26	None

table 3-3

RENEWABLE PORTFOLIO STANDARD (RPS) FUNDED PROJECTS IN THE NORTH COUNTRY AS OF DECEMBER 2011

Source: The New York State Renewable Portfolio Standard Performance Report, NYSERDA, December 2011.

Energy Goal 2: increase the energy efficiency of the region's building stock

Retrofitting existing buildings represents the greatest opportunity to increase the energy efficiency of buildings in the North Country and reduce their energy consumption. Over the next four decades, a majority of North Country buildings will require substantial reinvestment in order to remain habitable and cost effective to their owners. Focusing on energy efficiency as part of this process would lead to direct economic and environmental benefits. It would also contribute to local energy independence, economic development, and the creation and retention of employment for local residents.

Residential energy consumption is the second leading contributor to GHG emissions in the North Country. Comprehensively addressing the inefficiencies of existing buildings would contribute greatly to reducing emissions as well as reduce energy costs for residents. Several energy efficiency upgrade programs exist across the region; however, much work remains to be done in improving the effectiveness and scope of these programs. The challenge to this goal is overcoming the financial and tactical hurdles to help residents and businesses retrofit existing buildings to be more energy efficient or replace aging heating systems.

Successful implementation of an energy efficiency strategy would require the continuation and expansion of existing programs directed at improving energy efficiency, enhancing the rate and scale of energy retrofits, and improving efficiency standards for new construction. Programs would need to engage and educate residents and local businesses and be integrated with contractor training to build support for energy efficiency.

Energy Goal 2: increase the energy efficiency of the region's building stock

OPPORTUNITIES

Retrofitting existing buildings represents the greatest opportunity to reduce energy use and increase efficiency for buildings in the North Country. Over the next four decades, a majority of North Country buildings will require substantial reinvestment in order to remain habitable and cost effective to their owners. Focusing on energy efficiency as part of this process would lead to direct economic and environmental benefits. It would also contribute to local energy independence, economic development, and jobs, creating and retaining employment for local residents. North Country businesses, residents, and communities spend a substantial percentage of income on heating, reflecting the high cost of fuel, a harsh winter climate, inefficient insulation, and the older, poorer condition of much of the region's building stock (NCREDC 2010).

BARRIERS

A large portion of North Country households (71%) use imported fossil fuels (fuel oil and gas) as their heating energy source *(see figure 3-3 on p. 57)*. This creates an energy burden on many households. Natural gas, which is the most cost-effective fossil fuel, is not available in all areas of the region. Homeowners most in need of energy retrofits are accustomed to undertaking their own home repairs and improvements. Available incentive programs may not be widely known by residents or accessible based on upfront costs. Even with the potential for large paybacks, an initial investment is difficult for many homeowners and there is no incentive for tenants or landlords.

INDICATORS

Buildings are identified as one of the major energy-consuming sectors of the economy in the New York State Climate Action Plan (NYSDEC 2010b). Buildings (residential, commercial, and government) currently are responsible for about 40% of energy use in New York State (ACEEE 2012). The following indicators were selected to measure the implementation of energy efficiency projects for buildings within the region using a selection of widely known programs to capture both existing and new construction.

1. *Existing buildings included in an energy efficiency program (e.g., EnergyStar)*
2. *Number of NYSERDA Energy Efficiency Funded Program Projects, and annual kWh savings*
3. *New construction built to LEED or similar energy efficiency standards*

Energy Goal 2: increase the energy efficiency of the region's building stock

BASELINE ASSESSMENT

There are currently 15 EnergyStar-certified buildings/facilities in the North Country region. Table 3-4 (on following page) identifies the facilities that have the EnergyStar designation.

For the commercial, institutional, and industrial sectors, NYSERDA reports participation in the Existing Facilities Program, New Construction Program, and Industrial & Process Efficiency Program (see table 3-5 on p. 70). Participation in the North Country Region resulted in a total of 29,581,902 kWh removed from the grid through 216 projects during 2010 and 2011.

There are 15 LEED-certified buildings in the region (see table 3-6 on p. 71), and 37 additional facilities have registered with the United States Green Building Council (USGBC) and are working towards LEED certification. Twenty of the 37 registered buildings are facilities on the Fort Drum military base.

SUGGESTED TARGETS:

1. Increase the number of existing buildings in energy efficiency programs or certified to green building standard by 20% by 2020, by 50% by 2035, and by 100% by 2050.

2. Increase annual kWh savings from NYSERDA Energy Efficiency Funded Program Projects by 20% by 2020. Re-evaluate progress and available programs in 2020 to set future targets.

3. Increase the number of buildings built to LEED or similar energy efficiency standards to 25% of new building stock by 2020, 35% by 2035, and 50% by 2050.

County	*Building/Facility*
Clinton County	JC Penney Store 2313 (Plattsburgh)
	Staples Store 251 (Plattsburgh)
Essex	None Listed
Franklin	None Listed
Herkimer	None Listed
Lewis	Keybank (Lowville)
	Lowville Academy and Central School (Lowville)
	KeyBank (Croghan)
Jefferson	KeyBank (Dexter)
St. Lawrence	Kohl's Department Store 10141 (Watertown)
	KeyBank, Arsenal Road (Watertown)
	Kmart Store 7432 (Watertown)
	Sears Store 2683 (Watertown)
	Staples Store 825 (Watertown)
	Dulles State Office Building (Watertown)
	JC Penny Store 2286 (Watertown)
	Madill Elementary (Ogdensburg)
	Edwards-Knox Central School (Russell)

table 3-4

NORTH COUNTRY ENERGYSTAR-CERTIFIED BUILDINGS AND PLANTS

Source: EnergyStar.
Data retrieved on January 16, 2013 from: http://www.energystar.gov/index.cfm?fuseaction=labeled_buildings.locator.

County	*Number of Projects 2010-2011*	*kWh savings, 2010-2011*	*Population (2010)*	*Projects per 10,000 people*	*kWh savings per capita*
All New York	5,717	623,551,788	19,378,102	3	32
Regional total	216	29,581,902	433,193	5	68
Clinton	60	1,839,857	82,128	7	22
Essex	13	1,115,939	39,370	3	28
Franklin	25	548,956	51,599	5	11
Hamilton	2	36,512	4,836	4	8
Jefferson	62	12,193,369	116,229	5	105
Lewis	16	2,089,530	27,087	6	77
St. Lawrence	36	11,688,269	111,944	3	104

table 3-5

NYSERDA PROGRAM PROJECTS IN THE NORTH COUNTRY REGION, 2010-2011

Source: NYSERDA
Program Participation2010-11.xlsx, file provided by NYSERDA

County	*Project Name*	*Construction Status*	*LEED Certification*
Clinton	None Listed		
Essex	Mars Education Center (Ticonderoga)	New Construction	Certified
	Troop B FIU (North Elba)	New Construction	Silver
Franklin	Paul Smith's College (Paul Smiths)	New Construction	Silver
	New Student Housing (Paul Smiths)	New Construction	Silver
	Natural History Museum of the Adirondack (Tupper Lake)	New Construction	Silver
Herkimer	The Arts Center at Old Forge (Old Forge)	New Construction	Silver
Jefferson	Fire Station (Fort Drum)	New Construction	Gold
	Northern Federal Credit Union (West Carthage)	New Construction	Silver
	Timbers Clubhouse (Fort Drum)	New Construction	Certified
	Child Development Center, Under 6 (Fort Drum)	New Construction	Gold
	Warneck PS Renovation and Addition (Watertown)	New Construction	Certified
Lewis	None Listed		
St. Lawrence	Clarkson University Student Center	New Construction	Silver
	Clarkson Science Building Addition (Potsdam)	New Construction	Gold
	St. Lawrence University, Johnson Hall of Science (Canton)	New Construction	Gold
	SUNY Canton Convocation Athletic Rec Center (Canton)	New Construction	Silver

table 3-6

NORTH COUNTRY LEED-CERTIFIED BUILDINGS

Source: United States Green Building Council
Retrieved on January 17, 2013 from: http://new.usgbc.org/projects

Energy Goal 3: reduce energy use through consumer decision-making and behavioral changes

North Country communities spend a substantial percentage of income on transportation and heating, a result of car-dependent travel and long distances to cover; the harsh winter climate; lack of awareness of incentives and models that encourage switching to more efficient or renewable energy systems; and inefficient insulation of many buildings in the region. This goal targets local efforts by individuals and businesses throughout the region, with the triple aim of increasing energy efficiency/conservation, reducing energy-related costs and increasing local employment opportunities.

Existing Opportunities and Barriers

Individual behavior is one of the most powerful and under-recognized change agents that can reduce energy consumption and GHG emissions. US Households directly account for 35% of national CO_2 emissions, and if adopted, existing energy efficiency measures for households and motor vehicles can allow energy savings of almost 30 percent— 11 percent of total U.S. consumption. (World Bank Policy Research Working Paper 5058) Yet behavior change is rarely included in energy strategies.

Energy Goal 3: reduce energy use through consumer decision-making and behavioral changes

OPPORTUNITIES

Community-based neighbor–to–neighbor behavior change models are best suited for independent-minded North Country residents. Case studies and examples, widely publicized, based on local examples where people, institutions and businesses are benefiting from dramatic reductions in energy costs, improved comfort at home, reduced transportation costs, and better health will be the most effective in encouraging behavior change. School programs that involve children and youth in solving the energy and climate challenges, including recycling, no-idle programs for school vehicles, full engagement in school building efficiency, and school gardening programs are also very effective at changing family behavior and decision-making. Contractors who are measurably benefiting from increased business through being part of programs that offer energy efficiency improvement for homeowners and businesses will be part of this informal education approach that encourages change through example.

The best avenues for communication may not be the media — in the interest of attempting to present two sides to every argument, the media has proven to be more confusing than clarifying to consumers; other tools and forums will have to be used for sharing best practices and compelling case studies, and those will be increasingly available as access to broadband grows across the region. The recent incidences of severe weather in New York State and the North Country have also raised awareness about vulnerability of many communities and businesses to the growing impacts of climate change.

BARRIERS

Human behavior is difficult to change. Crises can affect behavior and changes in decision-making patterns, but energy and climate problems are chronic problems where change is seen as gradual, accommodating small adjustments that occur over time and do not present themselves as sudden shifts. In the North Country, particular challenges include the long distances between communities, dependence on individual vehicles for getting to and from work and other amenities, lack of awareness of incentives for more energy efficient choices, and lack of knowledge about examples of the recent projects that are bringing great benefits to institutions, people and businesses in the region. There is also widespread perception that upfront costs are high and not affordable for many. Low income levels across the region add to the challenge.

INDICATORS

Regardless of the energy source, promoting reduction in energy consumption in conjunction with increasing efficiency is essential to regional sustainability and economic growth and will reduce GHG emissions and costs. Measuring a region's total energy consumption on a per capita basis indicates the region's progress towards these goals.

1. *Regional energy consumption per capita (MMBTU)*

Energy Goal 3: *reduce energy use through consumer decision-making and behavioral changes*

BASELINE ASSESSMENT

The average annual per capita energy consumption across the North Country region is 215 MMBTUs. This is higher than the New York State average of 192 MMBTUs for 2010, most likely because of the high average transportation energy needs in the region (NYSERDA 2012). The mix of energy uses in the region is reflected in the consumption patterns shown on figure 3-4 (on following page). In the United States, the major users of energy are buildings (40%), industry (32%), and transportation (28%) (ACEEE 2012), and the national average per capita energy consumption was 316 MMBTU in 2010 (USEIA 2012). In the North Country, transportation is the major energy consumer (42%), followed by residential (28%), commercial (17%), and industrial (13%).

Energy use varies slightly among counties within the North Country region. Clinton County supports higher levels of industrial activity and requires more energy than the more rural counties in the region, such as Hamilton County.

SUGGESTED TARGETS:

1. Reduce current annual per capita energy consumption to 20%* below forecasted levels by 2020, 30% by 2035, and 40% by 2050.

**This target reflects New York State's "45 by 15" clean energy policy, which challenges the state to reduce electricity end-use in 2015 by 15% below forecasted levels, while simultaneously meeting 30% of electricity needs through renewable resources.*

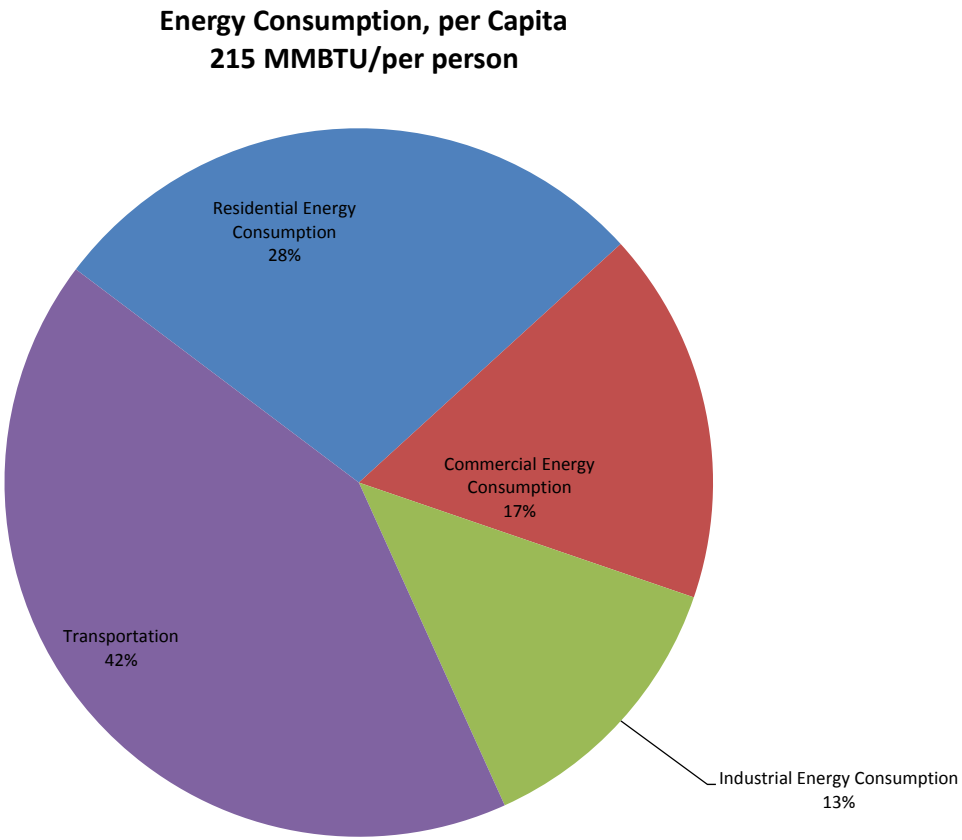


figure 3-4

ENERGY CONSUMPTION IN THE NORTH COUNTRY REGION, 2010

Source: E&E, 2012

ENERGY IMPLEMENTATION STRATEGIES

The following priority implementation strategies have been developed to meet the energy goals of increasing local-scale renewable energy generation; increasing energy efficiency of the region's building stock; and reducing energy use through decision-making and behavioral changes.

Perform a resource and lifecycle assessment to evaluate biomass resources, develop sustainable practices, and determine the capacity for regional biomass expansion and adoption.

Pilot high-efficiency, low-emission biomass-based community projects, including district heating; neighborhood pellet systems, and innovative fuel distribution approaches.

Provide and increase training opportunities for local contractors for renewable energy installations.

Facilitate an increase in solar installation using successful models of residential and community-based solar power, including solar thermal.

Promote the expansion of NYSERDA's and other ongoing programs to enhance the rate and scale of energy retrofits.

Establish incentives for energy efficiency and green building projects.

Develop guidance for small-scale power systems.

Energy Strategy: perform a resource and lifecycle assessment to evaluate biomass resources, develop sustainable practices, and determine the capacity for regional biomass expansion and adoption.

SUNY College of Environmental Science and Forestry (ESF), NYSDEC, Cornell University, and others have made progress towards a biomass inventory and assessment for the state, but more research still needs to be done. In order for the North Country to retain the ecological integrity of its extensive forested lands while making a transition to the use of biomass as a primary stationary fuel source, a set of guidelines must be created for the use of biomass resources. Additional studies needed include those on anticipated biomass use, forest capacity, and job creation and training for the forestry industry.

Also needed is a complete lifecycle analysis of wood as a renewable fuel. A complete analysis including the energy costs of harvesting, processing, and delivery, the additional capital costs of wood based heating systems to show how much greenhouse gas emissions are saved through the use of renewable wood fuels will create a mechanism to influence policy and decision-making across the entire Northern Forest area Clarkson University, in partnership with other research organizations in the region, has proposed to develop this analysis.

EXAMPLE PROJECTS:

The following projects that serve this strategy are described under Working Landscapes:

- Encourage Ongoing Research at each of the 10 Higher Education Institutions
- Create Woody Biomass Learning Centers at Representative Locations
- Woodshed Planning Tool

Energy Strategy: pilot high-efficiency, low-emission biomass-based community projects, including district heating; neighborhood pellet systems, and innovative fuel distribution approaches.

Communities across the North Country are already in the early stages of implementing these projects. Where natural gas is unavailable and communities are dependent on fuel oil, municipal leaders are excited about creating local economic development based on biomass as the primary fuel source. A number of models are being developed, from pilot neighborhoods making the switch to high-efficiency, low-emission wood pellet systems to wood-based district heating systems that would serve several municipal buildings including schools, government office buildings, health care facilities, as well as nearby homes. Developing these projects as high visibility pilots where monitoring and reporting on benefits and savings are built into the implementation strategies will be critically important to drive similar change across the region.

Prior to installation, all projects should perform an emissions comparison between existing and proposed systems to evaluate the potential for increased levels of particulates and other HAPs from biomass use. Projects will also be encouraged to estimate cost savings, local job creation, and the overall local economic impact of the project. In communities where natural gas lines are located wood biomass does not compete economically. The Tug Hill Commission is proposing a GIS analysis of which communities have access to natural gas, highlighting those that don't have natural gas which would help hone efforts to implement projects to convert individual homes to biomass or create district heating opportunities.

High-Efficiency Biomass Installations:

Identify a select number of candidate pilot sites for the installation of or conversion to high-efficiency biomass systems. A range of building types, including, schools, residences, and municipal buildings can be included. Larger buildings may consider the addition of low-temperature electric generation to improve boiler utilization and efficiency during seasonal temperature fluctuations. Several communities are already well underway in developing these options. Tupper Lake's project includes 60 buildings at Sunmount's campus that currently run oil with propane fuel as a backup. The proposal would switch the entire campus over to a biomass-fired energy system and create a district beyond Sunmount where the energy would be distributed as well. The nearby L.P. Quinn Elementary school and The Wild Center natural history museum, as well as residents in the area, are listed as those who could potentially be hooked up to the district. Tupper Lake is also proposing a Model Neighborhood Project (MNP) in partnership with the Northern Forest Center which would subsidize the purchase and installation of high efficiency, fully automated pellet boilers in homes, affordable housing units and municipal buildings to demonstrate the efficiency, cost-savings and ease of use of these systems. The Town of Saranac has conducted feasibility studies and is prepared to move their pilot projects forward, and the Town of Indian Lake is also reviewing options for innovation wood-based district heating systems.

Essex County would also like to investigate the feasibility of converting the existing heating systems serving the County Complex, County Jail and DPW facilities to biomass heating systems. The project will contribute to the Energy goals of reducing energy use and increasing building energy efficiency. The biomass feasibility projects if implemented, will contribute to the use of renewable energy.

A New York State based wood pellet boiler manufacture has proposed a project that would be a model and catalyst for expanding the use of advanced high-efficiency wood pellet boiler systems in commercial and institutional-scale buildings in the North Country. The project will help overcome some of the key barriers to expanded use of biomass including: high capital cost of equipment, insufficient customer base to achieve economies of scale for bulk pellet fuel delivery and lack of trained technical staff to install and provide maintenance on biomass boiler systems. The project will install advanced high-efficiency wood pellet boiler systems at three sites in the Region (public school, recreational facility and college campus). The project will develop and demonstrate a business model that can leverage private sector resources to replicate the boiler system financing model at other sites in the North Country once a core base of projects is established. Businesses are also looking at using biomass to replace fuel oil. For example, with assistance from the USDA Forest Service, the HP Hood plant in LaFargeville (produces cottage cheese & sour cream) is examining the feasibility of using biomass to replace its reliance on fuel oil. Assuming the project is found to be feasible and offers an attractive return on investment for the company, and that the company decides to move forward, further study could look at the feasibility of providing heat to the neighboring town highway facilities and bus garage as well as the manufacturing plant.

Operational Improvements of Existing Biomass Installations:

As systems are installed, specific regional improvements will be realized. Although these systems are highly efficient during the coldest parts of the winter, during the shoulder seasons buildings often don't put enough demand on the boilers to keep them running at peak efficiency. One regional school is planning to install a low temperature, closed Rankine cycle engine on their 1.4 MMBTU/hour ACT high efficiency chip/pellet boiler will allow the boiler to operate more efficiently during the entire heating season while producing a significant amount of grid-tied electricity. This project would serve as a demonstration site for others in the North Country who are interested in increasing the efficiency of their wood boilers.

Energy Strategy: facilitate an increase in solar installation using successful models of residential and community-based solar power, including solar thermal.

There is a widespread misperception that solar energy is not viable for northern climates. Germany, for example, had installed by the end of 2012 about 30 gigawatts of solar capacity, providing between 3 percent and 10 percent of its electricity, and its solar resources are comparable to Alaska, much less than Northern New York. (Washington Post, Feb 8, 2013) The schools, homes and other buildings that currently have solar panels or solar thermal systems installed should become demonstration sites for their communities. New community-based solar projects need to be piloted and widely publicized. Each County across the region should have successful highly visible solar projects that become the model for future energy developments. Neighbor to neighbor dialog is a winning strategy in the North Country.

EXAMPLE PROJECTS

Solar Cooperatives

Coordinate between municipalities to apply for joint-funding for solar installations. Collaborative efforts can result in more effective distribution of resources. Installations can be used to provide energy for municipal facilities, and net metering can further reduce operating costs. The Keene Solar Project proposes to build an engineered field of panels on top of the long-closed landfill, now a transfer station as a pilot for other closed landfill sites, which are ideal for solar installations.

Community-based Virtual Net Metering Pilot

Identify a pilot project for community-based-virtual net metering. Use the findings to support an expansion of the existing capacity of solar power for residential, commercial, and institutional applications. The Keene Solar Project can serve this project goal as well.

Solar Thermal Greenhouses

Establish a pilot program to convert a selection of seasonal greenhouses from oil heat to solar thermal with the goal of reducing GHG emissions, enabling year-round operations and employment, and providing locally produced food year-round. Currently, a highly productive and innovative small scale farm in the heart of the Adirondack Park has greenhouses running 8 months of the year with supplemental heat provided by electricity, propane or fuel oil. This proposal reflects a new, transformational, approach in the North Country that utilizes solar thermal and raised beds, to gain a 12 month/year operation. The Rivermede Farm Solar Thermal Greenhouse Project has 3 elements: 1) change 4 operating greenhouses from oil fired heat and that are currently operated 8 months out of the year to Solar Thermal greenhouses operated 12 months out of the year, 2) develop and use performance metrics to assist other farms in making similar decisions, 3) share lessons learned from project experience and performance metrics with Adirondack Harvest and 2013 North Country Clean Energy Conference. The project is expected to remove 1800 gallons of fuel oil, or 46,800 lbs of CO_2, from the environment, move 3 seasonal positions (currently) to 2 full time positions post project completion.

Energy Strategy: provide and increase training opportunities for local contractors for renewable energy installations.

SUNY Canton has a longstanding program that trains contractors to do energy efficiency upgrades, and some colleges such as Clinton community college provide training for students in wind turbine installation and maintenance and other renewable energy-related jobs. Some of this training is supported by the Workforce Development Institute which provides loans or direct support to contractors to go through the training. These programs can be enhanced and more widely marketed for future workforce training as the number of green job opportunities in the North Country increases.

EXAMPLE PROJECTS

Hold a Green Building Contractor Conference

The Wild Center in Tupper Lake, NY coordinates a bi-annual conference that focuses specifically on contractors, engaging them in green building practices ranging from wastewater treatment to deep retrofits to passive solar design. The event is aimed at contractors, architects, and do-it-yourself homeowners.

Improve Access to Employment

Stronger connections and better coordination with the New York State Department of Labor's Career One-Stop Centers can help to steer unemployed individuals to training opportunities. Demonstrating that energy jobs are in demand will improve the job marketplace.

Energy Strategy: promote the expansion of NYSERDA's and other ongoing programs to enhance the rate and scale of energy retrofits.

NYSERDA's Green Jobs Green New York program, just two of the many NYSERDA programs available to North Country residents, is designed to encourage retrofits across the state, is active in the North Country and is supporting growth in the number of home and business energy efficiency upgrades. However, given the relative age and inefficiency of North Country homes and buildings, that rate has to be increased exponentially in order to achieve the energy reduction goals in this Plan. This challenge has to be tackled community by community, driven by municipal leadership, neighbors sharing benefits with neighbors and schools and municipal buildings serving as models for their communities. The North Country region will collaborate with NYSERDA and other State and federal agencies and organizations to make programs more accessible to residents and businesses located in rural and small town communities.

EXAMPLE PROJECTS

Community Energy Management

The Wild Center in Tupper Lake coordinates a bi-annual conference that focuses specifically on contractors, engaging them in green building practices ranging from wastewater treatment to deep retrofits to passive solar design. The event is aimed at contractors, architects, and do-it-yourself homeowners.

Energy Efficiency Updates for Community/Municipal Buildings

Stronger connections and better coordination with the New York State Department of Labor's Career One-Stop Centers can help to steer unemployed individuals to training opportunities. Demonstrating that energy jobs are in demand will improve the job marketplace.

Energy Efficiency Updates for Residents

Establish a program to supplement NYSERDA's EnergyStar program for building energy improvements. Supplemental support is needed to provide more extensive outreach to residents to show the benefits and to increase the number of free energy audits performed. In addition, determine if more options are available for alternative funding for improvements and provide information to residents to increase the number of retrofits undertaken.

Energy Strategy: establish incentives for energy efficiency and green building projects.

Improving building energy efficiency is the single most effective way to decrease energy costs and reduce GHG emissions. A number of NYSERDA programs exist which can support a wide level of energy efficiency projects. Potential project applicants in the region should be supported and encouraged to make use of these available programs. The North Country must expand its outreach to residents, seek new sources of support and provide more information on available programs. Additionally, and to expand funding opportunities, the region should look to develop creative incentive programs beyond existing NYSERDA and other governmental programs. These may include competitions, community-based efforts, innovative investment opportunities, or other vehicles that can increase the number of energy efficiency projects and performance of North Country buildings. These programs can provide community outreach and education to residents on the cost and energy savings potential from energy efficiency projects.

Providing incremental improvements to residents is also a high priority. The region will continue to look to programs both statewide and local to provide rebates and incentives for the purchase of energy efficient appliances. These improvements provide both energy reduction and financial benefits to residents as well as improve understanding and appreciation for energy-related upgrades.

EXAMPLE PROJECTS

Study and Implement Extensive Energy Conservation Measures

Essex County is interested in implementing energy conservation measures recommended from a series of NYSERDA and NY Power Authority audits conducted for all Essex County-owned facilities. These include the County Courthouse, Fish Hatchery, DPW Administration building and garage, Community Resources/Transportation building, Mental Health building, Probation building, Nutrition building and County Government Complex. This project will implement the energy conservation measures recommended in the audits, to include energy efficient light fixtures, programmable thermostats, weather stripping of doors & windows, insulation, window replacement, heating system & HVAC upgrades, occupancy sensors and Energy Star appliances.

In St. Lawrence County, students in SUNY Canton's Alternative and Renewable Energy program are developing a plan to do a "deep energy retrofit" on a newly purchased building to make it net-zero through insulation, geothermal heating and PV panels. This would be the first net-zero professional building in the North Country. These students are also preparing a basic design for a new net-zero Town Hall building and doing the analysis to determine how to achieve net-zero. The building will be well insulated, take advantage of passive solar gain and have sufficient PV to produce all its power needs. They chose net-zero as the standard over LEED certification because it is simple to gauge success: the meter tells all.

Another project proposes to study the impact of implementing household energy efficiency improvements on economic development. The study will compare the benefits of investing economic development dollars in weatherization versus recruitment of manufacturing plants and will show the relative effects of the two development strategies on economic development in the North Country region. A 2007 study showed significantly greater economic benefits from investments in weatherization. The project aims to provide data that will assist those who are drafting and selecting energy projects and encourage an increase in the number of economic development projects targeting residential energy efficiency improvements.

One school district proposes to fund a feasibility study for an integrated biomass and solar (PV and thermal) fuel switching project. As proposed, it would be designed to make the system and its performance visible to students with enough instrumentation that they would use it for class instruction and experiments. If these technologies take hold in the area, it would have the additional benefit of attracting interested young people to enter training programs and work in the field.

Energy Strategy: develop guidance for small-scale power systems.

There is a large opportunity in the North Country to reduce its dependence on imported energy, create jobs, and reduce costs through smaller scale energy projects including micro-hydro, geothermal, residential scale wind, community solar, anaerobic biodigesters, and other renewable energy systems. However, there is very little information available for guiding residents, municipalities and businesses to install these systems. The guidance will include permitting requirements, case study examples, average payback periods, contractors and businesses available to do installations, and government incentive programs.

EXAMPLE PROJECTS

Operational Improvements of Existing Biomass Installations

Evaluate low-head dams within the region for the potential to rehabilitate and develop hydropower. Potentially dozens of sites exist. Efforts exist in communities such as Croghan to rehabilitate these structures as potential sources of energy and as a focal point for downtown revitalization efforts.

Lewis County is striving to rehabilitate a specific site at the Croghan Dam and to develop the economic potential of the site to provide for the long-term sustainability of the structure through the generation of hydroelectricity. Although the project is intended to focus on a specific dam in Lewis County, it could serve as a model of what can be done with numerous low-head dams throughout the state that have the capacity to provide green energy.

Another project focuses on developing a micro-hydro system that would be inexpensive, relatively easy to install and maintain, and would provide enough electricity for an average household. Two researched case studies and two field trials have been conducted to date. With the data collected, it is assumed that a feasible system could be designed and developed that would have a base cost of under $1000 (not including installation) and would be able to pay for itself in as little as 2 years. The goal is to manufacture these systems locally and install them throughout the North Country.

Community Scale Digesters

Install community-scale digesters to accept food waste from restaurants, manure from farms, yard wastes, and other organic materials that could be used to generate electricity or methane for local municipal facilities or a commercial or industrial end-user. By-products of the digestion process would be available for land-application to farms and other customers.

Approximately 30% of landfill waste is food scraps from individuals, and organizations, and businesses. One proposed project will divert 900 tons of organic material from landfills annually through the process of anaerobic digestion, will generate income by producing marketable products, decrease the carbon footprint, provide a sustainable solution to our solid waste issue, create green jobs in the bioenergy field and make the community a model for other communities. Another project, based at a school will provide a demonstration where food scraps from the local school district and local businesses (restaurants and grocery stores) get converted to methane gas which will be used for electric generation. Food scraps would be processed on the school campus, the electricity generated fed into the electric grid, and the leftover digestate used on their working farm as a soil amendment.

Lewis County proposes a digester would be centrally located to collect manure from multiple farms in a small radius of the facility. Energy production is expected to be used at a local manufacturing operation. The digester would be located close enough to the energy user to pipe the gas produced directly to the customer. Electricity would be produced at the customer site and the heat would also potentially be used at the site. The solid by-product of digestion would be available for farms or other customers and the liquid by-product would go back to the farms for spreading on fields.

OTHER EXAMPLE PROJECTS

In addition to the above-mentioned projects, several other example projects are recommended to serve the overall energy goals of this Plan.

in support of

Goal 1: Increase the local generation and distribution of renewable energy

Research the opportunities to utilize existing renewable energy production facilities. The ReEnergy Chateaugay plant is a 20-megawatt biomass-to-energy facility, currently idled. When operational, it uses locally sourced sustainably harvested forest residue biomass as its primary fuel to produce approximately 130,000 MWh of electricity per year — enough to supply nearly 17,000 homes. When operational, the facility employs 18 full-time well-paid workers and sustains approximately 100 other jobs in the region.

in support of

Goal 3: Reduce energy use through consumer decision-making and behavioral changes

Two projects work to support this goal. The first seeks to create and maintain best management practices, a web-based database profiling best management practices organized by CGC Plan categories to support and improve educational options in the region. Criteria for inclusion will be based on categories, goals, strategies and indicators identified in the Plan.

A second project is an ongoing program currently managed by the Wild Center in Tupper Lake, Franklin County. This ongoing education and information sharing initiative has succeeded in raising awareness of climate and energy issues across the region for three years with underserved and nontraditional audiences. The project focuses on information-sharing project on green solutions for the Adirondack region and beyond; specializing in green building training workshops, on-line news, frequently updated social media, educational case studies of success, innovative teaching videos of hands-on solutions and regional conversations about climate and energy. It reaches atypical but necessary audiences including contractors, code officers, municipal leaders, teachers, transportation specialists, tourism agencies, community planners, buildings specialists, and alternative energy businesses.

Fueling the Regional Economy
(a case study)

CHALLENGE:

The North Country needs power to grow its economy, and a power plant that could supply the electrical needs of 50,000 homes near Fort Drum was sitting idle. Turning it back on would supply a major energy source for the region, but its coal-burning plant was outdated, and no new owner wanted to start up a major pollution source.

OPPORTUNITY:

One option would be to retrofit the heat source, and use the generating plant with a cleaner fuel. That's where ReEnergy came in, with a plan to take over the plant, located on the base at Fort Drum, and turn it back on with a more sustainable fuel source.

ACTION

Fort Drum looks to local biofuels

The Department of Defense has major sustainability programs. The drive for new energy sources is based in part on awareness of how dependence on nonrenewable energy will seriously limit future operations. Retrofitting the plant with a renewable source was just what the General ordered.

RESULT

Generating millions in new local energy dollars

ReEnergy is retrofitting the Black River plant to run on biomass at a cost of $34 million. The revamped facility will run on 70 percent biomass. The remaining 30 percent will consist of waste products like old, shredded tires and construction debris, products that might otherwise end up in landfills.

"We will sell directly to the grid," said Ainsworth James, the company's Manager for Engineering and Maintenance. "We own the power plant and lease the land from the base. The base has a whole energy task force initiative – their goal is to look toward greener energy."

"The North Country is rich with forestland, and we want to make productive, sustainable use of that resource," said Sarah Boggess, spokeswoman for ReEnergy, adding that most of the fuel will be coming from within a 50-mile radius of the facility. ReEnergy's goal is to sustainably harvest the woody biomass, which will include logs and treetops from lumber operations that would otherwise go unused. "ReEnergy is seeking third-party certification from the Sustainable Forestry Initiative, ensuring that its fuel supply will be sustainably harvested," added Boggess. "When it does it will be the first biomass company in the U.S. to do so."

And the sustainability efforts don't stop there. "We are installing a new cooling tower for the plant," said James, noting that the new system will decrease the discharge of hot water into the Black River by about 90 percent. That reduction will lessen the impact on life in the river.

Not only does the retrofit help meet sustainability goals, it also makes for good business for both ReEnergy and the surrounding community. "One of the driving forces behind the retrofit was putting jobs back into the community," said James. An estimated 177 jobs were created during the retrofit project. The facility will employ 33 workers full-time and is expected to add an additional 144 jobs in the community for the harvesting and distribution of fuel. ReEnergy will make $11 million in annual wood purchases from local foresters in the four-county region surrounding the facility. The project has generated excitement in the logging community. "We were at Woodsmen's Days in Boonville and the foresters kept stopping by our booth," said Anthony Marciniak, interim facility manager at Black River. "They were saying, 'we're ready to go, when can you start taking our wood chips?'"

"We also have a chipper lease program for local harvesters," continued Marciniak. "We lease them a chipper and they pay it back incrementally with their chip loads." Chippers can cost $250,000 or more, proving a sizeable impediment to foresters who are just starting out. "Without start-up capital you can't do it," he said.

Because of the sustainable nature of the operation, ReEnergy was selected to sell renewable energy credits to NYSERDA under New York's Renewable Portfolio Standard. It is ReEnergy's goal to eventually provide renewable power to Fort Drum itself. "We're bringing back a station that has been dormant for years," added Marciniak. "It's always exciting to get those turbines started and start making energy again."

"One of the phrases I see a lot is homegrown," concluded Boggess. "We're using a local sustainable fuel to provide energy to our community. That's homegrown."

IV

Livable Communities And Land Use

CONCENTRATE INVESTMENT IN VIBRANT AND RESILIENT DOWNTOWNS

The communities of the North Country are characterized by their integration with surrounding landscapes. A combination of historic rural hamlets and small urban communities, the region and its residents are strongly connected to the working lands that support their economies, and the recreational outdoor activities enjoyed on these lands by both residents and visitors to the North Country. Region wide, there is a respect for local choices, favoring the stewardship of natural resources and a self-sufficient way of life. However, self-sufficiency in the region is marked not only by small-scale home production of food and energy, but also by a community-level commitment that promotes efficiency and resiliency through interdependence.

In general, the land use and development pattern for the North Country region follows that typical of rural areas: small communities with low- to mid-scale development on Main Streets connected by regional roadways. The locations of new commercial or light industrial construction are often focused on the periphery of towns and villages. New commercial development is often single story in nature, with a limited building life span and extensive parking areas. New residential development is often in peripheral areas in the form of stand-alone subdivisions.

Areas of agricultural lands exist in areas between towns and villages and include farm houses and accessory structures for farming equipment. Interstates 87 and 81 run north-south along the eastern and a portion of the western boundaries of the region, respectively. Amtrak passenger rail service runs approximately parallel to I-87 along Lake Champlain north to Canada.

This plan promotes strategies that will support the revitalization of main streets, reduce sprawl and increase the effective use of land, and improve access to transportation, healthy food options, and wellness services. These strategies incorporate quality of life, community growth, and economic development for those living and working in the region.

LIVABLE COMMUNITIES AND LAND WORKING GROUP

Goals:

1. *Prevent sprawl by focusing revitalization on existing Main Streets and downtown areas.*
2. *Create and update comprehensive plans and zoning ordinances as a means to improve sustainable practices.*
3. *Improve the resiliency and adaptability of communities to climate-related impacts.*
4. *Include public health in land use planning and sustainability initiatives to encourage healthy communities.*
5. *Develop sustainability programs in local schools & colleges to develop, instill, & demonstrate concepts of sustainable land use practices.*

Priority Implementation Strategies:

- *Implement pilot projects for Main Street redevelopment. Use successful outcomes as the basis for future projects.*
- *Support development of local planning (including Hazard Mitigation Plans & Comprehensive Land Use) with funds & staffing*
- *Establish programs that provide infrastructure and economic resiliency to climate related impacts.*
- *Encourage healthy communities through nutrition awareness and providing healthy local food choices. Promote educational opportunities and develop knowledge networking to connect schools and enable them to share sustainability projects and programs across the region. Establish incentives for energy efficiency and green building projects.*
- *Develop guidance for small-scale power systems.*

Numerous projects and initiatives are underway to preserve the character and history of local communities and to make them accessible to visitors from around the country. In order for the resulting implementation strategy to succeed, a number of conditions must be coordinated and supported for success. In this context, efforts were made to replicate such interconnectedness during the planning process by carefully coordinating across the Plan Focus Areas, notably transportation, working landscapes, and economic development.

A Special Advantage

Encompassing almost 26% of New York State's land and just 1.7% of its population, the North Country has the luxury of viewing its available lands as a critical component in any sustainable and/or economic development strategy. *Source: (Fry et. al. 2011)*

LIVABLE COMMUNITIES AND LAND WORKING GROUP, *cont'd.*

The Livable Communities and Land Use Working Group focused on developing goals, identifying sustainability opportunities and constraints, framing statements, reviewing indicators, and collecting baseline data.

The 36 members of the Working Group represented each of the seven counties in the North Country and included county-level planners, health planners, Main Street revitalization committee members, housing assistance program and housing trust staff, and outreach coordinators. Working Group members included landscape architects, educators, and administrators from local educational institutions, including the Cornell Cooperative Extension, Paul Smith's College, and SUNY Potsdam. Further expertise, unique to the region, was brought by Working Group members from Adirondack Sustainable Communities, ADK Futures, and the Adirondack Park Agency. Other specialists within the Working Group included representatives from entities such as the New York State Department of Environmental Conservation (NYSDEC), The Nature Conservancy, Wildlife Conservation Society, Saranac Lake Community Garden, Saranac Lake Community Store, the Tug Hill Commission, Fort Drum, and United Helpers.

The Working Group discussed and considered land use planning as it relates to sustainable development and smart growth principles. Special attention was given to the creation and preservation of livable communities in order to facilitate targeted, sustained growth with increased mobility options. Discussions were held regarding economic growth, the appropriate siting of infrastructure (roads, water/sewers, and utilities), and new development. The discussions identified goals and strategies to support priority revitalization areas (e.g., Main Streets and village & city downtown areas) and land use within existing urban and rural communities. The priorities of the NCREDC's strategic plan were incorporated into the Livable Communities and Land Use strategies.

Primary Themes

- *The importance of the connection between governance requirements and land use policies.*
- *The connection between efficient and healthy land use planning and transportation infrastructure, which links it all together.*
- *Maintenance and promotion of the unique character of each of the region's communities as potentially marketable assets and as sources of local pride for the population. Focus not so much on growth but rather on maintaining and revitalizing its small-scale, unique regional character.*
- *Recognizing the important relationships between livable communities and public health.*

The Working Group operated from the premise that growth for the sake of growth is *not* acceptable. The goals selected and described by the Working Group are designed to provide a framework for encouraging a mix of retail and businesses with a priority on neighborhood serving needs such as grocery, dry cleaning, and pharmacy uses which form the basis for determining the appropriate indicators for the region.

Living Communities and Land Use Goal 1: revitalize main streets and town centers to reduce the cost and impacts of sprawl development

Encourage mixed-use zoning in downtown centers to improve walkable conditions and encourage neighborhood vitality. Return to early community design elements that focused on walkable grid patterns centered around hamlet and village services. Prevent sprawl by focusing revitalization on existing Main Streets and downtown areas. Revitalize existing buildings and restrict the expansion of infrastructure until existing capacity has been reached.

Existing Opportunities and Barriers

Historical land use patterns of towns and villages are compatible with compact development patterns. Working Group members noted the positive aspects of the historical development pattern in many of the small towns and hamlets.

Livable Communities and Land Use Goal 1: revitalize main streets and town centers to reduce the cost and impacts of sprawl development

OPPORTUNITIES

A return to early community design elements, found in the existing community design of Main Streets and grid pattern streets, represents good design that is easy to replicate. The development of community place, pride, and local identity can result in the attraction of investment and population. Early housing stock was solidly built; therefore, existing buildings need only to be revitalized, not replaced. Original homes and commercial buildings may be made energy efficient and promoted as community assets. The preservation of embodied energy and character inherent in beautiful old buildings, which are often neglected and fall into disrepair, can breathe life back into older downtowns.

The existing scales of many Main Streets located in North Country hamlets and villages support the ability to create "Complete Streets". As defined by Smart Growth America, "Complete Streets are streets for everyone". They are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. Complete Streets make it easy to cross the street, walk to shops, and bicycle through town centers. They help improve flow of vehicular traffic and make it safer for pedestrians.

In the region, policies or standards need to be developed to strike a balance between the need to maintain roadways and decrease traffic congestion, and the need to keep downtowns open, walkable, and economically viable. Early communication at the start of a roadway improvement project is particularly important between state agencies such as NYSDOT and the communities that the project will impact. Ongoing engagement between local municipalities and NYSDOT will help both parties understand each other's needs, and help develop standards for street upgrades that are consistent with both state requirements and local planning initiatives.

The redevelopment of previously developed sites, which can include abandoned, economically obsolete, or brownfield sites, can reduce development impacts on watersheds, and forested or other undeveloped land. Redevelopment of these sites can provide economic and community benefits by maximizing the productivity of previously inefficiently used properties. Buildings or facilities may be present on these sites, in some cases salvageable for renovation or for building materials. The removal of large paved areas during rehabilitation of these sites should also be part of rehabilitation to reduce the impermeable surface area of a site. Redevelopment of these properties when present in downtown centers can breathe new life into a streetscape, increase the diversity of businesses, and encourage redevelopment of nearby properties.

Livable Communities and Land Use Goal 1: *revitalize main streets and town centers to reduce the cost and impacts of sprawl development*

BARRIERS

Many communities have not updated their zoning codes in decades, if at all. Current tax structures limit incentives for reinvestment in hamlets and villages in favor of areas outside of core communities as developers opt for reduced taxes and lower development costs. In some parts of the North Country, low-density development (on lots of 5 to 40 acres) is a major development pattern, which is at odds with the desire to promote compact development patterns. This style of development converts land rapidly, saps village centers of vitality and tax base, consumes natural resources, places large demands on community infrastructure, and inhibits ecological connectivity. A 2003 Brookings Institute study (Pendall 2003) found that across upstate New York, urbanized or developed land use is increasing at a pace that far outstrips the regional population growth. The report points to a number of policy explanations and solutions, including fragmented local governance, tax structures favoring development outside of cities and villages, and zoning for large lot sizes.

The reuse or repurposing of previously developed sites can be hindered by regulatory hurdles and challenges of ownership and maintenance. The use of payment in lieu of taxes (PILOT) agreements creates financial frameworks for the development of new infrastructure. These agreements are often challenging for the local jurisdiction to implement and can result in inadequate revenue for the jurisdiction. Technical support can be provided to jurisdictions entering into these agreements with developers to ensure equity and fairness for all parties.

Livable Communities and Land Use Goal 1: *revitalize main streets and town centers to reduce the cost and impacts of sprawl development*

INDICATORS

The following four indicators emerged out of the existing land use and development patterns, which typify more rural areas and consist of small communities with low- to mid-scale development on Main Streets connected by regional roadways. Four indicators were selected to create a comprehensive measurement of development patterns, which include population, land use, and incentive policies.

1. ***Percentage of population living in areas defined as hamlets, villages, city centers, and downtown areas.***

2. ***Area of developed land within a region based on an evaluation of land use patterns and per capita land consumption.*** Developed land patterns demonstrate where sprawl may contribute to population loss in city centers, and locations of reduced available land for economic sectors such as agriculture, forestry, and recreational uses that characterize the region and provide much of its income

3. ***Number of municipalities with Main Street Revitalization Programs.***

4. ***Percentage of municipalities with tax policies and incentives to encourage development in municipal centers (NYSERDA governance indicator).***

Livable Communities and Land Use Goal 1: *revitalize main streets and town centers to reduce the cost and impacts of sprawl development*

INDICATORS

Percent of population living in areas defined as hamlets, villages, city centers, & downtown areas:

The 2010 Census data indicate that 46.41% of the North Country population resides in the region's cities, villages, and hamlets. Population details, by county, are presented in *Table 4-1 (on p. 98)*. The breakdown reveals that the relative percentage living within cities, villages, and hamlets varies greatly by county.

As presented in census data, there has been an overall loss of residents from the population centers since 2000. From 2000 to 2010 the total population of the region remained relatively constant, showing an approximately 2% increase. However, in 2000, 53% of the North Country population lived within the region's cities, villages, and hamlets, as opposed to 46% in 2010. The decrease occurred across the region, except for Lewis County, which saw a 3% increase. *Table 4-1 (on p. 98)* shows the population density within cities, villages, and hamlets for 2010.

Area of developed land in the region:

Land use was characterized within the North Country region using the Multi-Resolution Land Characteristics Consortium's (MRLC) National Land Cover Database. The per capita land consumption in the North Country was derived by dividing the total acres of developed land by the total population of the region, resulting in a value of 0.47 acres per person. A breakdown of developed land data for each of the North Country counties is presented in *table 4-2 (on p. 99)*. The table shows that only 2.68% of the North Country's land area is developed, with the percentage for individual counties ranging from 0.87% in Hamilton County to 6.03% in Jefferson County. The land cover defined as High Intensity Development, wherein people reside or work in high numbers, is less than 1% within each of the North Country counties. A majority of developed land within the North Country can be characterized as developed open space or low to medium intensity, which includes lawns, parks, and single-family housing units. *Figure 4-1 (on p. 100)* shows the locations of the developed land cover within the North Country. Consideration should also be given to the tendency for residents in this region to seek large lots for privacy and open space enjoyment. A large lot may also represent low impact development with self-imposed conservation interests.

Livable Communities and Land Use Goal 1: *revitalize main streets and town centers to reduce the cost and impacts of sprawl development*

INDICATORS, *cont'd.*

Number of Municipalities with Main Street Redevelopment Programs:

The New York Main Street Program, a state-level program administered by the Office of Community Renewal in Albany, provides both financial resources and technical assistance aimed at improving New York's traditional Main Streets and neighborhoods to stimulate economic development. A review of the New York Main Street Awards from 2004-2011 and communication with the Program Points of Contact for the Syracuse Region (serving Franklin, Jefferson, Lewis, and St. Lawrence counties) and the Capital District and New York City Region (serving Clinton, Essex, and Hamilton counties) revealed that none of the communities within North Country counties received grants through 2011. The New York Main Street program is now part of the Consolidated Funding Application (CFA) process, and the New York Main Street Program is administered under the agencies of Homes and Community Renewal, Office of Community Renewal (HCR and HCR/OCR). Of the projects awarded funds in 2012 through the NCREDC CFA process, the following seven projects will be administered under the NYMS and, based on a project description, address a "Main Street focus" (NYSREDC 2012):

- *Village of Port Henry, historic building revitalization*
- *Indian Lake Theatre Project, rehabilitation of a movie theatre*
- *Village of Cape Vincent, commercial building rehabilitation*
- *Carthage Downtown Redevelopment, assistance for renovation of buildings*
- *Village of Lowville, redevelopment of the county jail space into supportive housing*
- *Village of Massena, streetscape improvements and renovations*
- *Village of Canton, renovation of residential and commercial units*

Percentage of municipalities with tax policies and incentives to encourage development in municipal centers (NYSERDA Governance Indicator):

There are no known municipal tax policies to encourage development in municipal centers within the North Country, and a centralized data source for this indicator is not available. Future data collection efforts should focus on individual reporting from the local jurisdictional level.

SUGGESTED TARGETS:

- *Increase the percentage of population living in areas defined as hamlets, villages, city centers, and downtown areas to 50% by 2020, 60% by 2035, and 70% by 2050.*
- *Reduce per capita land consumption by 5% by 2020, 8% by 2035, and 10% by 2050*
- *Increase the number of municipalities with Main Street redevelopment programs to 10 by 2020, 20 by 2035, and 30 by 2050.*
- *Increase the percentage of municipalities with tax policies and incentives encouraging downtown development to 10% by 2020, 20% by 2030, and 30% by 2050.*

County	*Population (2010)*	*Total Population Living within Cities, Villages, and CDPs* (Hamlets)*	*% Total Population Living within Cities, Villages, and CDPs* (Hamlets)*
Clinton	82,128	37,472	45.63
Essex	39,370	24,645	62.60
Franklin	51,599	11,500	22.29
Hamilton	4,836	348	7.20
Jefferson	116,229	68,318	58.78
Lewis	27,087	7,789	28.76
St. Lawrence	111,944	50,985	45.55
Total	433,193	201,057	46.41

table 4-1

POPULATION DENSITY IN THE NORTH COUNTRY REGION, 2010

Source: Census 2010

**Census designated places (CDPs) within the North Country often represent Hamlets.*

County	*Percent Developed, Open Space*	*Percent Developed, Low Intensity*	*Percent Developed, Medium Intensity*	*Percent Developed, High Intensity*	*Percent Developed, Total*
Clinton	3.04	1.52	0.50	0.16	5.22
Essex	1.92	0.53	0.10	0.02	2.57
Franklin	1.81	0.28	0.07	0.02	2.17
Hamilton	0.82	0.04	0.01	0.00	0.87
Jefferson	3.03	2.17	0.63	0.20	6.03
Lewis	0.74	0.17	0.04	0.01	0.96
St. Lawrence	1.76	0.54	0.13	0.03	2.46
Total	2.68				

table 4-2

LAND DEVELOPMENT IN THE NORTH COUNTRY REGION

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

MRLC Definitions:

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

Developed, Low Intensity: Includes areas with a mix of constructed materials and vegetation. Impervious surfaces account for 20-49% of total cover. These areas most commonly include single-family housing units.

Developed, Medium Intensity: Includes areas with a mix of constructed materials and vegetation. Impervious surfaces account for 50-79% of the total cover. These areas most commonly include single-family housing units.

Developed, High Intensity: Includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses, and commercial/industrial. Impervious surfaces account for 80 to100% of the total cover.

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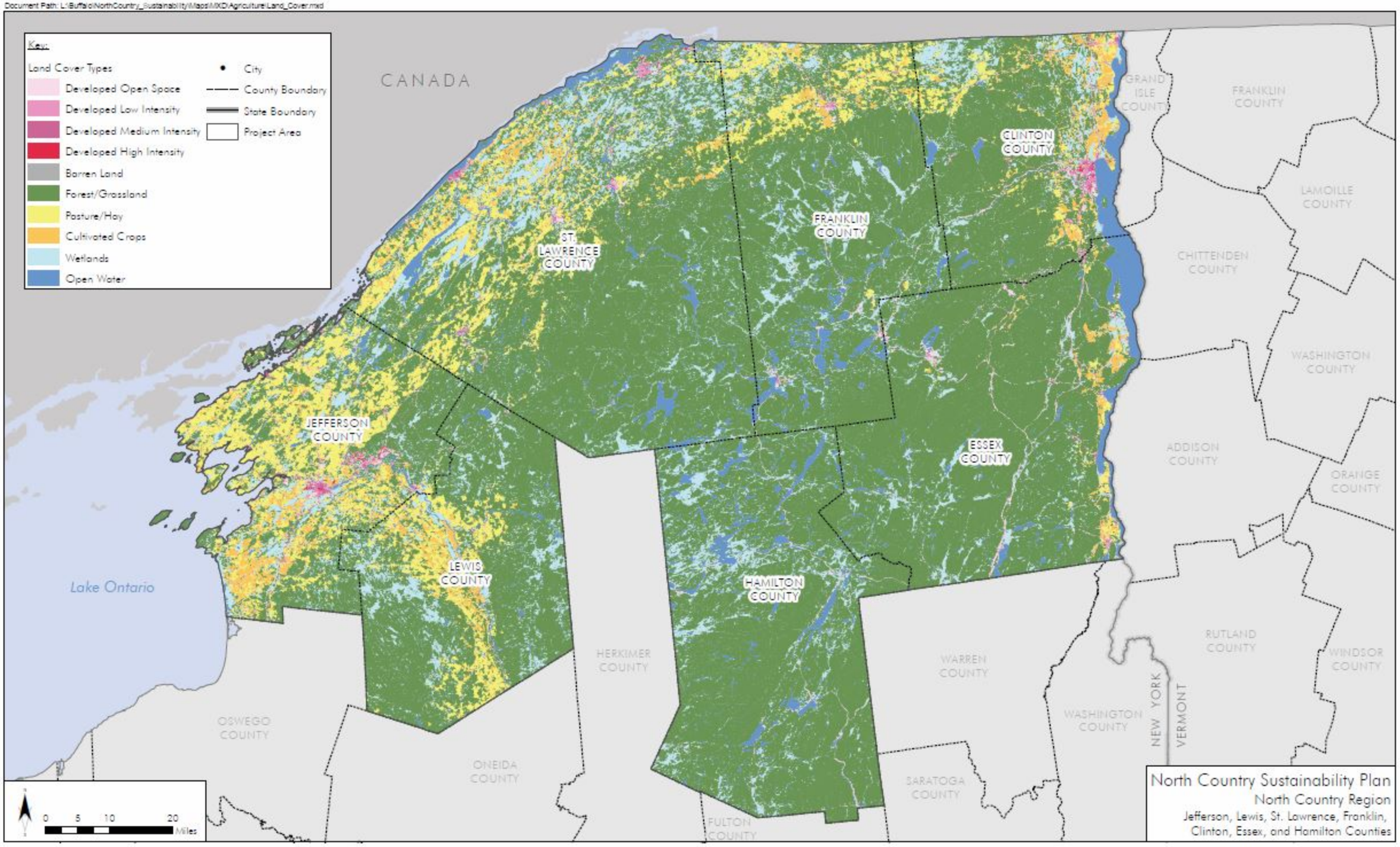


figure 4-1

LAND COVER IN THE NORTH COUNTRY REGION

Living Communities and Land Use Goal 2: create and update comprehensive plans as a means to improve sustainable practices

Comprehensive plans can provide a foundation for sustainable community development. Engaging citizens in the planning process is critical to identifying public support or concerns surrounding sensitive land uses and establishing sound policy choices for the community. In addition, education and outreach to elected officials will help direct their attention to smart growth development trends and how they can be applied to their communities. Comprehensive plans should consider zoning updates for mixed-use zoning and renewable energy installations and strategies for freight transport, public transportation, and adaptation to weather-related impacts.

Livable Communities and Land Use Goal 2: *create and update comprehensive plans as a means to improve sustainable practices*

OPPORTUNITIES

There are opportunities for improving local planning efforts and supporting the increase of comprehensive plans across the region. While a number of communities have outdated plans or have yet to engage in a comprehensive planning effort, there are a number of communities which have undertaken this work. There are local models which are specific to the small city or rural nature of the region which can be utilized. Support for planning efforts is increasing as constituents begin to see the collective impact of the lack land use planning. Groups interested in supporting agricultural interests and those interested in improving multi-modal transportation choices such as walking and bicycling lead the process in some locations. In addition, severe weather-related events such as Hurricane Irene and the low snow winter of 2011 are raising awareness of climate-related impacts.

There is a rich resource in the public and private educational institutions in the region which could be active participants in this process. They could fill data gaps, and provide technical support if engaged. Sharing of success stories and local best practices of completed plans will help temper local concerns and help move planning forward.

BARRIERS

Barriers to progress vary across the region. In many locations local government lacks the political interest or will to develop comprehensive plans. Within some communities some businesses and residents believe that local zoning plans, let alone plans that look to implement new sustainability practices, could limit commercial and residential growth.

Within the Adirondack Park some residents are under the impression that the State has provided comprehensive plans through the Adirondack Park Agency (APA). While state-wide planning is in part managed by the APA, many development and land use issues are not overseen by the APA, leaving no local oversight of critical community issues.

Local jurisdictions in some cases lack the financial resources, staff availability and/or technical knowledge to undertake these efforts. In the North Country, two counties (Hamilton and Franklin) lack a county level planning office. Daily heavily workloads require staff to address immediate needs before considering longer term efforts.

Livable Communities and Land Use Goal 2: *create and update comprehensive plans as a means to improve sustainable practices*

INDICATORS

A jurisdiction's Comprehensive Plan forms the basis of the jurisdiction's goals as they relate to enhancement, growth, and development and generally focuses on the built and natural environments, public infrastructure, and related land use issues. New York State law requires that zoning codes (land use regulations) be in agreement with the policies found in the Comprehensive Plan.

1. *Municipalities with a Comprehensive Plan that has been updated within the last 5 years.*

BASELINE ASSESSMENT

As of 2008, two of the seven North Country counties (Clinton and St. Lawrence) had written Comprehensive Plans, and 54% of municipalities had prepared Comprehensive Plans. A breakdown of the towns within the North Country that had prepared a Comprehensive Plan in 2008 is presented in *table 4-3 on following page*. Recent discussions with county departments indicates that written Comprehensive Plans are in progress and/or have been recently approved for Jefferson and Lewis counties; Elizabethtown, Lewis, Newcomb, Saranac Lake, and Willsboro (Essex County); Arietta and Inlet (Hamilton County); and Philadelphia (Town and Village), Wilna, and Le Ray (Jefferson County).

SUGGESTED TARGETS:

- *Increase the region-wide percentage of municipalities with a comprehensive plan updated within the last 10 years to 60% by 2020, 75% by 2035, and 85% by 2050.*

County	*Municipalities with a Written Comprehensive Plan*	*Total Number of Municipalities*	*Percentage of Municipalities with a Written Comprehensive Plan*
Clinton	17	19	89%
Essex	15	21	71%
Franklin	5	24	21%
Hamilton	6	10	60%
Jefferson	26	43	60%
Lewis	10	26	38%
St. Lawrence	23	46	50%
Total	102	189	54%

table 4-3

NUMBER OF COMPREHENSIVE PLANS FOR NORTH COUNTRY TOWNS, VILLAGES, AND CITIES

Source: Land Use Planning and Regulations NYS 2008, Appendices B and C.

Living Communities and Land Use Goal 3: improve the resiliency and adaptability of communities to climate-related impacts

There is a need to address safety issues related to increased storm events and other natural disasters and impacts associated with weather. In the ClimAID Synthesis, Responding to Climate Change in New York State (NYSERDA 2011), the North Country is included in both Region 6 (Tug Hill Plateau) and Region 7 (Adirondack Mountains). Climate-related issues for these geographic areas were also noted in the Confronting Climate Change in the US Northeast document (NYSERDA 2011).

The rural nature of the region provides opportunities for improved preparedness and planning. Recent events such as the spring 2011 regional flooding, Hurricanes Irene and Sandy, and the life, property, and infrastructure damage associated with them, indicate that the North Country is vulnerable and that early preparation could mitigate the scope of future impacts. The development of resiliency and hazard mitigation plans is an important step towards improving a community's ability to effectively deal with severe weather events. A review of historic weather data shows that the climate of the Northeast region is moving towards overall higher temperatures, resulting in winters with less snowpack and more rain and summer seasons with drought-like conditions (NYSERDA 2011). The expectations for weather-related impacts for the communities in the North Country include:

- ***Reduced snowfall,*** *resulting in lower rates of tourism (snowmobiling, winter sports) in the winter.*
- ***Increased rain events,*** *resulting in damaging rainfall/flooding.*
- ***Drought conditions*** *in the summer, resulting in changing agricultural conditions (reduced viability for certain crops, reduced yields from dairy cows), as well as impacting fish populations.*

Livable Communities and Land Use Goal 3: improve the resiliency and adaptability of communities to climate-related impacts

OPPORTUNITIES

The greatest opportunity for energizing local residents and governments around resiliency and reducing climate impacts have come from a series of serious, weather events over the last number of years. The North Country has seen the impact of severe flooding, hurricanes and winters with practically no snow – events that have devastated communities both physically and economically. These and other severe events nationally have brought people and communities together for the first time to talk about the impact on the livelihoods, communities and environment. As these events have reinforced, the North Country, due to its strong agricultural economy and its outdoor recreational pursuits are highly susceptible to changes in weather that is more closely being linked to climate change.

While winter climate impacts are more visually apparent, a lack of snowfall impacts all seasons, with increased drought conditions, reduced recreational water activities, and an increase in threat of fire.

Many recreational lands offer multiple opportunities for outdoor activities. Businesses have begun to assess climate impacts and investigate agricultural practices and new businesses or sports models to keep visitors and tourist coming to the region. Ski and snowmobile operations may need to be adapted by adding new equipment or limiting operations to smaller less impacted regions. In addition, new activities, such as mountain biking may expand as the shoulders of some seasons are expanded.

BARRIERS

The region is highly engaged in dairy farming and the raising of crops to support dairy operations. Farmers and farm organizations will need to work together to understand emerging impacts and may want to look to southern dairy producing areas of Pennsylvania and other locations to see how these regions are dealing with heat and water impacts on farm production. Some winter activities such as Nordic skiing and snowmobiling may have difficulty as the weeks with adequate or predictable snow patterns may reduce visitors to the region.

Livable Communities and Land Use Goal 3: *improve the resiliency and adaptability of communities to climate-related impacts*

INDICATORS

The first step in taking action towards climate resiliency is regional and community awareness.

1. *The number of communities participating in FEMA's National Flood Insurance Program (NFIP) Community Rating System (NYSERDA Climate Adaptation Indicator).*

   This FEMA program is available nationwide, and supports community awareness of flood impacts. Communities enrolled in this program are encouraged to take steps to reduce their risk of flood potential, and can increase eligibility for flood insurance discounts by participating.

2. *The degree to which climate adaptation is discussed within the region's Hazards Mitigation Plans and their 5-year updates (NYSERDA Climate Adaptation Indicator).*

   This indicator represents a measure of a county's preparedness for potential climate impacts.

BASELINE ASSESSMENT

As of December 2012, no North Country villages, towns, or cities were listed as "current" in FEMA's NFIP Community Rating System (CRS).

There is limited North Country data regarding Hazards Mitigation Plans at this time. Additional data is anticipated to be available by the end of 2013. The current status of available Hazards Mitigation Plans is provided in *table 4-4 (on following page)*.

SUGGESTED TARGETS:

- *For communities within a FEMA designated 100-year floodplain, increase participation in FEMA's NFIP CRS to 50% by 2020, 75% by 2035, and 100% by 2050.*

- *Increase the percentage of North Country counties with Hazards Mitigation Plans (and 5-year updates) that address adaptation to climate-related impacts to 25% by 2020, 50% by 2035, and 100% by 2050*

County	*Hazards Mitigation Plan Status*	*Includes Discussion of Climate Adaptation*
Clinton	Hazards Mitigation Plan expired in June 2012. Clinton County recently applied for grant money to write a new plan.	Not yet available
Essex	Essex County Pre-Disaster Multi-Jurisdictional Hazards Mitigation Plan 2011	No
Franklin	Hazards Mitigation Plan is progress.	Not yet available
Hamilton	Hazards Mitigation Plan in progress via grant funding, in conjunction with Herkimer County.	Not yet available
Jefferson	Jefferson County Multi-Jurisdictional Natural Hazard Mitigation Plan 2011	Yes (once, related to drought)
Lewis	Lewis County Multi-Jurisdictional Natural Hazard Mitigation Plan 2010	Yes (once, related to drought)
St. Lawrence	In progress. Deadline for completion is October 2013.	Not yet available

table 4-4

STATUS OF COUNTY HAZARD MITIGATION PLANS

Source: Stakeholder contacts (via email, phone)

Living Communities and Land Use Goal 4: include public health in land use planning and sustainability initiatives to encourage healthy communities

There is a strong correlation between the built environment and public health levels enjoyed by a community. The North Country is rich in outdoor recreation opportunities during all four seasons. Opportunities for community members of all ages to walk, hike, paddle, swim, ski, and bicycle provide simple ways to integrate health into daily activities. However, there is more to public health than recreation. It includes access to fresh and healthy food options, access to healthcare and wellness services, and minimizing potential threats from environmental contaminants. Community amenities also add to the overall well-being of an area and can include services such as transportation for the elderly and disadvantaged, mental health support services, and education and outreach to community members on available programs.

Livable Communities and Land Use Goal 4: include public health in land use planning and sustainability initiatives to encourage healthy communities

OPPORTUNITIES

Many North Country residents live near recreational opportunities, whether large sub-regions such as the Adirondacks or the Thousand Island Recreational Area, or close to local parks, rivers, and facilities in their towns and cities. Low population densities mean relatively low demand for resources.

Local food sources are growing across the region. The region has embraced the local food movement and while distribution can still be limited, non-profit organizations and for profit companies are providing more options. Being a rich agricultural region should allow for the expansion and improvement of food sources to residents. Local food production is rising in the region and consumers are beginning to find and use local distribution locations for local and imported foodstuffs.

While areas of sprawl can be found within the region, much of the city and town development is older and small scale in nature and built in a compact manner. These compact land use patterns mean the opportunity for improving walking and bicycling options are more easily achieved than in a less densely developed suburban environment.

BARRIERS

In some communities the local population is not aware of the recreational opportunities available to them. Residents discuss that they lack information on access, and discuss how tourists and visitors have better access to recreational information than they do about the lands right outside their door. In addition, access can be limited by long distances to reach some locations and the need for a car or other transportation to get to many regional locations.

Local food consumption is complicated by a need to link local producers to consumers. With local foods production increasing, more distribution and sales locations will increase local food market penetration. A short growing season limits the year-round production of vegetable and other foods. While proposals for renewable projects may increase low-cost energy for more cold-season production this has yet to be properly explored.

Livable Communities and Land Use Goal 4: include public health in land use planning and sustainability initiatives to encourage healthy communities

INDICATORS

Although there are a variety of potential indicators available to measure public health, these two were selected because of the limited access that many regional communities have to a year-round grocery store, and the ability to connect this goal with the Working Landscapes goal to increase the local production and processing of agricultural products within the region. In addition, three counties in the region (St. Lawrence, Jefferson, and Lewis) are reported by the NYS Department of Health as having obesity rates higher than the state average (above 25%).

The density of grocery stores within a county represents a link between the livability of communities and the well-being of its residents. Residents are more likely to maintain a balanced and nutritious diet if healthy foods are readily available and affordable within the community. In the rural communities that comprise a large portion of the North Country, there are often more convenience stores than grocery stores, and they typically do not provide the same fresh food options as larger grocery stores. The scattered and low levels of population make it difficult for full-service grocery stores to be financially viable in many areas of this region. Alternatives such as backyard gardens, food stands, and canning and freezing of homegrown produce are cost effective for residents and a healthy food option without the chemicals and preservatives of many processed foods. The future of these long-standing practices may be at risk, as future generations may require dual-income households, long commutes to and from work, and other time requirements that have made options such as home canning no longer feasible in today's busy households.

Cooperatives and bulk purchase programs may provide viable options for some communities. Additionally, informal car pools and errand sharing by neighbors also increase access to grocery needs. Finally, senior centers, schools, and churches can provide opportunities for bulk buying and centralized cooking that have the potential to provide healthy food choices.

The density of seasonal farmer's markets within a county also has a direct link to healthy communities because of the correlation between access to fresh produce and the nutrition and diet of residents. This can be especially important in rural areas, where the availability of grocery stores is limited (PLFT 2010). However, reliance on standardized data sets may be limited in this region, where a growing number of residents are finding food-security through gardening and homesteading. Discussions with stakeholders indicated that some regional residents are using homesteading skills to provide their food, save money, and become more self-reliant. In addition, Amish farm stands, most notably in St. Lawrence County, provide fresh foods and food products. The USDA also reports that 10-25% of the farms in the region have some level of direct sales to consumers.

1. *Grocery stores per capita*
2. *Farmer's markets per capita*

Livable Communities and Land Use Goal 4: include public health in land use planning and sustainability initiatives to encourage healthy communities

BASELINE ASSESSMENT

Grocery stores per capita

On average, there are 0.35 grocery stores per 1,000 people in the North Country, with a total of 121 grocery stores operating in the region. However, the available data includes large grocery stores and supermarkets, and may not account for smaller general stores and seasonal grocery stores that are common in the region. Forty-six towns and cities in the North Country (34%) are considered "food deserts" by the USDA. A food desert is defined as a "low-access community" where one-third or more of a population resides more than 1 mile from a grocery store in an urban area, and more than 10 miles from a grocery store in a rural area. The county with the highest percentage of towns and cities considered food deserts is Lewis County (76%), followed by Hamilton County (67%) and St. Lawrence County (45%). Jefferson County is the only county within the North Country that doesn't have any food desert locations. For further detail, county data is provided in Table 4-5.

Farmer's Markets per Capita

According to USDA 2011 data, there are 0.12 farmer's markets per 1,000 people (for a total of 41 farmer's markets) in the North Country, with Jefferson County hosting the most markets. Several regional sources, such as the Adirondack Farmers Market Cooperative, Adirondack Harvest, and Gardenshare in St. Lawrence County suggest that the number of farmer's markets within the region may be increasing. Table 4-6 provides USDA county-level data on farmer's markets in the region.

SUGGESTED TARGETS:

- Increase the number of Grocery Stores and Farmers Markets per Capita in the region as shown in *table 4-7 (on page 116)*.

- In addition to the number of stores and markets, location should be strongly considered to give better access to those areas not served by a grocery store or farmer's market. For example, Jefferson County falls below the regional baseline for grocery stores per 1,000 population, yet it has the highest number of farmer's markets and no areas classified as food deserts. In Clinton County, the towns of Clinton, Dannemora, and Ellenburg could be easily served by one additional store situated between them. However, grocery options in Chateaugay (less than 15 miles from Clinton and Ellenburg) or Plattsburgh (less than 15 miles from Dannemora) may already be sufficient for residents of these towns when combined with seasonal fresh foods from backyard gardens.

County	*Hazards Mitigation Plan Status*	*Grocery Stores / 1,000 population (2009)*	*Food Desert Locations (towns and cities)*	*Percentage of Towns and Cities Considered Food Deserts*
Clinton	22	0.27	Clinton, Dannemora, Ellenburg	20%
Essex	21	0.56	Minerva, Newcomb, North Hudson	17%
Franklin	14	0.28	Bangor, Brandon, Dickinson, Moira, Santa Clara, Waverly	30%
Hamilton	3	0.61	Arietta, Benson, Hope, Lake Pleasant, Morehouse, Wells	67%
Jefferson	26	0.22	None	0%
Lewis	5	0.2	Croghan, Diana, Greig, Lewis, Leyden, Lyonsdale, Martinsburg, Montague, New Bremen, Osceola, Turin, Watson, West Turin	76%
St. Lawrence	30	0.28	Brasher, De Kalb, De Peyster, Edwards, Fowler, Hammond, Hermon, Hopkinton, Lawrence, Macomb, Morristown	45%
TOTAL	121	0.35 (avg.)	46 Towns and Cities	34%

table 4-5

GROCERY STORE DATA FOR THE NORTH COUNTRY REGION

Source: Economic Research Service (ERS), U.S. Department of Agriculture (USDA) Food Environment Atlas.
http://www.ers.usda.gov/data-products/food-environment-atlas/go-to-the-atlas
USDA Economic Research Service Food Desert Locations
http://www.ers.usda.gov/data-products/food-desert-locator/go-to-the-locator.aspx

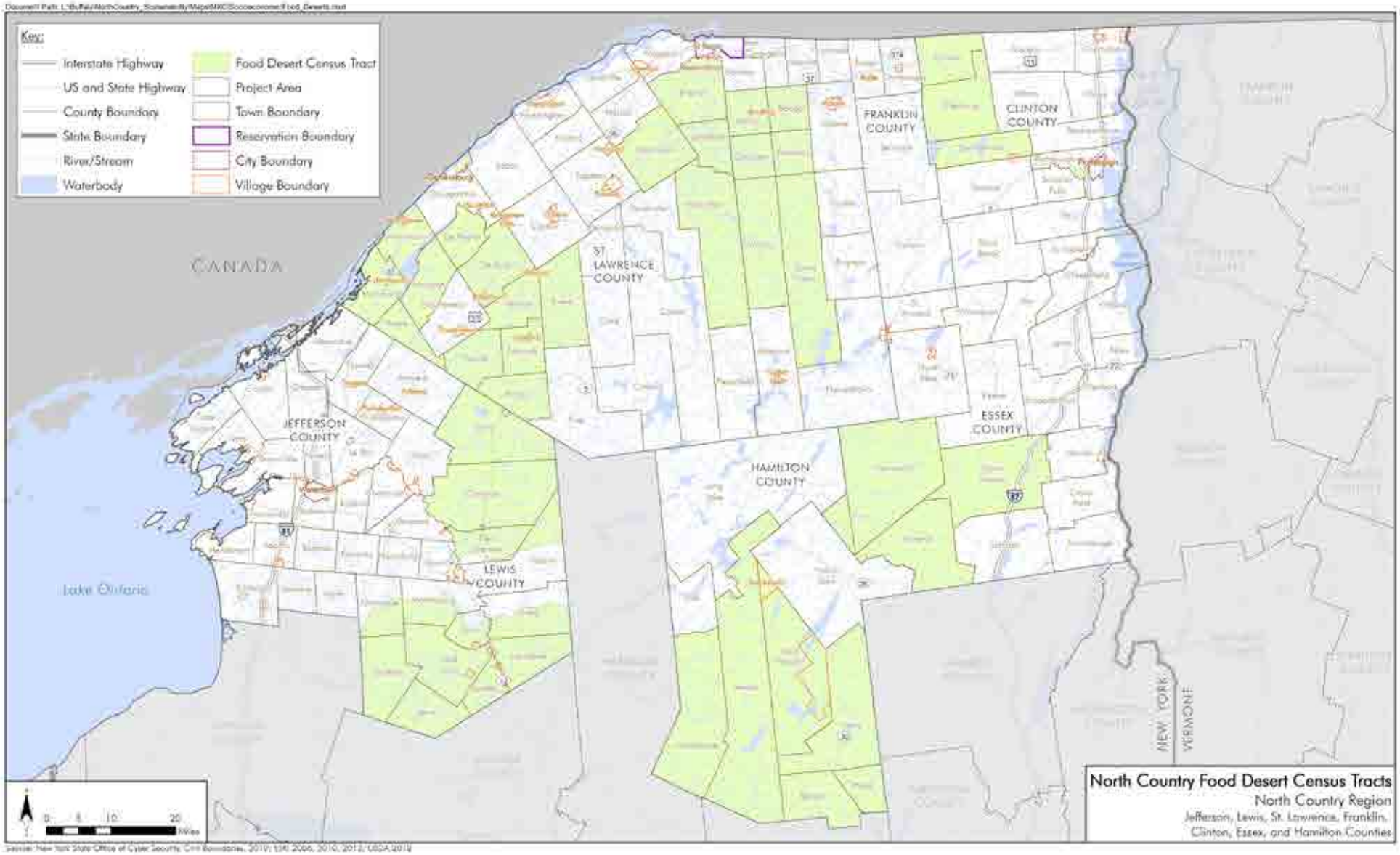


figure 4-2

FOOD DESERT LOCATIONS IN THE NORTH COUNTRY REGION (2009)

County	*Number of Farmer's Markets (2011)*	*Farmer's Markets/1,000 Population (2011)*
Clinton	5	0.07
Essex	6	0.16
Franklin	6	0.12
Hamilton	1	0.21
Jefferson	14	0.12
Lewis	2	0.08
St. Lawrence	7	0.07
Total	41	0.12 (avg.)

table 4-6

FARMERS MARKETS IN THE NORTH COUNTRY REGION

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

Year	*Grocery Stores/1,000 Population*	*Farmer's Markets/1,000 Population*
2020	0.36 (124 stores)	0.15 (51 markets)
2035	0.38 (131 stores)	0.18 (61 markets)
2050	0.40 (138 stores)	0.20 (68 markets)
Total	41	0.12 (avg.)

table 4-7

SUGGESTED TARGETS FOR GROCERY STORES AND FARMERS MARKETS[1]

1. Number of stores/markets estimated based on baseline assessment population.

Living Communities and Land Use Goal 5: develop sustainability programs in local schools and colleges to develop, instill, and demonstrate concepts of sustainable land use practices

In rural communities, where public facilities and community centers are often limited, school buildings frequently serve as community centers. Schools are often the largest building in a community and can be used to encourage education on sustainability and serve as sites for pilot programs.

Livable Communities and Land Use Goal 5:

develop sustainability programs in local schools and colleges to develop, instill, and demonstrate concepts of sustainable

OPPORTUNITIES

For many towns, public schools are the focal point of the community. For these communities the development of sustainability programs within the curriculum as well as retrofits and energy improvements of buildings have a direct impact on students and residents. These programs have "high impact" on residents through their relationship with the school as the center of community.

In addition to the public school system, the schools of higher education provide both those attending and the community with access to information about how sustainability principles can positively impact their lives. Students who remain in the region bring the practices they have learned or just seen back to their communities

BARRIERS

Most public education in New York State is constrained by tight fiscal responsibilities that require boards of education to stick strictly with delivering quality education as affordably as possible. The development of sustainability curriculums or undertaking projects such as building heating programs can be difficult to fund and fiscally support. In addition many capital improvement projects require additional layers of non-local approval to install or implement, these can cause long-term delays or make projects unviable.

In both the public and higher educational sectors the region could benefit from increased communications and coordination of programs, sharing of resources and the development of "starter programs" that could help those who have not yet gotten involved get underway with program development. Colleges and universities can act as incubators for new ideas but moving these concepts off campus and into the communities requires additional support, communication and funding.

Livable Communities and Land Use Goal 5:

develop sustainability programs in local schools and colleges to develop, instill, and demonstrate concepts of sustainable

INDICATORS

Reinforcing schools as the center of each community creates a unique opportunity to support opportunities for facility-level sustainability efforts such as renewable energy, conservation, and recycling. Many programs are already in-place through NYSDEC for recycling, toxics reduction, and air quality assessments. The existing conditions within the 66 school districts in the North Country region mirror many of the problems of budget and enrollment fluctuations and aging infrastructure faced by New York State as a whole, as well as nationally. As a result, there are excellent opportunities for innovation.

1. *Percentage of schools with sustainability outreach and education.*

BASELINE ASSESSMENT

There is limited data regarding sustainability programs in regional schools at this time, but data collection can be completed in the future through the recommended projects described below. Several sustainability outreach and education initiatives are underway, some of which were discussed in the Common Themes chapter of this plan. A metric for higher education institutions could include the number of institutions that have a sustainability coordinator position.

SUGGESTED TARGETS:

- Increase the percentage of North Country K-12 school districts that have sustainability-related programs, and the percentage of higher education institutions that have a sustainability coordinator position to 25% by 2020, 50% by 2035, and 75% by 2050.

LIVABLE COMMUNITIES AND LAND USE IMPLEMENTATION STRATEGIES

The following priority implementation strategies have been developed to meet Livable Communities and Land Use goals of revitalizing Main Streets, creating comprehensive plans, improving climate resiliency, supporting healthy communities, and developing sustainability programs for education.

Implement pilot projects for Main Street redevelopment and supportive guidelines and ordinances. Use successful outcomes as the basis for future projects.

Provide funding and staffing resources to support the development of local planning, including Hazard Mitigation Plans and Comprehensive Land Use Plans.

Encourage healthy communities through nutrition awareness and providing healthy local food choices.

Promote educational opportunities and develop knowledge networking to connect schools and enable them to share sustainability projects and programs across the region.

Living Communities and Land Use Strategy: implement pilot projects for main street redevelopment and supportive guidelines and ordinances; use successful outcomes as the basis for future projects.

The North Country has abundant locations that could serve as demonstration projects for implementing Main Street redevelopment pilot projects. In both public meetings as well as across a number of Focus Area Working Groups residents and members discussed the importance of focusing civic improvements and redevelopment within the borders of existing cities, towns and villages.

Locations that may offer the strongest opportunities may be locations with mixed building stock, some well-maintained and cared for anchor properties, but also with properties that hold redevelopment or improvement opportunities. These locations usually already have existing groups providing local redevelopment support that could act as project supporters. In addition, communities already looking to balance issues of vehicle congestion with pedestrian and business access could provide pilot opportunities.

These conditions can impact land use patterns, development, and walkability, and be showcases if redevelopment can strike a balance that the community can embrace. The City of Malone has been working on the issues of transportation and Main Street Redevelopment and could be part of initial project discussions.

EXAMPLE PROJECTS

Use Complete Streets Guidelines

Redevelop streets in downtowns centers to offer more convenience, safety, and attractiveness to pedestrians, retail stores, and other development. Allow for multi-modal transportation options when possible, including enhanced bike and pedestrian networks within communities. Consider opportunities for storm water management and other infrastructure improvements.

Consider Conservation Development Ordinances

Communities can promote more compact development patterns by adopting Conservation Development ordinances, such as Conservation Subdivision Regulations. While these do not necessarily push development into existing municipal centers, they are generally preferable to traditional subdivision patterns. In addition to the development of template or model ordinances for Conservation Development, the region can assess and determine the number of communities in the North Country with existing Conservation Development ordinances.

Living Communities and Land Use Strategy: provide funding and staffing resources to support the development of local planning, including hazard mitigation plans and comprehensive land use plans.

Many local communities do not have the resources to develop locally supported comprehensive plans. Additionally, many local jurisdictions are not comfortable in bringing in outside planners to develop non-local or cookie-cutter land use plans that do not meet the local needs of these communities. To provide the needed support, a region wide training and technical support program is recommended, which can provide on-site assistance to communities within the region. Education on the importance of planning for community growth and the mitigation of hazards such as the safety of critical infrastructure is another important strategy that should be supported by a regional trainer. The New York State Tug Hill Commission has developed a program called Circuit Riders. The Riders assist communities with planning support. A similar model focused on comprehensive planning, could move the region forward with local planning. To ensure that local government and residents fully support the program and embrace the effort it will be important that these staff have local knowledge and are assigned to the local government. A neutral, non-partisan organization would need to provide organizational management.

EXAMPLE PROJECTS

Create a Municipal Sustainability Manual

Education of local governmental staff will begin the process of instilling the importance of sustainable practices into various levels of government. A practical guide based on local experience, projects and programs will help people understand that these new practices are practical and can bring long-term cost savings to local government.

Provide funding and technical assistance for the development of hazard mitigation plans (HMP)

Develop HMPs for towns in accordance with the established targets. Educate municipal participants about adaptability strategies that should be included in an HMP, or added as an addendum (if a plan is already in place). A region-wide workshop would provide an excellent venue to educate and share ideas among participants.

Living Communities and Land Use Strategy: encourage healthy communities through nutrition awareness and providing healthy local food choices.

Education and food availability are the two primary ways to promote nutrition and healthy eating habits within the region. Often, nutritional education is provided in the home, where residents grow up with backyards gardens and rely on homegrown produce in the summer and canned/jarred fruits and vegetables in the winter. However, not all have access to fresh food or understand the value of nutrition. In some cases, fresh foods can be costlier than processed, which makes them less desirable to consumers. A developing movement to support locally grown and produced foods in region offers new opportunities to connect local producers to consumers, and to increase the availability of healthy foods in communities. The region should capitalize on this movement to expand the number of farmers markets, CSAs, and distribution centers. Education on healthy food choices should be expanded through supermarket programs and schools.

EXAMPLE PROJECTS

Encourage Programs to Support Healthy Food Choices

Expand successful programs that educate consumers on healthy food choices to additional locations. Supermarket Smarts in Clinton County provides free grocery store tours led by a registered dietician. Adopting Healthy Habits in Jefferson County is providing small grants (up to $5,000) to projects aimed at increasing awareness of and access to fitness and fresh food options to low-income families.

Additional projects related to this strategy are described under Working Landscapes:

- Food Hubs
- Create Retail Market Space for Fresh Food Vendors
- Establish entities to connect local farmers with local consumers

Living Communities and Land Use Strategy: promote educational opportunities and develop knowledge networking to connect schools and enable them to share sustainability projects and programs across the region.

One of the key findings of the North Country plan has been the understanding that there is already a wealth of information, ideas, programs and people engaged in sustainability practices and projects. A goal of the plan was to begin to bring these resources together, and the strategy moving forward is to create a website to act as a central depository for information, projects, education, resources and funding opportunities. The primary need moving forward will be to determine the details which will support this long-term effort, including hosting, data management, and idea sharing. Currently a number of websites exist that could be grown to support this effort, or a new site could be developed.

EXAMPLE PROJECTS

Establish a Sustainability Curriculum

Encourage all 10 of the higher education institutions in the region to include a sustainability program in their curriculum (currently available at four schools).

Develop Educational Components with Energy Savings

Promote community based educational programs, such as the Local Living Venture, that teach workshops and classes on sustainability concepts such as using local and seasonal foods, renewable energy and energy efficiency in, and engage members in idea sharing.

School Sustainability Survey

Create a survey for distribution to K-12 school districts and colleges in the North Country to identify which and colleges have sustainability-related programs. With this information, design future tasks to expand sustainability programs in the region

Fueling the Regional Economy

(a case study)

CHALLENGE:

Economies run on energy, and economies that can produce their own energy have more control of their futures than those that depend on others for all their power. The North Country has solid hydropower and wind resources, but needs to develop other local renewable energy resources in order to keep energy dollars from leaving the region and reduce greenhouse gases, and gain more control over its economic future.

OPPORTUNITY:

North Country farmers could increase income and put fallow lands back into use by adding energy as one of the things the farmers grow. Biofuels are natural solar power plants. Growing plants convert sunlight to sugar that can be stored and then released through burning. The question is what sorts of these solar collectors might work best in the North Country?

ACTION

Put a fast growing crop into the mix

Shrub willow has received increasing interest as a biomass fuel. "We can grow more tons of wood per acre per year with willow than with any other crop in the Northeast," said Tim Volk, Project Director for SUNY-ESF's willow biomass program. "The willow also grows well on marginal farmland which means we don't compete with other crops we need for other uses."

Usual cutting regimes for shrub willow harvest the product every three years, and a typical planting can be harvested seven times before a new planting is needed because the willow can sprout from the roots once it is cut. That can mean more than twenty years of harvests from one planting.

The willow wood, converted to chips or pellets, can be burned though gasification at power plants and produce electricity. According to Volk, gasification of willow yields 16 units of energy for every energy unit put into production. Corn, by comparison, yields just 1.4 or 1.3 units relative to the energy used to grow and harvest the corn.

Those numbers have attracted the attention of the USDA Farm Service Agency, which announced a Biomass Crop Assistance Program (BCAP) for the production and use of shrub willow for nine counties in Central and Northern New York. The county list includes Clinton, Essex, Franklin, Herkimer, Jefferson, Lewis, Oswego, Oneida, and St. Lawrence.

"This is a sort of jump start to establishing commercial shrub willow production," said Volk. As part of the USDA program, landowners who plant shrub willow could receive up to 75% ($741/acre) of their planting cost, as well as receive a rental payment for their land while it is used for growing willow.

"The rental payment helps farmers who are accustomed to an annual payment cycle with crops," said Volk. Many farmers rely on yearly harvests to support their livelihood, and waiting to harvest willow can be financially demanding on them.

As part of this program, ReEnergy Holdings of Latham, New York has agreed to process the first three cuttings from the willow produced. "This will allow landowners to have an end user buy their product, and it will make them money," said Abrahamson.

Willow plantings under the program are scheduled to take place in the springs of 2013 and 2014, and a total of 3500 acres of shrub willow will be grown as part of the USDA project.

RESULT

Progress toward a local energy harvest

SUNY-ESF's long-term willow program (which began in 1986) has researched ways to increase yields, develop more efficient harvesting schemes, and investigated whether genetic strains of shrub willow yield a higher return.

"There are about 175 species of shrub willow worldwide," said Volk, "which gives us a large potential for genetic improvement." "We are looking to tailor our willow," added Abrahamson. "For instance if it is used to create biofuels, we could use one with more sugars."

Growing willow absorbs carbon dioxide, helping with greenhouse gas reduction. "From a carbon standpoint, we are neutral to the plus side," said Abrahamson. "We want to come off fossil fuels and this is part of the solution."

The hope is that the USDA BCAP will create momentum for the future production and use of shrub willow in central and northern New York by reducing the unknowns of a new product to landowners. These are many of the same areas that once supported a large basket willow industry in the 1800s. "I want to see this go commercial," said Abrahamson. "This will help us put energy in our backyard, so we can quit shipping it overseas."

V

Working Landscapes

CULTIVATE ECONOMIC OPPORTUNITIES BASED ON SOUND ENVIRONMENTAL PRACTICES FOR FARMING, FORESTRY, AND RECREATION

The North Country's working lands have a legacy of economic importance. When the Mohawk and St. Lawrence valleys became primary shipping routes in the 1800s, the adjacent lands became prime sources for timber, iron, animal hides, meat, and hydropower. Farmlands sprung up in the fertile valleys surrounding the forested interiors of the Adirondack and Tug Hill regions. As developments grew, private parks and rustic "camps" became a wilderness destination for a variety of vacationers. The great camps of this era still provide a distinguished architectural style within the region.

In recent decades, significant changes in the regional and national business climate have affected the agricultural and forest industries of the North Country, but the region's resource-rich environment continues to drive its economy. Overseas market prices have brought uncertainty to the forestry market, leading to fluctuations in timber prices and the sale of some privately owned forestland. Extensive forestlands in the North Country lie within and outside of the Adirondack Park boundaries. These forestlands are the source of large volumes of wood and wood products. While most of the forestland outside the Park is privately owned, within the Adirondack Park boundaries approximately half the forestland is owned by New York State and is part of the Adirondack Forest Preserve. Forestland in the Preserve is "Forever Wild," meaning it can never be used to harvest trees or extract other resources. When private forestland within the Park comes up for sale, New York State is often the purchaser. Such purchases by the state keep the land in forest cover. At the same time, it prevents forest resources from being utilized for the production of wood products, which can have a negative impact on the region's forestry industries. In recent years, the state has purchased conservation easements on large areas of working forests to keep them producing economically valuable products, while reserving fee-simple purchases for more ecologically important lands. The result has been a lessening of the economic impact of taking forestland out of wood production.

Zoning codes, tax policies, and a variety of other factors encouraging sprawl have also allowed encroachment on agricultural lands, threatening available farmland. The economics of farming in the past several decades has resulted in the consolidation of farms and fewer farms in the region (USDA 2007). However, recent technological advances and societal changes (e.g., greater interest in locally grown foods, increased demand for dairy products, interest in wood fiber and biomass) appear to favor the farm and forest businesses of the North Country and the natural resources they produce and manage.

In addition, the region's landscapes and waters offer plentiful outdoor activities. The Adirondack Park sees approximately 7 to 10 million visitors a year; however poor enforcement of protective regulations threatens the Park's use as a recreational resource (Visit Adirondacks 2013). The lack of sufficient visitor amenities limits the current economic benefits of Park tourism. Substantial recreational opportunities exist in the region outside of the Park in the Thousand Islands, St. Lawrence River Valley, Champlain Valley, and Tug Hill regions. Equal attention should be given to promote these areas in addition to the Park.

From a bio-regional perspective, the North Country is unique. While forests are ubiquitous in the region, the greatest proportion of woodlands is within the Adirondack Park. Conversely, the greatest proportion of agricultural lands is in the surrounding valleys of the Thousand Islands, St. Lawrence, Champlain, and Tug Hill regions. This arrangement is ideal for developing an arrangement by which the greater Adirondacks serve as the region's "wood basket" and the surrounding valleys serve as the region's "food basket." This arrangement would not only promote greater regional self-sufficiency, but could also significantly reduce GHGs through an efficient regional transport model.

This chapter addresses agricultural businesses and lands, forest businesses and lands, outdoor recreation and related businesses, and the multiple economic and ecological roles fulfilled by those enterprises and lands as they sustain the social, economic, and ecological well-being of the region.

WORKING LANDSCAPES WORKING GROUP

The 32 members of the Working Landscapes Working Group included representatives from each of the seven counties, including municipalities, private companies, county agricultural development units, regional soil and water conservation districts, academia, the NYS Tug Hill Commission, and NYSDEC. Further regional focus was brought by members from the Nature Conservancy, Yellow Wood, Adirondack Mountain Club, Adirondack Sustainable Living Project, and Adirondack Landowners Association.

Through a series of working group and public meetings, regional stakeholders were called upon to identify goals and strategies that would improve the use and management of the region's working lands. Working group discussions emphasized the importance of developing sound planning strategies to develop and maintain an appropriate balance between the social, economic, and ecological roles of the region's landscapes.

The Working Group also identified a number of areas where improvements could be made in the use of farm and forest products and to recreational infrastructure within the region. These improvements would invigorate the economies of communities throughout the region. However, there are multiple barriers to successful change, many stemming from historical planning and management practices.

These include zoning practices that encourage "sprawl-type" development; distribution, transportation, and market access challenges for local food producers; state-owned forestlands within the Adirondack Park boundaries that may never be cut; private forestland vulnerable to becoming non-commercial through sale and/or subdivision; and highly variable levels of recreational infrastructure throughout the region.

Several major themes emerged from these discussions:

1. *Using market-based incentives such as third-party certification (USDA Organic, Sustainable Forestry Initiative, Forest Stewardship Council, etc.) and "locally grown" or regional branding of products as marketing tools to target customers motivated to support more sustainable practices.*

2. *Capitalizing on the availability of advanced boiler technology by increasing the processing of wood fiber produced in the region to heat community facilities and homes*

3. *Meeting the increased demand for fitness in the general population by making hiking, bicycling, canoeing, and other outdoor recreation more accessible to those living in and visiting the region.*

Employing sustainable management techniques in forestry, agriculture, and recreational practices can support economic viability by helping to maintain long-term quality and productivity of the resources upon which each are dependent. The need for sustained production of high-quality agricultural and forestry products is unlikely to diminish over time, despite market fluctuations. Smart conservation of these resources will provide long-term environmental benefits and can provide a basis for ongoing local economic security.

WORKING LANDSCAPES WORKING GROUP, *cont'd.*

Goals:

1. *Promote development of the agricultural & forestry industries, including expansion of existing operations & starting new operations.*
2. *Increase local food & forest product processing & sales within the region.*
3. *Increase the use of biomass to meet the thermal energy needs of the region and beyond.*
4. *Promote tourism and recreation based on the region's natural resources while providing for the long-term maintenance of the region's recreational resources.*
5. *Enhance forest management through increased use of best management practices.*
6. *Upgrade and maintain existing farming infrastructure to improve energy efficiency and reduce farm operating costs.*

Priority Implementation Strategies:

- *Capitalize on existing forest industry infrastructure to make greater use of forestland and underutilized farmland for biomass development.*
- *Support research and development of dedicated energy crops for thermal applications, such as shrub willow, switchgrass, and miscanthus.*
- *Expand availability of local food by encouraging new farmers, while connecting local growers with local markets, including year-round and seasonal residents, schools, institutions, and tourists.*
- *Establish visitor information hubs with concierge-style services in tourist destinations; coordinate outdoor excursions with visitor transportation.*
- *Educate forestland owners on the financial and resource benefits of using the services of professional foresters to manage & develop their resource.*
- *Improve the production capacity of commodity and specialty crops and assist farms with diversification (including agri-tourism) and new business startups.*
- *Incentivize energy audits, upgrades of farm equipment, and methods to enable farmers to achieve production goals using less energy.Promote the expansion of NYSERDA's and other ongoing programs to enhance the rate and scale of energy retrofits.*
- *Establish incentives for energy efficiency and green building projects.*
- *Develop guidance for small-scale power systems.*

Working Landscapes Goal 1: promote development of the agricultural and forestry industries

The objectives of this goal are to support the economic growth of farms *(see tables 5-1 and 5-2, on following two pages)* and forest businesses *(see table 5-3 on page 139)*, strengthening existing businesses, keeping productive farmland and forests actively producing food and fiber, expanding agricultural and forest economic activity, and selectively supporting the expansion of new farmlands where compatible with neighboring land uses.

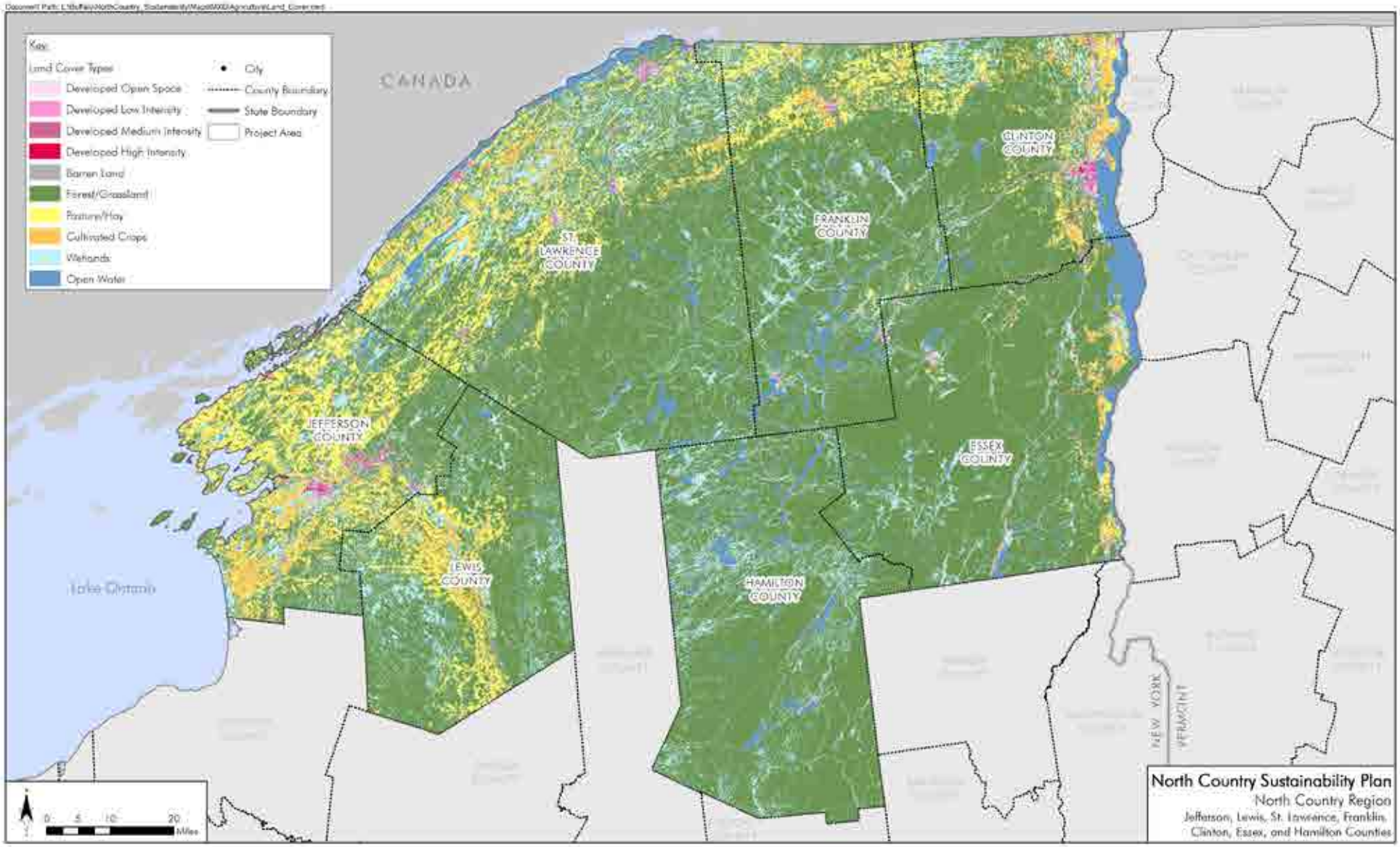


figure 5-1

LAND COVER: AGRICULTURAL AND FOREST

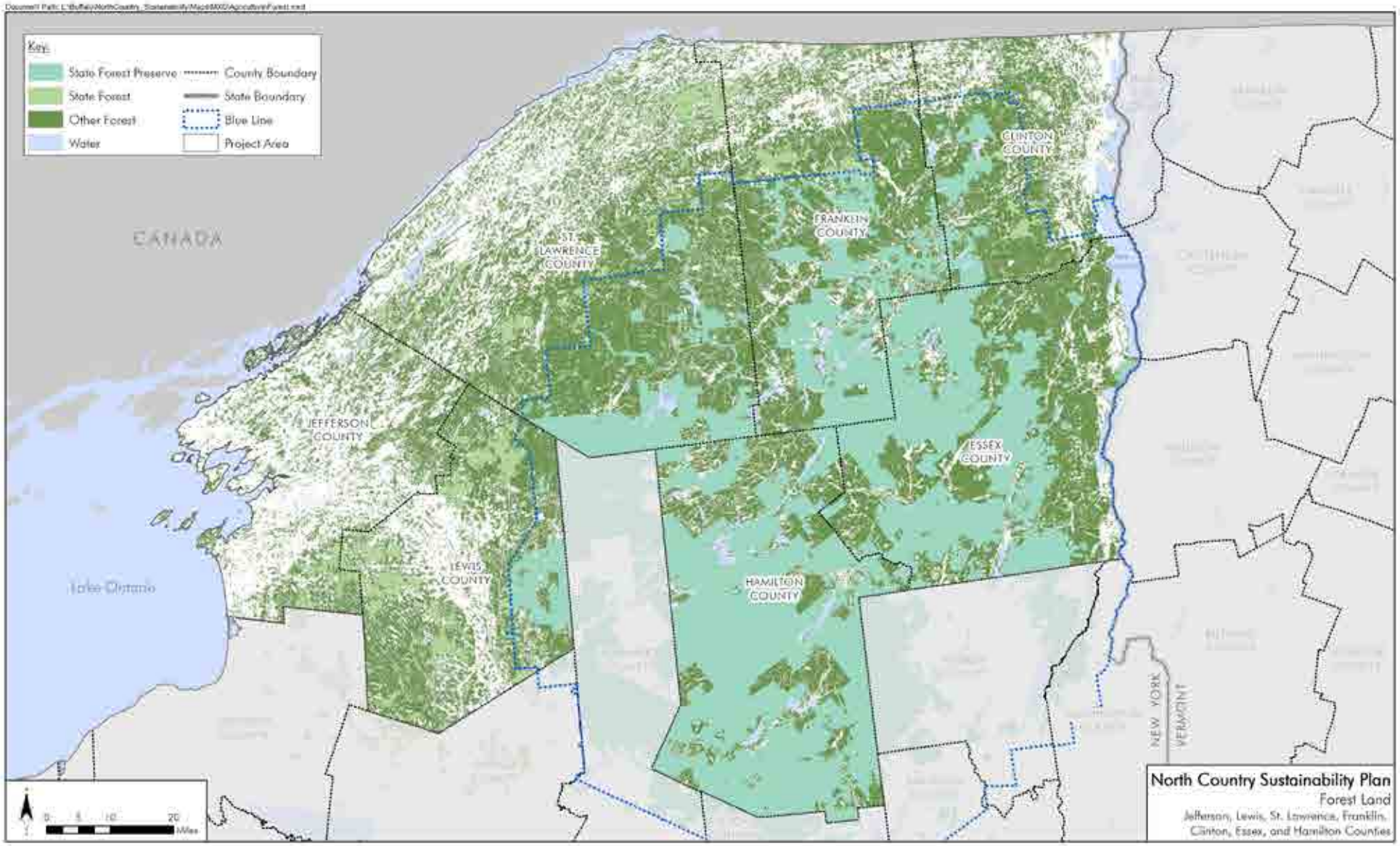


figure 5-2

FORESTLAND:
STATE AND PRIVATE

Working Landscapes Goal 1: promote development of the agricultural and forestry industries

OPPORTUNITIES

The North Country consists of abundant open space, providing significant opportunities to develop its agriculture and forestry industries. An area of significant potential includes the responsible development of its biomass resource. Schools across the region have already made the conversion from fossil fuel based heating systems to biomass (pellets and wood chips) and are realizing substantial savings. The opportunity exists for continued conversions on the institutional level as well as on the residential level. There is potential for the North Country to responsibly develop its biomass resource to not only satisfy increasing local needs, but also as an exportable resource as well. Local jobs can be created to harvest, process, and distribute biomass locally and in adjacent regions.

With a call from Cornell Cooperative Extension to increase maple syrup production in New York State, the region's abundant sugar maple resource and ideal sugaring climate provide opportunities for new farmers to enter into the syrup market, and for existing seasonally-based entities to diversify their income. Ski centers such as Titus Mountain in Malone and Whiteface Mountain in Wilmington are taking advantage of this opportunity for increased income during their shoulder season.

Demand for local food in the region is strong; however several small-scale farmers report the farmers' market venues are saturated. Opportunities exist to grow this demand for locally grown and processed products by educating consumers of the value of local food, including building a willingness to pay higher prices for higher quality food, and for expanding into other markets, such as surrounding metropolitan areas.

Opportunities also exist for private forest owners to continue forestry practices on their land while preserving open space character through conservation easement relationships with the Department of Environmental Conservation (DEC). Several companies and organizations have engaged in these relationships, including Paul Smith's College and International Paper.

Communities have the opportunity to develop a much needed slaughterhouse which would be compatible with industrially zone land use designations. One such facility is proposed in the hamlet of Ticonderoga. Currently all meat from the region must go to Tri-Town Meat Packing Company in Brasher Falls for USDA certified processing.

As local growers pursue value-added options for their produce, there is an increasing need for certified processing kitchens. A small handful of such kitchens exist in the region, however the need far outweighs the supply.

Working Landscapes Goal 1: promote development of the agricultural and forestry industries

BARRIERS

Many barriers exist for regional forest and agricultural industries. Perhaps most significant for farmers is the very slim profit margin. Farmers must balance the demands of paying a fair working wage to employees, complying with strict regulations, paying rising supply and energy costs.

Aspiring young farmers are faced with the challenge of finding affordable land suitable for farming. This is, in part, due to zoning policies which often view open space as a potential for development. While farmers' markets provide a high quality opportunity for local growers to connect with local consumers, many farmers are finding the farmers' market venue to be saturated and an unsustainable method of selling their goods given the off-farm time commitments involved.

To date, one USDA slaughterhouse exists in Brasher Falls. Extremely long wait times and long travel distances make the processing of meat a significant hurdle for livestock growers.

Working Landscapes Goal 1: promote development of the agricultural and forestry industries

INDICATORS

These indicators were selected to provide overall measures of the economically active resource bases for agriculture and forestry in the region. (More detailed data exists for segments of agriculture including major crops, orchards, livestock, etc., which may be useful for determining the impact of specific projects.) Agricultural and forestland cover are shown on *figure 5-1*, and state- and privately owned forestlands are identified on *figure 5-2*. It is assumed that, over time, conversion of farmland and forestland to developed uses will inevitably result in some reduction of farmland and forestland. It is also assumed that an increase in farmland is most likely to result in a decrease in forestland and vice versa, rather than a decrease in developed land.

The "Privately Owned Forestland within the Adirondack Park" indicator documents how much private forestland remains available for wood production and harvesting within the "Blue Line." Note that because of the New York State Constitution's "forever wild" provision with respect to state-owned land in the Adirondack Park, it is unlikely that state-owned land within the Preserve will be transferred to the private sector. There is also a relationship between the acres of cropland and the acres of forest. While some farmland may change to other uses, one significant direction of change is from open land to forestland, which could increase available forestland acreage.

1. ***Farm acreage and products:***
   a. *Number of farms*
   b. *Acreage of land in farms*
   c. *Total cropland*
   d. *Harvested cropland*
   e. *Market value of agricultural products sold*
2. ***Economically productive forests:***
   a. *Privately owned forestland within the Adirondack Park, including land under State Working Forest Conservation Easements that allow for continued forest harvesting. (In general, state-owned forestland within the Adirondack Park may only be used for non-extractive uses. This indicator would track conversion of commercially harvestable timberland to "forever wild" status and other uses that are incompatible with commercial harvests of trees and, therefore, would be removed from the pool of timberland; see next bulleted item.)*
   b. *Timberland acres (i.e., those available for wood production and harvest) throughout the North Country, including state forestlands outside the Adirondack Park.*

Working Landscapes Goal 1: promote development of the agricultural and forestry industries

BASELINE ASSESSMENT

1. ***Privately owned forestland within the Adirondack Park:*** *1,724,042 acres of privately owned forestland within the Blue Line of the Adirondack Park (USGS LULC, 2006)*

2. ***Timberland (private and public forests available for wood production and harvest) in North Country Region:*** *4,058,333 acres (USFS FIA Database, 2010)*

SUGGESTED TARGETS:

Regionally, the number of farms has been trending downward for many decades as farms have consolidated. In some parts of the United States and New York State, however, the number of farmers has actually increased as more people seek to make at least part of their income from producing food or fiber from the land.

The preferred trend for the health of agriculture and forestry would be to keep all farmland and forestland in production. However, it is unlikely that the acreages of both sectors can be maintained over the next several decades due to pressures to develop the land for other purposes, unless all other land development were to take place as re-development of brownfields and other previously developed land. Therefore, the targets reflect the desire to keep all but a very small amount of current farmland and forestland in those uses. While any reductions in cropland and timberland are undesirable, that loss can potentially be offset by increasing the productivity of those lands and producing higher value crops.

County	*Number of Farms*	*Land in Farms (acres)*	*Total Cropland (acres)*	*Harvested Cropland (acres)*	*Market Value of Agricultural Products Sold (in $1,000)*
Clinton	590	149,219	70,891	62,157	124,200
Essex	243	50,226	22,206	16,033	11,459
Franklin	604	130,852	69,691	59,079	68,097
Hamilton	20	450	156	57	362
Jefferson	885	262,331	166,233	147,726	139,242
Lewis	616	167,249	92,028	82,977	112,629
St. Lawrence	1,330	347,246	176,921	146,838	140,151
Total	4,288	1,107,573	598,126	514,867	596,140

table 5-1

FARM ACREAGE AND PRODUCTS

Source: USDA National Agricultural Statistics Service
Census of Agriculture, 2007.

Target Year	*Number of Farms*	*Land in Farms (acres)*	*Total Cropland (acres)*	*Harvested Cropland (acres)*	*Market Value of Agricultural Products Sold*
2020	4,500	Hold at 1,100,000	595,00	Hold at 515,000	$890M
2035	4,800		593,00		$1.34B
2050	5,000		592,000		$2.0B

table 5-2

FARM ACREAGE AND PRODUCTS TARGETS

Source: National Land Cover Database, 2006, Land Cover Dataset

Target Year	*Privately owned forestland within the Adirondack Park (acres)*	*Timberland available for wood production and harvest (acres)*
2020	1,720,000	4,055,000
2035	1,718,000	4,053,000
2050	1,716,000	4,051,000

table 5-3

ECONOMICALLY PRODUCTIVE FORESTS TARGETS

Working Landscapes Goal 2: increase local food and forest product processing and sales within the region

Increase the local processing of food and forest products *(see tables 5-4 and 5-5 on page 144)*. Create and improve markets for local foods, both farm-to-table and wholesale distribution. Label and advertise products as locally produced. Take into account and improve upon seasonal variations in distribution systems and retail store operations.

Working Landscapes Goal 2: increase local food and forest product processing and sales within the region

OPPORTUNITIES

Consumers are increasingly expressing a preference for local and more specialized foods, which they are often willing to pay a premium for. This development presents opportunities for the region's farmers to market their quality products with a North Country brand and to supply value-added products such as cheese, yogurt, sausage, and maple syrup. The implementation of internet marketing and sales and the growing popularity of farmer's markets and community-supported agriculture provide opportunities for growers to market their products directly to an expanding base of local consumers.

Working Landscapes Goal 2: increase local food and forest product processing and sales within the region

BARRIERS

To increase the processing and consumption of meat products produced in the North Country, local growers must overcome the region's shortage of approved slaughter and packing facilities. Currently, animals must be transported long distances to approved facilities. The associated financial cost is a significant disincentive to livestock and poultry producers, especially producers dealing in smaller volumes and specialty animals. The lack of local meat-processing facilities and inspection requirements that are especially burdensome on smaller operations also deter wider direct marketing of meats, including sales to area restaurants. Food safety is a concern around the country, but solutions, such as expediting approval for high-level filtration for small-volume milk producers, are available.

As in much of the rest of the country, farms in the region face the challenge of attracting younger people into the profession. Even individuals with the knowledge and desire to farm face barriers, including sizable financial hurdles and finding available land and facilities. Young farmers and seasoned farmers alike have to overcome limited cash flows and financing challenges if they want to switch to growing new products in order to move into value-added products or to shift into new marketing methods. This may require a more rapid approval and understanding of new technologies, which can make farming easier, and of workable exceptions to many of the existing farming regulations, some of which are based on practices common almost a century ago.

Working Landscapes Goal 2: increase local food and forest product processing and sales within the region

INDICATORS

These indicators were selected from readily available data sets from NYSDEC, NYS Department of Agriculture and Markets, and the USDA to provide a measure of the amount of natural resources used within the region to create value-added food and forestry products. Processing facilities within the region contribute to a stronger economy, and reduce the distance raw materials must be shipped for processing.

1. ***Number of wood-processing facilities in the region:***
   a. *NYS Department of Agriculture and Markets permits: 20C (retail and food processing) and 5A (animal slaughter facilities other than beef and pork)*
   b. *USDA-permitted facilities for processing meat, poultry, and eggs*
2. ***Number of permitted food-processing facilities in the region:***

BASELINE ASSESSMENT

SUGGESTED TARGETS:

- ***Primary wood-processing facilities***
  - *Increase the number of primary wood-processing facilities to 50 by 2020, 60 by 2035, and 70 by 2050.*
- ***Secondary wood-processing facilities***
  - *Increase the number of secondary wood-processing facilities to 65 by 2020, 75 by 2035, and 85 by 2050.*
- ***Permitted food-processing facilities***
  - *Increase the number of 5A Permit Holders to 10 by 2020, 25 by 2035, and 40 by 2050.*
  - *Increase the number of 20C Permit Holders to 590 by 2020, 640 by 2035, and 690 by 2050.*
  - *Increase the number of USDA Permit Holders to 3 by 2020, 6 by 2035, and 12 by 2050.*

Facility Type	*Number of Facilities*
Primary (process trees into finished products or materials for further processing, e.g., sawmills)	40
Secondary (process wood into finished products, e.g., furniture manufacturing)	55

table 5-4

PRIMARY AND SECONDARY WOOD-PROCESSING FACILITIES

Source: NYSDEC Directory of Primary Wood-Using Industry in New York State, 2009. NYSDEC Directory of Secondary Wood-Using Industry in New York State, 2009.

Permit Type	*Regional Permit Holders*
NYS Dept. of Agriculture and Markets 5A Permits	0
NYS Dept. of Agriculture and Markets 20C Permits	541
USDA Permits	1

table 5-5

PERMITTED FOOD-PROCESSING FACILITIES

Source: NYS Dept. of Agriculture and Markets. USDA FSIS Meat, Poultry and Egg Product Inspection Directory

Working Landscapes Goal 3: increase the use of biomass to meet the thermal energy needs of the region and beyond

Make greater use of sustainably grown and harvested biomass in the region to meet energy needs and replace fossil fuels imported to the region. Spur economic activity through demand for local wood and installation of state-of-the-art wood heating/co-generating facilities. Develop a comprehensive assessment of the biomass resource and a comprehensive management plan/implementation strategy to ensure the protection of the region from unsustainable harvesting.

Working Landscapes Goal 3: increase the use of biomass to meet the thermal energy needs of the region and beyond

OPPORTUNITIES

While there is potential for large-scale biomass-to-energy projects, advances in technology are also making it increasingly attractive for schools and other large buildings to use forest products to supply their heat. In addition to providing local jobs supplying the wood, communities and businesses will be able to trim energy budgets and reduce their greenhouse gas (GHG) emissions. Given the region's abundant forest resources and lack of access to low-cost natural gas, there are significant incentives to expand the use of biomass to heat buildings.

Working Landscapes Goal 3: increase the use of biomass to meet the thermal energy needs of the region and beyond

BARRIERS

The region's lack of processing facilities, specifically sawmills and other solid wood products facilities, poses a barrier to local processing of timber products. Some of this timber is currently processed in Canada before re-entering the United States for use within the North Country.

Another barrier, as noted earlier, is a lack of strong data on the availability of biomass as a resource, not only in terms of quantity but also in terms of accessibility and cost to transport. A long-term vision is needed, including a concrete, comprehensive sector development plan to prevent the degradation of the forest resources and to avoid a boom/bust economic scenario. Development of, or at least access to, a biomass market must be fully integrated into any planning activity.

INDICATORS

These indicators provide a relative measure of the extent to which the use of biomass is replacing the use of fossil fuels. The sources of the baseline data include NYSDEC's list of New York State facilities using low-grade/underutilized timber products and wood residue products, the Biomass Energy Resource Center (BERC), and regional stakeholder input. No single comprehensive data source was found for these indicators. However, Tables 5-6 and 5-7 show the types of facilities within the region that are using biomass, and can be used to track progress towards the goal.

1. *Number of utility and community facilities using biomass for energy*

SUGGESTED TARGETS:

- *Increase the number of utility and community facilities using biomass for energy to 30 by 2020, 70 by 2035, and 90 by 2050.*
- *Increase the number of number of biomass manufacturing facilities in the region to 8 by 2020, 12 by 2035, and 15 by 2050.*

Facility Name	*Type*	*Description*	*County*	*Status*	*Fuel Type*
Ausable Valley Middle/High School	Heat	Public School	Clinton	Active	Chips
Keeseville Elementary School	Heat	Public School	Clinton	Active	Chips
International Paper Co.	Heat/Power	Paper Manufacturer	Essex	Active	Chips/Roundwood
The Wild Center	Heat	Museum	Essex	Active	Pellets
North Country School	Heat	Public School	Essex	Active	Chips
Town of Saranac Lake	Heat	District System	Essex	Planned	Chips/Pellets
Petrova Elementary/Middle School (Saranac Lake)	Heat	Public School	Essex	Active	Pellets
ReEnergy Chateaugay	Power for Distribution	20MW Generation	Franklin	Active	Chips
Village of Tupper Lake	Heat	District System	Franklin	Planned	Chips/Pellets
Malone Middle School	Heat	Public School	Franklin	Active	Pellets
ReEnergy Black River	Power for Distribution	30MW Generation	Jefferson	Planned	Chips
ReEnergy Lyonsdale, LLC	Power for Distribution	20MW Generation	Lewis	Active	Chips/Roundwood
South Lewis CSD	Heat	Public School	Lewis	Active	Chips
Edwards-Knox Central School	Heat	Public School	St. Lawrence	Active	Chips
Clarkson University, Walker Center Arena	Heat	Higher Education	St. Lawrence	Active	Pellets
SUNY College of Environmental Science and Forestry, Ranger School	Heat	Higher Education	St. Lawrence	Active	Chips

table 5-6

FACILITIES USING BIOMASS FOR THERMAL OR ELECTRICAL ENERGY PRODUCTION

Source: NYSDEC, New York State Facilities using low-grade/underutilized timber products and wood residue products. Biomass Energy Resource Center (BERC). Regional stakeholder input.

Facility Name	*Description*	*County*	*Status*	*Fuel Type*
Essex Pallet & Pellet	Residential Supply	Essex	Active	Pellets
Associate Harvest, Inc.	Residential Supply	Jefferson	Active	Pellets
USDA Permits	Residential Supply	St. Lawrence	Active	Pellets

table 5-7

BIOMASS MANUFACTURING FACILITIES

Source: NYSDEC, New York State Facilities using low-grade/underutilized timber products and wood residue products. Regional stakeholder input.

Working Landscapes Goal 4: promote tourism and recreation based on the region's natural resources while providing for the long-term maintenance of the region's recreational resources

Promote outreach and education to communities and tourists to create awareness of local recreational resources such as trail systems, facilities, and related services region wide. Recreational trails can improve the quality of community life and tourism opportunities when they are physically connect communities. To serve hikers enjoying the many trails located well outside villages and hamlets, project stakeholders suggested the creation of a circulating shuttle service similar to the popular LL Bean shuttles that operate within Acadia National Park in Maine.

Working Landscapes Goal 4:
promote tourism and recreation based on the region's natural resources while providing for the long-term maintenance of the region's

OPPORTUNITIES

The populations of United States and nearby Canada are generally familiar with the beauty of Adirondack region's mountains, forests, and rivers, but people outside the region are less aware of the diverse and abundant beauty of the North Country outside the Adirondack Park. Opportunities exist, however, to attract greater numbers of recreationists from in and outside the region to enjoy the natural amenities of the entire North Country through improvements in community amenities such as hotels, bed and breakfasts, restaurants, and shops. Additionally, ample amounts of recreational opportunities exist outside of the Adirondack Park that are underutilized and could be promoted more aggressively. These include, but are not limited to, the St. Lawrence River and the Thousand Islands, Lake Champlain, the Tug Hill Plateau, the Saranac, Grass and Oswegatchie rivers, and Lake Ontario. Recreational opportunities include hunting, fishing, camping, hiking, rafting, canoeing, kayaking, skiing, ATV-ing, and snowmobiling, as well as eco-forestry tours, working or learning visits to operational farms, and subsistence hiking, where individuals can learn to live off the land in forested areas. There is potential to develop ecotourism as a niche industry. Other potential tourism options include farmstays, where visitors learn about a working farm, and on-farm culinary resorts where locally grown food is served.

Agri-tourism and historic tourism are also opportunities to promote the unique hamlets of the North Country. Examples of existing efforts include cider and local orchard tours, corn mazes, hay rides, and organic farm stands. Quebec's approach to regional land use and protections on agricultural land were cited as a good example of how a region can protect its farmland against encroachment and development. Creating unique cultural centers was also suggested as a way to develop strong communities and increase tourism.

BARRIERS

Recreation and tourism on the working lands of the region are challenged by declining state and local budgets for staffing and maintenance of trails and other recreational infrastructure. This problem was exacerbated by the extensive damage caused by Hurricane Irene and Tropical Storm Lee in 2011. There is also a lack of supporting amenities such as hotels and restaurants in communities located along the routes that tourists use. Incomplete Unit Management Plans for many state-owned lands, both within and outside the Adirondack Park, pose an additional challenge. These plans are intended to provide a comprehensive management plan for all public lands.

While the region has a many recreational opportunities, potential visitors and residents find it difficult to identify many of these opportunities. Information on recreational lands, historical landmarks, visitor attractions, and accommodations is scattered across state, local and private business web sites, and other information resources, making trip planning and identification of opportunities difficult. A more comprehensive regional approach involving the capture and distribution of this information would facilitate recreational experiences. The inclusion of new tourism and recreational opportunities such as agro-tourism and sporting activities such as paddle sports and bicycling will benefit residents as well as local businesses.

Working Landscapes Goal 4:
promote tourism and recreation based on the region's natural resources while providing for the long-term maintenance of the region's

INDICATORS

Intensity of use of the region's recreational resources provides a measure of contributions to economic development, while the actions and resources allocated to the upkeep of those resources provides a measure of the sustainability of the resources.

While some data is available for various regions of New York State, no comprehensive data sources at the county level were found for the selected indicators. This represents a data gap that should be filled as implementation of this sustainability plan progresses.

1. ***Numbers of Users of Recreational Lands by type:***

    a. *Hikers/Climbers*
    b. *Water Sports (Non-Motorized)*
    c. *Water (Motorized)*
    d. *Snowmobiles*
    e. *Skiing (Alpine and Nordic)*

2. ***Conditions of recreation infrastructure (trails, skiing facilities, water-based recreation facilities) and levels of resources allocated to infrastructure improvement and upkeep.***

BASELINE ASSESSMENT

There are insufficient data to succinctly characterize the baseline for these indicators.

SUGGESTED TARGETS:

While baseline data are not readily available, project sponsors may be able to gather relevant data for the elements on recreation user days (or other measures of activity) and on improving and maintaining recreational resources.

Working Landscapes Goal 5: enhance forest management through increased use of best management practices

Create resource conditions that support long-term productive use of forests for energy, wood, wildlife, and other benefits through implementation of sustainable forest management. Encourage third-party certifications for sustainability where applicable. Encourage invasive species management and control to protect the forest industry by avoiding or mitigating negative economic and ecological impacts resulting from the introduction of invasive species.

Working Landscapes Goal 5: enhance forest management through increased use of best management practices

OPPORTUNITIES

While some local efforts have been completed to conduct a comprehensive assessment of the region's biomass resource, opportunities exist to expand on these efforts resulting in an assessment of stand-level sustainable management practices and ecosystem service impacts which could lead to recommended best practices.

With recent passage of state legislation supporting invasive species management, opportunities exist for continued monitoring and mitigation of the spread and impact of invasive species on the region's forested lands.

BARRIERS

To date, projects such as NYSERDA's biomass roadmap, completed in conjunction with SUNY Environmental School of Forestry (ESF), have made preliminary efforts at assessing the biomass resource in the area. However there remains a lack of good data on the impacts of growing a thermal biomass industry in the region. Developing these baselines will allow the region to create recommended best management practices to support the industry region-wide.

Invasive species management and control in the region remains a significant challenge. As climate change continues, new threats arise every year. Funding of invasive management remains a challenge as well as mitigation efforts are extremely costly and funding sources are difficult to locate.

Working Landscapes Goal 5: enhance forest management through increased use of best management practices

INDICATORS

Several third-party certification forest sustainability programs are in use in the region, including the Forest Stewardship Council, the Sustainable Forest Initiative, and the American Tree Farm System. However, data for participation in each of these programs was not readily available. Although forests can be and, in many cases are, managed sustainably without third-party certification, certification can improve marketability of wood and forest products. The certification indicator provides a measure of the extent to which forest owners have adopted management practices that will be recognized by secondary processors and consumers as sustainable.

Professional foresters provide direct assistance to forest owners in planning the long-term value and health of their forest lands. Foresters look to balance short-term goals and needs with longer-term management policies to promote and sustain healthy, productive, high-value forest resources. For example, timber sales are planned to generate income while creating conditions that favor valuable species and long-term productivity. The forester also provides knowledgeable assistance to landowners when overseeing harvest operations and during the negotiation of sales contracts.

No comprehensive data sources were found for the following recommended indicators:

1. *Acres of forest land enrolled in forest stewardship programs or under third-party certification for sustainable management*
2. *Number of professional foresters in active practice in the region*

BASELINE ASSESSMENT

There are insufficient data to succinctly characterize the baseline for these indicators.

SUGGESTED TARGETS:

While baseline data are not readily available, project sponsors should track their relevant project data, the elements of sustainable forest management, and invasive species prevention, control, and management.

Working Landscapes Goal 6: upgrade and maintain existing farming infrastructure to improve energy efficiency and reduce farm operating costs

Provide farms with energy efficiency audits to identify current energy use and opportunities to achieve production goals with less energy. Increasing energy efficiency will improve both environmental and economic sustainability.

Working Landscapes Goal 6: upgrade and maintain existing farming infrastructure to improve energy efficiency and reduce farm operating costs

OPPORTUNITIES

Through participation in NYSERDA programs such as the Agriculture Energy Efficiency Program, great opportunities exist for farmers to reduce costs of operation through energy efficiency upgrades. With the agriculture sector contributing 9% of all North Country greenhouse gas emissions, such improvements will also contribute to reducing regional GHG emissions. The rural nature of the region and the specific needs of farmers, who must meet seasonal deadlines and work on tight timelines, should be taken into account when any program is envisioned and implemented.

BARRIERS

Farmers are constrained by high demands on their time and therefore find participation in many programs difficult. Even with the understanding that these programs are beneficial in the long-term, many are unable to fully or actively participate due to more immediate operational needs. Additionally, farmers are not always aware of the existence of programs. More can be done to reach these people to increase participation and improve outcomes of these programs.

Working Landscapes Goal 6: upgrade and maintain existing farming infrastructure to improve energy efficiency and reduce farm operating costs

INDICATORS

This indicator provides a measure of the extent to which North Country farmers have identified the need for and the benefits of greater efficiency in their use of energy.

1. *Number of farms with completed energy audits.*

BASELINE ASSESSMENT

Table 5-8 (on following page) presents baseline data for farms with completed energy audits. Less than 0.25% of all regional farms have been audited.

SUGGESTED TARGETS:

- *Increase the number of audited farms per county by 5% by 2020, 20% by 2035, and 50% by 2050.*

County	*Number of Energy Audits*	*Number of Farms (current baseline)*	*Percent Audited*
Clinton	6	590	1%
Essex	2	243	0.82%
Franklin	0	604	0%
Hamilton	0	20	0%
Jefferson	0	885	0%
Lewis	0	616	0%
St. Lawrence	6	1,330	0.45%
Total	10	4,288	0.23%

table 5-8

ENERGY AUDITS PERFORMED FOR FARMS IN THE NORTH COUNTRY

Source: EnSave Inc. for NYSERDA sponsored audits. USDA NRCS for Environmental Quality Incentives Program sponsored audits.

WORKING LANDSCAPES
IMPLEMENTATION STRATEGIES

The following priority implementation strategies have been developed to meet the Working Landscapes goals of promoting the development and expansion of the agricultural and forestry industries; increasing local food and forest processing, increasing the use of biomass, encouraging best management practices for forestry; promoting tourism; and improving the energy efficiency of farms.

Capitalize on existing forest industry infrastructure to make greater use of forestland & underutilized farmland for biomass development.

Support research and development of dedicated energy crops for thermal applications, such as shrub willow, switchgrass, and miscanthus.

Expand availability of local food by encouraging new farmers, while connecting local growers with local markets, including year-round and seasonal residents, schools, institutions, and tourists.

Establish visitor information hubs with concierge-style services in tourist destinations that coordinate outdoor excursions with transportation for visitors.

Educate forestland owners on the financial and resource benefits of using the services of professional foresters to manage and develop their resource.

Improve the production capacity of commodity and specialty crops and assist farms with diversification (including agri-tourism) and new business startups.

Incentivize energy audits, upgrades of farm equipment, and methods to enable farmers to achieve production goals using less energy.

Working Landscapes Strategy: capitalize on existing forest industry infrastructure to make greater use of forestland and underutilized farmland for biomass development

The North Country has a long-standing forest industry presence. Until recently, much of this has focused on the paper industry. As the need for fresh paper stock declines with increased availability of recycled paper products, mills such at the Newton Falls Paper Mill have shuttered their doors. Increasing demand for biomass can revitalize the paper-centered forestry industry, giving new destination for timber products. Additionally, the North Country consists of thousands of acres of abandoned and fallow farm land. Tremendous opportunity exists for regional farmers to earn additional income on this land through the growth of dedicated biomass crops.

EXAMPLE PROJECTS

Promote pilot projects which encourage cultivation of biomass on marginal farmlands

Work with key players to incentivize and subsidize the growth of biomass crops on marginal lands. Projects such as the USDA Shrub Willow project which compensates farmers growing Shrub Willow on marginal farmlands, while educating government officials, agricultural leaders, farmers and land owners, will allow local farmers the opportunity to earn income on previously underutilized land, while increasing the availability of biomass to be used as alternatives to fuel oil for heating.

Working Landscapes Strategy: support research and development of the region's biomass resource, including woodshed analysis, technological efficiencies, fuel (pellet/woodchip) processing, and dedicated thermal energy crops, such as shrub willow, switchgrass, and miscanthus.

While the North Country has great potential for the development of its forested lands as a biomass source, concern has been expressed repeatedly over the need to establish a comprehensive, data-based plan which will ensure that the resource remain intact for future generations both as an economic asset and for the ecosystem services provided by healthy forests. As the region looks to capitalize on this bountiful carbon neutral energy resource, there is great need for research in every aspect of the process to inform industry, residents, manufacturers, foresters, etc. as to best management practices. The 10 educational institutions within the North Country's boundaries serve as an enormous resource in the acquisition of relevant data. Students can learn by engaging in real-life projects while making important contributions the region.

EXAMPLE PROJECTS

Encourage Ongoing Research at each of the 10 Higher Education Institutions

Encourage collaborative research between educational institutions and organizations such as NYSERDA, and the USDA. SUNY Canton, SUNY ESF, and Clarkson University are engaged in ongoing studies exploring thermal biomass applications. Extending these studies, including research into dedicated energy crops, will contribute to the appropriate development of such resources in the area.

Create Woody Biomass Learning Centers at Representative Locations

Create a woody biomass learning center that would provide hands-on learning opportunities for harvesting small- and large-diameter trees for wood chips and cordwood. Provide opportunities for individuals to learn how to install and operate different types of wood gasification plants. Project locations need to be equipped to train individuals in small-scale, low-impact harvesting techniques that will improve remaining trees without damaging other natural resources. North Country School of Essex County is proposing such a center in which attendees would be educated in regards to appropriate harvesting and implementation of the biomass resources. Additionally, several regional schools, such as Edwards Knox in St. Lawrence County, have taken advantage of their biomass conversion to offer educational opportunities to their students. Ausable Forks School in Essex County offers tours to the public and actively informs the public about the operation of its facility.

Woodshed Planning Tool

Develop a planning tool that provides up-to-date information on stock, growth rates, harvest rates, and business demands for potential new woody biomass markets is a critical step in developing the biomass resource. Such a tool could be used to determine whether there is a sustainable supply for wood within a certain radii to support potential new markets. This tool would account for the fluctuating demand for hardwood lumber, softwood lumber, pulp, and biomass as markets change. Currently, SUNY ESF has been working with NYSERDA on a biomass roadmap project designed to accomplish these goals, while providing baseline data to guide future decisions on forested lands. While great work has been done, continued work is necessary to collect real data to be used as a baseline. Additional research is necessary to assess the impact of the impact of biomass development on the ecosystem services provided by intact and healthy forests.

Working Landscapes Strategy: expand availability of local food by encouraging new farmers, while connecting local growers with local markets, including year-round and seasonal residents, schools, institutions, and tourists.

The North Country is experiencing a local food movement comparable to that experienced across the country. While great advances have occurred across the region, including increased numbers of farmers' markets, growing connections between restaurants and farmers, and more local food making its way into local institutions, much work remains to be done. Challenges exist in processing, distribution, high costs of local food, and locally saturated markets. Encouraging more young farmers to move into the area by way of affordable land and educational opportunities will help to boost the supply. Local food advocacy organizations are playing an important role in connecting growers to local markets and should receive ongoing support to continue to carry out their mission.

Food Hubs

Investigate the feasibility of "food hubs" as a means of providing much needed fresh, local food to "food deserts" in the North Country to stimulate and sustain the agricultural industry. Food hubs can serve a variety of functions, including processing, storage, distribution, and sale of local agricultural food and value-added products. Paul Smith's College, located in Northern Franklin County, is developing a relationship with Purdy and Sons, a food hub company based out of Sherburne, NY. Efforts are underway for Purdy and Sons to act as the central distribution point for the college, bringing high quality, safely handled local food to an institutional setting.

Create Retail Market Space for Fresh Food Vendors

Provide fresh, affordable food to year-round residents in a number of communities, as well as seasonal residents and visitors via food market stalls and other related retail storefronts. Northern Borne, a grocery store in the Village of Long Lake, offers an open air market with a wide selection of locally grown vegetables and fruit. County, have taken advantage of their biomass conversion to offer educational opportunities to their students. Ausable Forks School in Essex County offers tours to the public and actively informs the public about the operation of its facility.

New Farmer Programs

Expand and enhance farm intern programs at area schools. Provide experiential learning opportunities for people interested in learning how to start and run a diversified farm for profit. North Country School (NCS), located in Essex County, has a long-standing tradition of educating youth on small-scale farming techniques. Campers and students attending their facility integrate farm chores into their everyday experience. NCS is proposing a long-term project aimed at expanding its current intern program to offer financial and practical training to new young farmers. Other farms in the area, such as Essex Farm in Essex, and Rivermede, offer paid positions to aspiring young farmers across the region.

Establish Entities to Connect Local Farmers with Local Consumers

Create and encourage existence of regional entities designed to promote local food in restaurants, institutions, homes, etc. Add value to local products through 'Buy Local' branding and campaigns, and farmers markets. Adirondack Harvest is the largest local food initiative and brand of the Adirondack region, covering 13 counties. The organization works to increase opportunities for profitable production and sale of high-quality food and agricultural products and expand consumer choices for locally produced, healthy food. Garden Share-based in Canton-offers a similar mission which seeks to end hunger regionally through the promotion of local food through education and outreach. The program boasts a unique opportunity for low income individuals to enjoy healthy local food through a program called CSA bucks. The Cornell Cooperative Extension of Jefferson County (CCEJC) has developed a local food promotion called the Grow Local Buy Local initiative. It is designed to increase direct marketing opportunities as well as to address local food desert issues.in Northern Franklin County, is developing a relationship with Purdy and Sons, a food hub company based out of Sherburne, NY. Efforts are underway for Purdy and Sons to act as the central distribution point for the college, bringing high quality, safely handled local food to an institutional setting.

Professional Development: "Farm-to-Fork" Academies for School Educators

Provide immersion events for regional educators that touch on all aspects of operating a sustainable, educational farm and garden. Teach educators how to create and implement comprehensive Farm-to-Fork programs designed for children. Include hands-on field and class work to demonstrate models of simple and sustainable living, effective production of local food, the stewarding of our natural resources, and how small institutions can make dramatic reductions in their carbon footprint. Paul Smith's College is working to develop an educational program integrating culinary students, farmers and local public schools to bring more local food to local schools via a classroom setting. This innovative educational model will offer an academic program to college students who will learn experientially about the farm to school movement from selection of varieties to grow, to growing and harvesting produce and meat, to preparing, marketing and delivering the final products to public schools.

Develop Workforce Programs to meet the needs of advancing industries

Partner with regional institutions to build a workforce trained and equipped to succeed in dynamic agricultural and forestry economies. The STEM initiative (Science, Technology, Engineering, Mathematics) is based out of Clarkson and consists of a group of educators and industrial representatives. The goal of this coalition is to coordinate between educational institutions and employers to ensure that the design of our educational programs is in keeping with the needs of various industries.

Working Landscapes Strategy: establish visitor information hubs with concierge-style services in tourist destinations that coordinate outdoor excursions with transportation for visitors

The North Country's abundant recreational opportunities attract thousands of tourists to the region every year. Opportunities exist to enhance this experience by creating more streamlined services which would exist at centralized locations throughout the region. In addition to concentrating recreational information, this would provide the opportunity to implement tourist-oriented public transportation systems comparable to those seen in Bar Harbor, Maine. Tourist-related greenhouse gas emissions are a concern for the region, therefore developing a coordinated transportation system associated with meeting the needs of tourists would be assist in reducing these numbers while facilitating a positive tourist experience.

EXAMPLE PROJECTS

Update and Create Community Recreation Guides

Update and revamp recreation guides, providing online access and interactive mapping as well as new printable materials to attract and engage more visitors to the region. The Tug Hill area is proposing the creation of a recreation portal comparable to the Adirondack Recreation Web Portal recently funded by the NCREDC. This would provide users the opportunity to download maps, GIS data, etc. The Tug Hill region is proposing that this be made available in print as well. The Adirondack Recreation Web Portal is in the process of being developed with the intent of providing visitors with easier access to the region's recreational resources.

Develop Community Trail Systems

Evaluate and develop ways to link town centers through multi-use trails. The region contains several potential community trail systems. The Black River Blueway/Scenic Byway of Jefferson, Lewis and St. Lawrence Counties have adopted a management plan that promotes tourism through the preservation of natural, historical, and cultural heritage. The City of Plattsburgh has a bike path that stretches 2.5 miles through the city of Plattsburgh, connecting the SUNY campus and neighborhoods with the city. Plans are in the works to develop a multi-use recreational path between Saranac Lake and Lake Placid, opening up this corridor for skiers, snowmobilers, and bikers. The Little Ausable River Trail Project was identified in its comprehensive plan. The trail will link four parks, the school, the post office and the hamlet of Peru by a trail system.

Working Landscapes Strategy: educate forestland owners on the financial and resource benefits of using the services of professional foresters to manage and develop their resource

With 50% of the Adirondack Park and thousands of acres outside the Park being owned by private entities, many are concerned with the potential for fragmentation of the region's forests. Within the Park, the Adirondack Park Agency serves to regulate the actions of individuals to a degree, however this has come under recent scrutiny as the agency looks to use third party entities to assess standards related to clear cutting. Local landowners will benefit personally from such educational opportunities while supporting the health of the regional forest by providing a macro perspective on their forestry decisions.

EXAMPLE PROJECTS

Forestry Workshops

Hold workshops through regional soil and water conservation districts for forestland owners to explain the benefits of third-party sustainability certification programs and provide resources to assist forestland owners to complete the certification process.

Regional Conservation Partnerships

Encourage multi-regional partnerships with the goal of increasing forest connectivity at the landscape level. The Wildlife Conservation Society (WCS) based in Saranac Lake is a partner in a regional initiative called the Staying Connected Initiative. Its goal is to conserve, maintain, and enhance the priority habitat linkages in the Northern Appalachian/Adadean Ecoregion to ensure landscape connectivity across the region from the western edge of the Tug Hill Plateau, into Nova Scotia. Land use planning including public outreach and education are a key component to this program.

Working Landscapes Strategy: improve the production capacity of commodity and specialty crops and assist farms with diversification (including agri-tourism) and new business startups

From dairy farms, to sugarbushes, and potato farms, agriculture has served as a backbone for the North Country for generations. The region has seen an overall net loss of farmers based in large part by narrow profit margins. Successful operations, such as Childstock Farms in Malone, have learned to thrive by growing commodity and specialty crops. Other farms, such as Rivermede in Keene Valley, have diversified their business to include maple syrup production, wreath making, and three-season crop extension. Continued support for farmers seeking to diversify, and add value to their existing crops is needed by way of continued and expanded educational programs such as offered by Cornell Cooperative Extension. Microloan and grant opportunities are also needed to help growers fund start-up costs for business initiatives. Diversification can take the form of agri-tourism as well, including wagon rides, corn mazes, hay mazes, and petting farms that support on-farm income.

SUPPORTING PROJECT

Improve Markets for Value-Added Products

Fund regional loan and grant programs for value-added farm and forestry ventures. The Whallonsburg Grange Community Kitchen is a certified commercial kitchen with basic facilities. The goal of the facility is to provide classes and space for community use, while promoting the facility as an incubator for small businesses and value-added processing for local farms. A similar project is being proposed for the Lake area called the Valley Kitchen.

Working Landscapes Strategy: incentivize energy audits, upgrades of farm equipment, and methods to enable farmers to achieve production goals using less energy

Agriculture is listed as contributing to 9% of the region's greenhouse gas emissions. Improvements in the efficiency of operations will not only contribute to the reduction of these emissions, it will help farmers to limit energy-related costs. The potential for the installation of on-farm biodigesters designed to handle waste as well as to create electricity, pose potential for savings in waste management expenses as well as providing low-cost, on-farm sources of electricity.

EXAMPLE PROJECTS

Promote NYSERDA and USDA Farm Energy Audit and Energy Management Plan Programs

Work with agricultural communities conducting outreach and educational programming to connect local growers with NYSERDA and USDA programming. NYSERDA and the USDA have ongoing programs that help pay for energy audits for farmers to identify where their purchased energy is used and to provide cost-effective recommendations for increasing their energy efficiency to save money and energy. The NYSERDA program is called the Agriculture Energy Efficiency Program. area called the Valley Kitchen.

Promote Installation of On-Farm Manure Digesters

Identify farms where installations of on-farm digesters are technically and economically feasible. The digesters would produce methane used to generate energy, reducing the cost of energy on those farms. The result would provide economic development opportunities for designers and installers of the digesters and make the farms more energy and cost efficient. While there has been much talk about implementing on-farm biodigesters including in Lewis, implementation has been difficult to realize. Proposed projects have met with resistance from community members and funding challenges. With continued educational outreach and funding opportunities, biodigestion poses the potential to contribute to real-time savings for local farmers.

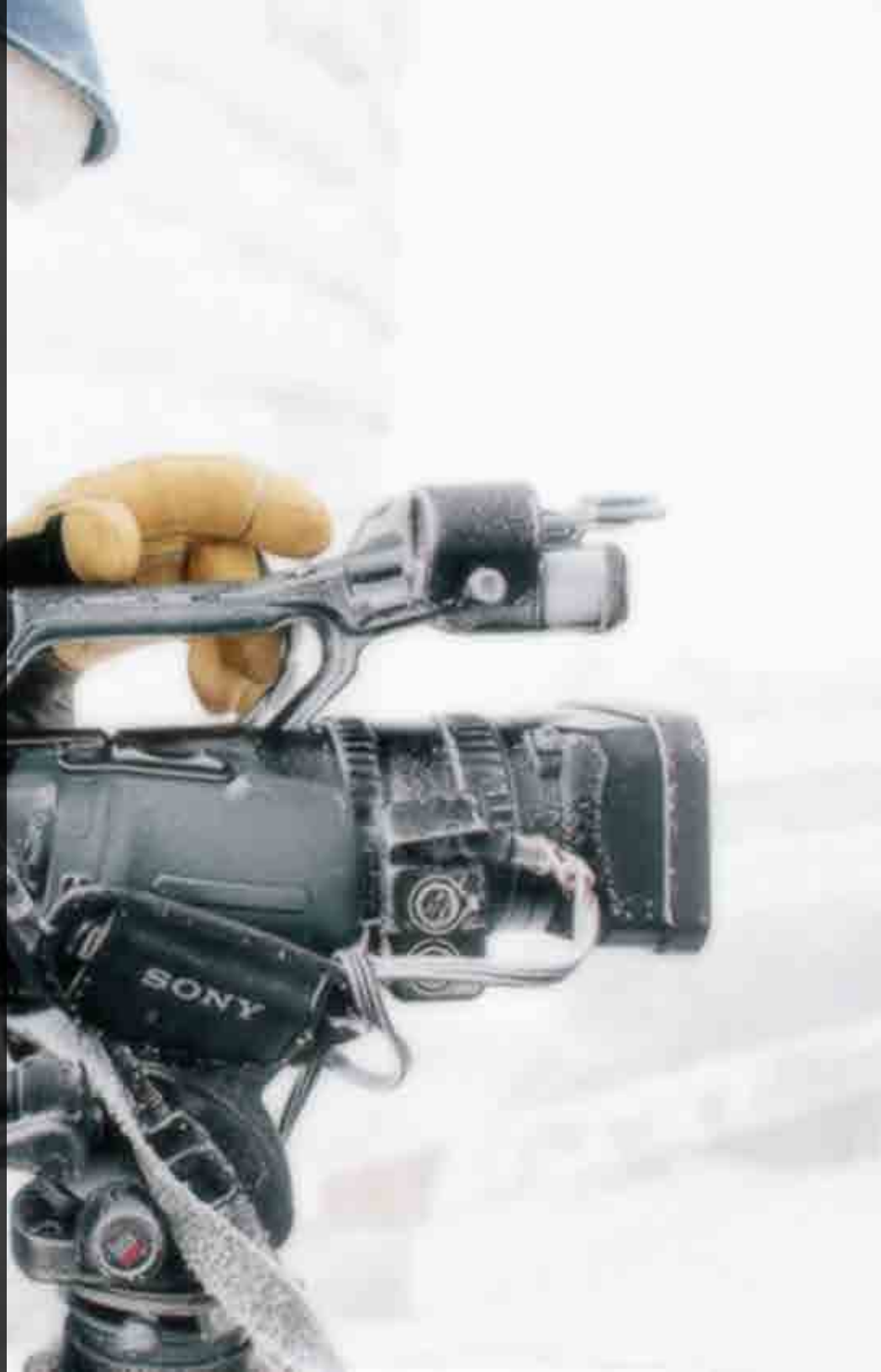
Leveraging the Internet *(a case study)*

CHALLENGE:

Access to broadband is transforming the way people work and offering innovative ways to reduce driving costs. Jobs can be performed at once-remote locations, and the need to travel to share conversation and ideas is being replaced by the need for access to broadband to serve the same purpose. Rural areas have been late to get access to broadband because the companies that pay to install fiber optic lines can recover their investment faster in the most populated places, and have focused their investment in those places.

OPPORTUNITY:

The fastest broadband in the world is now available to the North Country and the region is already benefiting from that technology as installations move forward. Where other regions have older pipelines that can slow transmission, the North Country's late adoption could prove to be a blessing, since the region could have one of the fastest complete systems in the world. Fast broadband means jobs created by entrepreneurs who can fashion businesses around broadband access, and it means savings and a jump in efficiency. Schools can add online learning, organizations can reduce travel costs by meeting online, businesses can promote themselves anywhere in the world, and North Country residents can have equal access to the information highway.



ACTION

New broadband is proliferating

With support from the US Department of Agriculture's Rural Utility Services and from New York State's Broadband Program Office, new fiber optic lines are traversing the region, with hubs throughout key communities, with a strong push into Hamilton County. The major backbones are being overseen by the Development Authority of the North Country (DANC) and the private ION Holding Company. Smaller rural internet service providers, such as Slic Network Solutions, are building their own networks to provide access to yet-unserved residences and businesses. Together these partnerships will create a sustainable infrastructure to support the broadband services. With more than $8 million in state grants that were won by the North Country Regional Economic Development Council's successful efforts, new broadband is reaching homes across the North Country at a pace of as many as 50 new residences a week in some areas.

RESULT

Instant global access

As the networks extend from Franklin into Hamilton County, the Wild Center in Tupper Lake will sponsor a broadband hub in its basement serving the Tupper Lake area. The Center is already seeing the impact. It conducted two test broadcasts, the first connecting the Essex Farm in Essex, New York to a national online audience that tuned in to learn about the farm and its local food efforts. A second test, from the winter summit of Whiteface Mountain, featured scientists explaining the special nature of the Adirondack High Peaks.

"Broadband changes everything," said the Center's executive director Stephanie Ratcliffe. "Before broadband you can talk to as many people you can fit in a room. After broadband the only limit to how many people you can reach depends on your imagination." The Wild Center plans to offer real time online education beginning in 2014 using the new broadband connection. "We can see what it could mean for us and for the other people who use the Center for meetings and programs. It starts to erase the obstacles that distance and the occasional winter blizzard used to impose on our region," said Ratcliffe. "We can invite people to meetings who are hundreds of miles away, and we will be able to share ideas and successes between communities in real time. I think it's a real game changer for our economy."

VI

Transportation

DEVELOP LOWER-CARBON SOLUTIONS TO OUR RURAL TRANSPORTATION CHALLENGES

The North Country's road network is heavily used for daily commuting, freight movement, and tourism. Due to its size, limited public transportation options, and the distances residents must travel to work and shop, the North Country is a car-dependent region. Therefore, roadway reliability is the key to efficient transportation in the region. In addition, the entire transportation infrastructure system must be flexible enough to provide secondary means of transit when primary road infrastructure is subject to repairs, floods, or other issues that render it unusable for a period of time. Currently, the region has limited bus transit, Amtrak passenger rail service, and freight rail service.

Road travel in the region occurs primarily along a few major arteries, such as I-81, I-87, Route 3, and Route 11. North-south travel within the region can cover 150 miles and take over three hours, while east-west travel can cover 180 miles and take more than four hours. Given the mountainous terrain and the limited existing road network in some areas, some locations in the region may be relatively inaccessible to other areas by road or rail. The harsh, cold winters of the region add an additional burden to road travel, resulting in slowed travel and the need for frequent repairs to road surfaces.

Often snowmobiles and all-terrain vehicles (ATVs) serve both recreational purposes and as alternative modes of transportation by providing access to back road networks during periods of extreme weather conditions and road conditions. Due to the heavy reliance on individual vehicles, transportation contributes 40% of the region's greenhouse gas emissions and is the single largest portion of regional emissions.

This chapter evaluates existing local transportation networks and presents strategies for providing a system that is financially, socially, and environmentally sustainable. These strategies focus on efficient and reliable transit system operation, a regional vehicle fleet fueled increasingly by renewable energy sources, affordable and practical multimodal travel choices for North Country residents and tourists, and efficient shipping options for businesses and government. One requirement for improving regional transportation options is increased regional coordination. This could be achieved with an integrated transportation plan that offers improved transportation options and reliability in order to support travel within communities and between counties of the region and surrounding areas. Cooperation between regional stakeholders is essential for establishing more integrated travel systems with shared costs and benefits.

For example, improvements in infrastructure for various modes of transportation such as walking and bicycling (both on-road and recreational trails), ridesharing, Complete Streets policies (as discussed in Section 4), and public transportation (including bus service and targeted shuttle services) can be more readily achieved by municipalities that work together to support transportation planning and improvements. Municipalities and counties that join forces will be able to make the best use of their limited staffing and budget resources.

For example, county-level transportation experts and local supporters can undertake joint or integrated transportation planning efforts, as well as prioritize and communicate regional transportation priorities more clearly with the New York State Department of Transportation (NYSDOT), New York State Department of Environmental Conservation (NYSDEC), and other involved agencies. Some transportation projects will be relevant to and viable only within specific local boundaries, while other improvements will require regional solutions, or even state support.

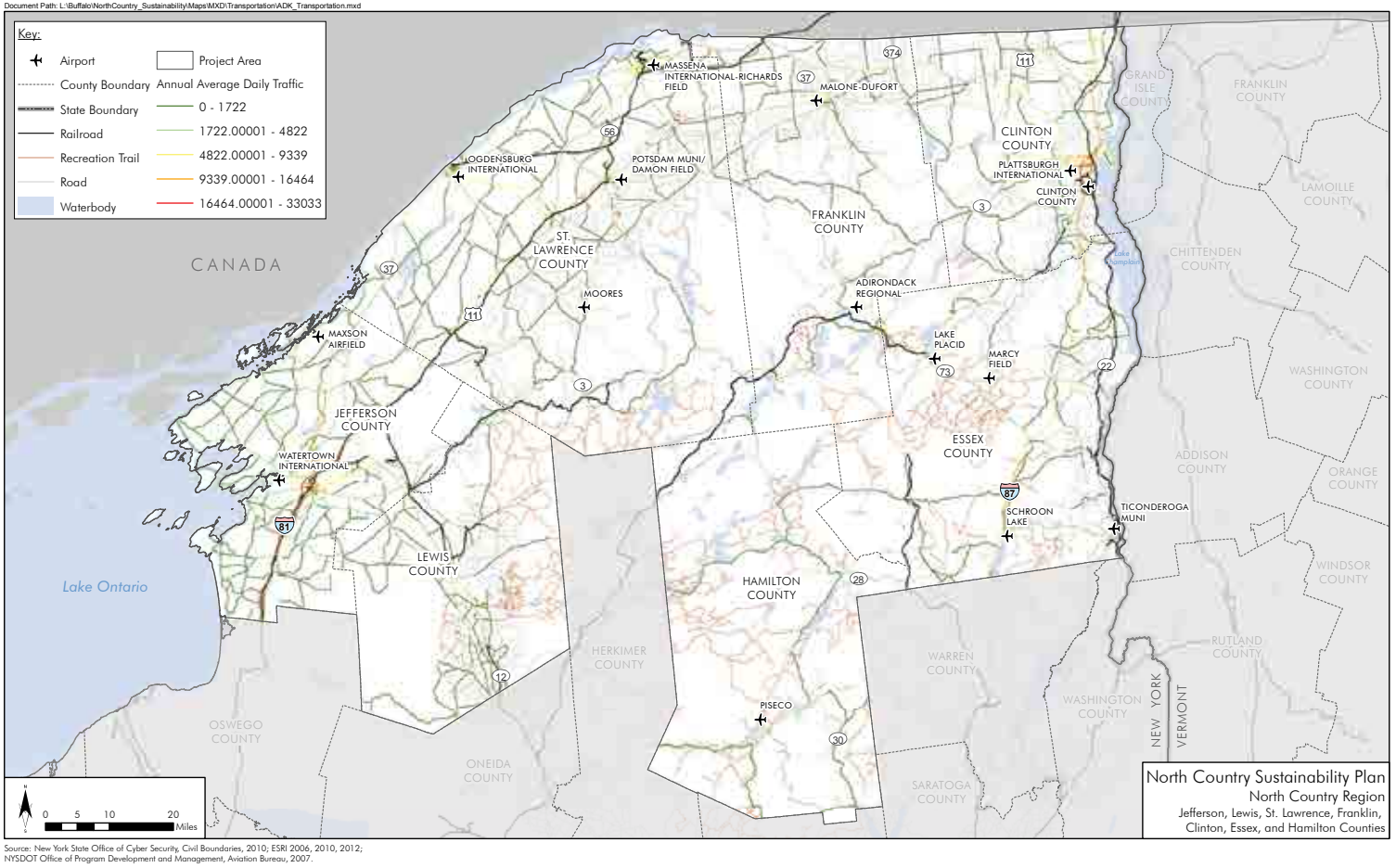
TRANSPORTATION WORKING GROUP

The 27 members of the Transportation Working Group included representatives from county planning departments, local municipalities, public transportation providers, non-profit organizations, NYSDOT, the Development Authority of the North Country (DANC), and educational institutions, including Cornell Cooperative Extension and SUNY Canton (Jefferson County). Further regional focus was brought to the group by members from the Adirondack Scenic Railroad and YESeleven, an organization dedicated to improving the Route 11 transportation corridor.

The Working Group identified a number of opportunities and constraints in the region's transportation sector and then established regional goals for transportation. Goals and strategies developed around cross-county transit services and better cooperation between counties, fuel usage and GHG emissions, telecommuting and the expansion of broadband service, rail improvements for passengers and freight, connecting transit options to downtown centers, and roadway improvements for corridors passing through main streets and downtown centers. Additional input was gathered from residents and regional stakeholders who convened at one or more public events held during this project's planning process or who contributed comments to this plan.

Major themes that emerged from these discussions included the following:

- *The importance of creating partnerships and inter-county cooperative efforts to most efficiently and cost-effectively design, implement, and carry through changes to the current county-by-county transit model.*
- *The importance of investment in street, rail, highway, transit, airport, and fueling infrastructure to promote regional economic stability and growth.*
- *Encouraging the use of more efficient modes of transportation, fuel-efficient vehicles, and renewable fuels to reduce greenhouse gas emissions and negative environmental impacts associated with transportation.*
- *The need for improved mobility to and within main streets and downtown centers to access services, restaurants, retail stores, hotels, and recreational opportunities.*
- *The need to expand broadband service to promote telecommuting, reduce vehicle miles traveled, and support small business growth in the region.*



Source: New York State Office of Cyber Security, Civil Boundaries, 2010; ESRI 2006, 2010, 2012; NYSDOT Office of Program Development and Management, Aviation Bureau, 2007.

figure 6-1

ADIRONDACK TRANSPORTATION NETWORK

GOALS

Four regional goals were identified during the development of this plan:

1. *Expand and promote the use of region wide alternatives to single-occupant vehicle travel for residents and tourists.*

2. *Reduce trip lengths and improve transportation and fuel efficiency.*

3. *Preserve and improve aging transportation infrastructure.*

4. *Concentrate freight and manufacturing development and shipping at prioritized intermodal sites to support sustainable business development.*

STRATEGIES

The following priority implementation strategies were established as the most essential to meeting these goals:

- *Update transportation codes to encourage intra-county bus services. Investigate new ways of increasing transportation or commerce options in North Country.*

- *Expand and complete broadband installations within the region and identify and adopt strategies to reduce transportation demand and improve commerce.*

- *Expand existing public transit services and establish new inter- and intra-county bus routes. Provide better connections from regional passenger rail stations and airports to hamlets and cities.*

- *Develop publically available informational services and educational opportunities including a regional transportation website that links residents and visitors to transportation options and services.*

- *Improve regional coordination of transportation infrastructure and services for residents, visitors and commercial interests.*

- *Improve freight operations and include freight shipping and distribution strategies in county comprehensive plans and local industrial development plans as they are updated.*

Transportation Goal 1: expand and promote the use of alternatives to single-occupant vehicle travel for residents and tourists

A SUSTAINABLE TRANSPORTATION NETWORK is marked by convenience, affordability, multimodal options, and safety. This goal recognizes that transportation is currently a major household cost for those who live far from town and village centers. It would provide attractive alternatives to driving alone during peak hours, including carpooling and transit supported by park-and-ride lots, on-line ride-matching services, and telecommuting options. It includes accessibility for transportation-disadvantaged populations, including the elderly, disabled, and low-income residents.

Transportation Goal 1: expand and promote the use of alternatives to single-occupant vehicle travel for residents and tourists

OPPORTUNITIES

Improving mobility in the North Country will require means to efficiently serve all populations and all types of trips, such as work commutes, travel to school, tourist trips, commercial trips, and medical trips. Replication of successful public transit programs such as Citibus in Watertown, and the removal of governance barriers preventing inter-county bus travel will increase the ability of the region to provide additional transportation options to residents and reduce single-occupant vehicle travel.

Improving or expanding existing rail technology and infrastructure in support of passenger rail travel, however modestly, would improve regional travel options. Strategic improvement to rail service, stations, and rolling stock would benefit the region, especially if tied to intermodal connectivity improvements such as regional bus service, short- and long-distance car rental options, and taxi or community bus service. As part of a more seamless travel network, regional rail (especially linked with innovative intermodal options) could become a more viable travel option for local residents and visitors.

Tourists must travel on the region's roads to access hotels, restaurants, services, retail stores, and recreational opportunities. Improved intermodal transportation connections, such as at bus or train stations, would allow visitors to arrive in the region and then easily connect to car rental services or other local transportation options. Efforts to promote tourist arrivals by means other than personal car or truck may offer both economic and environmental advantages. Examples include the following:

- *Intermodal service, which is increasingly popular in mountain areas of Europe. Cycling holidays, during which a rail or bus service collects a client's luggage from home by taxi or truck, loads it onto the train or bus, and delivers it to the destination hotel by shuttle for a nominal fee, and carries passengers with their bicycles to the area. The cost savings in terms of parking spaces, road wear and tear, environmental damage, and imported fuel helps subsidize the cost of baggage transfers and shuttle buses from railheads to housing (hotels, rented rooms, and/or homes).*

- *Computer-based ride-share programs, which allow individuals to network for shared ridership (for school, services, shopping, sporting, or entertainment) using a mix of transport options, which could be linked to the 511NY Web site.*

Human Services Transportation

A 2010 regulatory change in New York State gave the New York State Department of Health authority to manage non-emergency medical transportation in lieu of the counties, in large part intended as a cost-saving measure. The outcomes of this change are not yet fully understood with regard to mobility, government costs, patient's out-of-pocket costs, quality of service, efficiency, or impact on total vehicle miles traveled. With the aging population in the North Country, the need for affordable transportation assistance and personalized services will increase substantially.

Transportation Goal 1: expand and promote the use of alternatives to single-occupant vehicle travel for residents and tourists

BARRIERS

In terms of passenger rail, service is currently limited to Amtrak, which provides service along the corridor owned by Canadian Pacific on the eastern side of the region, and the Adirondack Scenic Railroad's tourist service, which runs between Utica and Thendara, Saranac Lake, and Lake Placid. Many regional stakeholders are in favor of a high-speed rail, but an analysis of a high-speed rail option is beyond the scope of this plan. However, such an analysis would likely support the Transportation Working Group's goal to provide an improved transportation option for those traveling between the North Country and either the downstate region or Montreal.

BASELINE ASSESSMENT

Percentage of commuters traveling via carpool, public transportation, biking, and walking: 18.5%. *Table 6-1 (on following page)* provides a breakdown of commuting, by travel type per county.

INDICATORS

The trend in this indicator over time, which uses routinely updated and available data from the American Communities Survey, will indicate the degree to which the region's efforts to increase multi-modal transit options is successful.

1. *Percentage of people commuting via walking, biking, transit, and carpooling.*

SUGGESTED TARGETS

Increase baseline to 20% by 2020, and 25% by 2035.

This goal can be attained through a combination of increased public transportation service, better promotion of carpooling, and land use decisions that result in more individuals living close to town and village centers, improving access to public transportation services, and making it feasible to bike or walk to destinations.

	Essex County	*Franklin County*	*Hamilton County*	*Lewis County*	*Clinton County*	*Jefferson County*	*St. Lawrence County*	*Total*	*%*
Total Population Commuting	17,109	20,169	2,336	11,929	36,445	52,132	44,894	185,014	—
Carpool	1,300	2,523	141	1,164	5,597	6,914	4,380	22,019	11.90%
Public Transportation	64	128	0	48	183	385	118	926	0.50%
Bicycle	28	72	5	18	109	77	227	536	0.29%
Walk	920	1,057	192	609	1,327	2,404	4,242	10,751	5.81%
								TOTAL:	18.50%

table 6-1

PERCENTAGE OF PEOPLE COMMUTING VIA CARPOOLING, PUBLIC TRANSPORTATION, BIKING, AND WALKING

Source: American Community Survey,
Table B0830 Means of Transportation to Work
Essex, Franklin, Hamilton, Lewis: 2006-2010 American Community Survey 5-Year Estimates

Transportation Goal 2: reduce trip lengths and improve transportation and fuel efficiency

Support the reduction of GHG emissions associated with the use of single-occupant vehicles and the high costs associated with transportation in the region by improving transportation efficiency in terms of trip lengths and fuel usage. Encourage and incentivize land use policies, programs, and projects that reduce trip lengths by concentrating mixed-use development in existing town and village centers. Support the installation of broadband as a way to increase telecommuting opportunities and reduce vehicle trips. Emphasize consistency with the NCREDC Plan's goal of "strengthening local communities through downtown development and hamlet revitalization." Promote cooperation between local, regional, and state governments for better planning and project outcomes.

Transportation Goal 2: reduce trip lengths and improve transportation and fuel efficiency

OPPORTUNITIES

The transportation sector is the largest consumer of energy in the North Country region and the largest producer of greenhouse gas (GHG) emissions (40% of total GHG emissions in the region) (E&E 2012). The "greener energy economy" described in the 2011 North Country regional economic development plan will require increased fuel efficiency across all transportation modes and types of vehicles and a shift away from petroleum as the principal transportation fuel source for some vehicles (NCREDC 2010).

Alternative fuels such as compressed natural gas (CNG) and propane have the potential to offer economic savings and reduced emissions. However, the potential return on investment is limited, and the use of such fuels is feasible only in areas where natural gas or propane is available and distribution infrastructure can be installed. Partnerships among multiple private and public entities to install one or more CNG fueling stations in Watertown or Plattsburgh might offer fleet operators in those areas payback periods of only a few years (Johnson 2010).

The long-term trajectory for the region's transportation network should entail a steady increase in the use of vehicles powered by locally and renewably generated electricity, corresponding with a decrease in the use of fossil fuels for transportation energy. This is not realistic or attainable in the short term, as the electric vehicles currently available do not meet the travel needs for most North Country residents and businesses and will require significant infrastructure investment. However, the addition of small-scale electric vehicle charging infrastructure in locations such as universities and tourist destinations is a reasonable present step.

Developing and providing broadband for communities in the North Country support transportation efficiency by encouraging telecommuting and limiting the number of trips and miles traveled daily by residents. It also fosters a knowledge economy based on professional services and serves as a tourism draw with added value for hotels. The term "broadband" refers to a high-speed, always-on, connection to the Internet. An example of a successful broadband program is the one implemented in the Town of Keene. The Federal Communications Commission is currently in the process of subsidizing rural broadband services. In 2012, under Round 2 funding provided by Governor Cuomo's Connect NY Broadband Grant Program, the North Country received a combined $3.5 million for the expansion of broadband services within the region. Grant awards went to the North Country Telecommunications Loan Fund, managed by the Development Authority of the North Country (DANC) ($500,000); Hamilton County Broadband Phase II ($1.7 million); and to the Long Lake Next Generation Broadband ($1.4 million).

Transportation Goal 2: reduce trip lengths and improve transportation and fuel efficiency

BARRIERS

The limited range, higher cost, and lack of four-wheel drive options among currently available electric vehicles limits their attractiveness to many North Country residents.

Regardless of fuel type, personal transportation energy use, GHG emissions, and its associated costs will be reduced to the extent that the region is successful in promoting alternative means of transportation to single occupancy use vehicles, and developing land use policies that result in more people living closer to community centers, especially the elderly who would benefit from better access to services and neighbors. Increased telecommuting, which may be encouraged by the continued expansion of broadband service, can also reduce household transportation energy consumption to the extent that not commuting to work reduces total household trips and vehicle miles traveled.

For bus and human services transportation, the cost to install CNG fueling infrastructure, purchase new vehicles, and make necessary changes to service bays typically runs into the millions of dollars. While new models for financing and cost sharing are being developed, installation of sufficient infrastructure may take years, and in many cases there is a more pressing need to secure adequate funding to maintain current fleets and staffing levels. More immediate options are the use of diesel/electric hybrids or the purchase of smaller buses, shuttles and vans, which require less infrastructure investment and offer more flexibility for bus routing.

In a July 2012 presentation titled "Broadband for New York's Economic Recovery – The North Country Region," several barriers were cited, including the expenses associated with the final connections within the jurisdiction (Last Mile Expense), the low population density of the region, and the low adoption rate of broadband by the population. Other factors cited included taxes, pole attachment fees, and the challenging geography of the region (NYSOFT 2009).

Transportation Goal 2: reduce trip lengths and improve transportation and fuel efficiency

INDICATORS

VMT is a standard transportation industry indicator for measuring trip lengths. This indicator will show progress towards the goal of reducing annual VMTs in the North Country, and therefore transportation efficiency.

The Housing and Transportation Affordability Index conveys the importance of considering transportation costs along with housing costs to understand the true burden of transportation on households *(see Figure 6-3 on p.187)*. The Affordability Index measures success in locating housing and job centers in close enough proximity to bring average combined housing and transportation costs below the benchmark of 45% of household income. It is also a measure of the availability of affordable transportation options in the region.

1. *Vehicle Miles Traveled per Capita.*
2. *Housing and Transportation Affordability Index (NYSERDA Economic Indicator).*

BASELINE ASSESSMENT

Annual VMTs per Capita

A breakdown of VMT per capita by county is provided in *Figure 6-2 (on following page)*. The regional average baseline is 9,775 VMTs per capita.

Housing and Transportation Index

As shown in *Table 6-2 (on p. 186)*, regionally, 56.81% of average household income is spent on housing and transportation costs. This exceeds the 45% affordable cost benchmark set by the Center for Neighborhood Technology. Note that only four of seven counties are currently represented by the index.

SUGGESTED TARGETS

No targets are suggested for these indicators. It should be noted that, in addition to any regional or local measures designed specifically to reduce per capita miles traveled, the metrics for vehicle miles traveled will be affected by factors such as the price of gasoline and the state of the regional economy

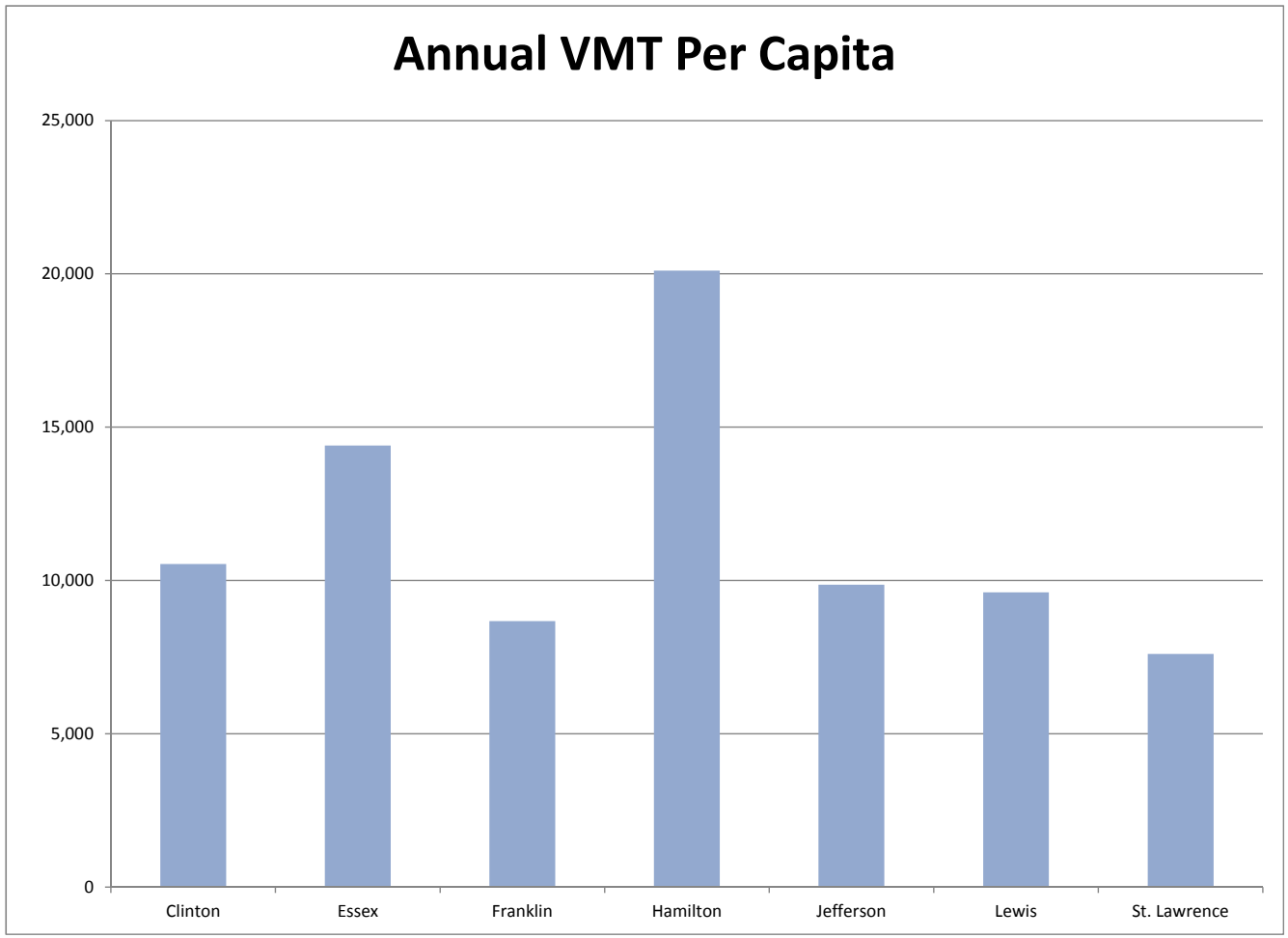


figure 6-2

ANNUAL VMT PER CAPITA, 2009

Sources: *VMT data provided by NYSDOT, Analysis Year 2009; population data from 2010 US Census.*

County	*Average Housing Costs as % of Household Income*	*Average Transportation Costs as % of Household Income*	*Average H+T Costs as % of Household Income*
Clinton	21.31%	32.44%	53.75%
Essex	No data available	—	—
Franklin	19.72%	37.33%	57.05%
Hamilton	No data available	—	—
Jefferson	22.27%	36.17%	58.44%
Lewis	No data available	—	—
St. Lawrence	20.11%	36.91%	57.02%
Regional	**21.15%**	**35.67%**	**56.81%**

table 6-2

HOUSING AND TRANSPORTATION AFFORDABILITY INDEX

Source: Center for Neighborhood Technology, http://htaindex.cnt.org/map/

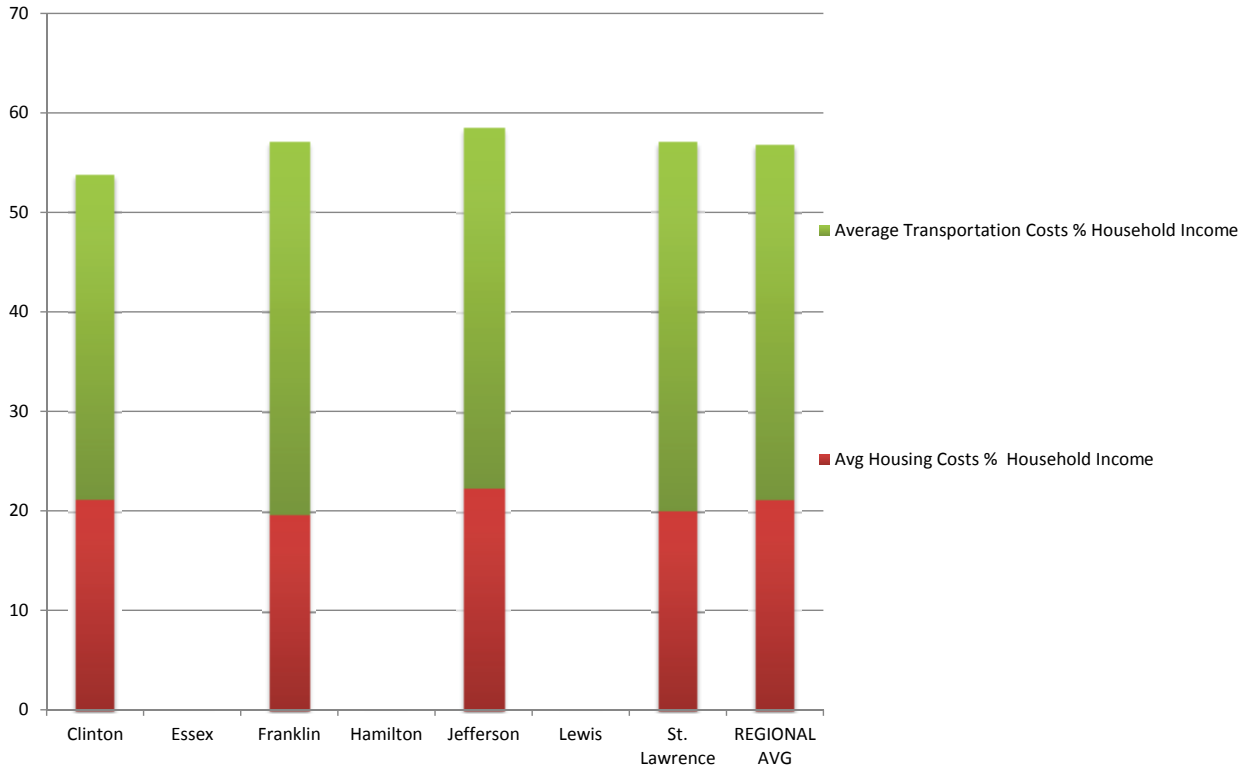


figure 6-3

AVERAGE HOUSING AND TRANSPORTATION COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME

Transportation Goal 3: preserve and improve aging transportation infrastructure

Adequately fund and maintain transportation infrastructure, recognizing that much of the region's infrastructure was built in the early part of the 20th century and will require significant reinvestment to preserve and improve. Existing roads and infrastructure, especially when addressing sprawl, should be given priority. New transit infrastructure should focus on targeted areas, such as downtown centers, and the creation of intermodal hubs to connect services. This approach is consistent with the state's Smart Growth Public Infrastructure Policy Act, which aims to minimize sprawl development by requiring state agencies to evaluate public infrastructure projects for consistency with Smart Growth criteria.

Transportation Goal 3: preserve and improve aging transportation infrastructure

OPPORTUNITIES

Keeping transportation infrastructure in a state of good repair, promoting and increasing scenic byways, and incorporating regional branding into roadway signage benefits visitors by supporting the tourist experience and creates stronger economic opportunities for residents. Many roadways include wide shoulders that facilitate bicycle travel, which supports tourism and travel by local residents.

Partnerships and inter-county cooperative efforts will be best able to remove governance barriers that currently exist for transportation infrastructure in the region. Inter-county transit service, for example among Jefferson, Lewis, and St. Lawrence counties, could potentially serve more passengers and produce economies of scale. The growth in the urbanized population of the Watertown area, supported by the large number of people at Fort Drum, has made possible the formation of a metropolitan planning organization (MPO), which could receive federal planning dollars for long-term transportation planning and transportation demand management. This new agency's planning activities and documents could impact not just Watertown and Jefferson County but also nearby sections of St. Lawrence and Lewis counties.

Counties can also collaborate to better address the need for shipping and distribution centers to serve large- and small-scale manufacturers and shippers. Industrial Development Authorities (IDAs) and economic development agencies could coordinate with county planning departments to amass greater shipping volumes at prioritized sites, which would result in efficiencies that reduce both transportation costs and vehicle miles traveled. Integrated intermodal transportation planning initiatives are being increasingly tested in communities, and the lessons learned could be valuable for consideration in this region.

BARRIERS

The regional network of transportation infrastructure (see Figure 6-1) is managed by many organizations that operate according to their own strategic plans and requirements, whether at the federal, state, county or local level; at the private sector level; or as part of not-for-profit or community initiatives. Few mechanisms exist for these organizations to exchange and share information at the regional level. Better coordination and planning at the regional level would directly benefit transportation infrastructure, mobility, energy use, and freight movement. Inter-county options are limited, with county-owned vehicles and buses often not permitted to cross county boundaries.

One approach to resolve this issue is to create transportation "champions", members representing each group, who are able to regularly share best practices and address issues impacting the region. Discussion items may include specific topics such as the future of the Route 11 corridor, as well as wider ranging challenges such as the viability of transit service in rural settings, the best use of currently under- or unutilized rail corridors, system reliability during potential catastrophic weather events, and increased shipping and distribution efficiency.

Transportation Goal 3: preserve and improve aging transportation infrastructure

INDICATORS

Growing national costs to maintain aging bridges or build new ones suggest that the North Country region should assess near- and long-term costs and develop funding plans for bridge maintenance, repair, and construction. The deficiency rate of regional bridges was selected as an available data NYSDOT set that can be used as a representative indicator for the overall condition of regional transportation infrastructure.

1. *Percentage of deficient state, local, and other bridges.*

BASELINE ASSESSMENT

According to NYSDOT, 37% of state, local, and other bridges within the region are categorized as deficient. Table 6-3 and Figure 6-4 provide a breakdown of bridge deficiency per county.

SUGGESTED TARGET

No target has been established for this indicator.

County	*Total Number of Bridges*	*Total Deficient Bridges*	*Percentage of Deficient Bridges*
Clinton	201	57	28.4%
Essex	242	94	38.8%
Franklin	183	85	46.4%
Hamilton	80	32	40.0%
Jefferson	292	89	30.5%
Lewis	170	69	40.6%
St. Lawrence	322	126	39.1%
Regional	**1490**	**552**	**37.0%**

table 6-3

PERCENTAGE OF DEFICIENT BRIDGES IN THE NORTH COUNTRY

Source: *NCREDC Website; data provided by NYSDOT.*

Transportation Goal 4: concentrate freight and manufacturing development and shipping at prioritized intermodal sites to support sustainable business development

Improve shipping times and keep costs affordable for both small- and large-scale shippers. Concentrate manufacturing development to improve resource sharing and access to multi-modal shipping options (rail, truck, air, seaway). The "greener energy economy" goal for the North Country is supported by this plan, which promotes the development of more efficient freight shipping through a greater emphasis on the use of rail. Regional success in selling and delivering products to buyers outside the region is contingent on rapid, affordable transportation of products. Regional businesses should be encouraged to discuss and collaborate on developing cooperative shipping arrangements that streamline supply chain management operations. A more efficient shipping network in the North Country could result in fewer freight vehicle miles traveled (VMTs) and faster, more affordable shipping and distribution options. This would help attract smaller-scale manufacturers and exporters who would bring jobs and dollars to smaller towns and villages.

Transportation Goal 4: concentrate freight and manufacturing development and shipping at prioritized intermodal sites to support sustainable business development

The underutilized regional rail corridor has the capacity to support affordable freight movements while being more environmentally friendly than alternative transportation modes. Additional study will determine whether the current marketplace is sufficient to support rail expansion.

While air travel is not the most energy-efficient or environmentally friendly mode of travel, the GHG inventory showed that, due to the relatively small current volume of aviation activity in the North Country, the combined GHG emissions from aviation, rail, and maritime activity account for only 2 percent of the regional total (E & E 2012). Supporting the growth of facilities and sites that have the potential to offer more efficient shipping options by rail, road, and air will be promoted as an implementation strategy to achieving greener freight shipping. For example, the juxtaposition of commercial activity, a rail line, and an interstate road adjacent to the Plattsburgh Airport offers long-term potential to support inter-modal freight movements.

OPPORTUNITIES

The Port of Ogdensburg, the only U.S. port along the St. Lawrence Seaway in the North Country region, is positioned to handle increasing maritime shipping volumes. The port's multimodal capabilities are also a long-term asset for further development, as the Ogdensburg Bridge and Port Authority also owns a short line railroad that connects the port with the CSX line, and the nearby Ogdensburg-Prescott International Bridge connects Route 37 with Route 416 to Ottawa, Canada.

While the North Country region is not a buyer/consumer of the locomotives and railcars made by Bombardier, or the train control products and systems of New York Air Brake, or the buses of Nova Bus, these North Country companies support public transportation services across the United States. These transportation equipment clusters should be included in any regional branding efforts that identify and/or promote the region's sustainable exports.

BARRIERS

The NCREDC Plan emphasizes the strategic importance of cultivating increased trading volumes with Canada (NCREDC 2010), citing the region's border crossings at Alexandria Bay, Ogdensburg, Massena, and Champlain. From an environmental perspective, efforts to decrease the amount of idling vehicles at border crossings are desirable, as are efforts to increase trade between the North Country region and neighboring Ontario and Quebec, where the time and distance required to deliver products is minimal. However, from an infrastructure perspective, increased Canadian-American trade would involve increased truck volumes on North Country bridges and highways, resulting in increased repair and maintenance costs. If increased activity is primarily between Canada and areas in the U.S. beyond the North Country, this region would bear the load of being travelled through without any of the benefits associated with stopping in the region, such as local sales, and would need to address heightened costs of infrastructure and service maintenance.

When locally produced foods and other goods do not need to be transported out of the region, fewer vehicle miles are traveled between production and consumption, resulting in lower overall transportation costs, less fuel consumption, and lower air emissions. Finding ways to calculate the associated transportation impacts may help producers, planners, and economic development staff as they seek to promote increased local sales.

Transportation Goal 4: concentrate freight and manufacturing development and shipping at prioritized intermodal sites to support sustainable business development

INDICATORS

Determine whether counties are aware of the transportation costs and challenges of large- and small-scale manufacturers and other entities importing or exporting goods and raw materials.

1. *Inclusion of shipping and distribution plans and strategies in county comprehensive plans.*

BASELINE ASSESSMENT

None of the seven counties have incorporated shipping and distribution plans and strategies into their comprehensive plans.

SUGGESTED TARGET

All counties preparing and regularly updating comprehensive plans should include freight-related strategies.

TRANSPORTATION IMPLEMENTATION STRATEGIES

The following priority implementation strategies have been developed to meet the Transportation goals of expanding alternative transportation options, reducing trip lengths and improving fuel efficiency, preserving infrastructure, and developing intermodal freight connections.

Update transportation codes to encourage intra-county bus services.

Investigate new ways of increasing transportation or commerce options in North Country.

Expand and complete broadband installations within the region and identify and adopt strategies to reduce transportation demand and improve commerce.

Expand existing public transit services and establish new inter- and intra-county bus routes.

Provide better connections from regional passenger rail stations and airports to hamlets and cities.

Develop publically available informational services and educational opportunities including a regional transportation website that links residents and visitors to transportation options and services.

Improve regional coordination of transportation infrastructure and services for residents, visitors and commercial interests.

Improve freight operations and include freight shipping and distribution strategies in county comprehensive plans and local industrial development plans as they are updated.

Transportation Strategy: update transportation codes to encourage intra-county bus services; investigate new ways of increasing transportation or commerce options in north country

The focus on local transit delivery hinders the ability to develop a regional perspective on travel and to provide a wider level of service. This local focus is understandable as systems are limited in providing service outside their permitted boundaries and funding is restricted to limited service areas. As the Plan begins to discuss taking a more regional viewpoint, systems are unable to make changes until regulatory changes are made to allow organizational changes to take place.

EXAMPLE PROJECTS

Regional Transportation Summits

Supported by varying county level governments, potentially based on impact and interest, convene regional transportation summits regarding key issues and opportunities (including regulatory and jurisdictional issues), such as long-range infrastructure costs, Route 11 corridor, public transit, Adirondack Scenic Railroad issues, and shipping and distribution.

Plan for Service Improvements and Cooperation

County level transportation agencies will need to determine the most opportune situations for changes, so that benefits can be targeted. The region is large, and transit operations will only be successful in selected, targeted areas. These areas should be determined before regulatory changes are suggested, so that marketing analysis and proposed ridership levels can be used to leverage political support for regulatory change. One area which could be included in a first round of review would be the City of Watertown and Jefferson County. Discussions with stakeholder in the region note that routes between Watertown and Fort Drum may be viable. Once origin and destination analysis is complete, a discussion on changing local funding and commission structures to allow route expansion (along with potentially new cost sharing arrangements) could be considered. Additional adaptations for discussion include costs sharing, cross border (city and/or county) route expansion, fare collection, and equipment management.

Transportation Strategy: expand and complete broadband installations within the region and identify and adopt strategies to reduce transportation demand and improve commerce

Comprehensive broadband will provide a strong alternative for the need for various forms of travel and could reduce vehicle miles travelled as well as save residents and businesses time and money. Broadband will allow for an increase in telecommuting by residents, allow companies to better market and provide information to residents, businesses and visitors and allow new information centered businesses to grow in areas formerly without access to the internet and high speed communications. While cost and technological barriers are slowing completion there are currently growing investment state-wide, with the North Country region gaining a number of broadband projects planned for 2013.

SUPPORTING PROJECT

Broadband and Transportation Study

The ongoing effort to increase broadband infrastructure in the region may result in fewer vehicle miles traveled by those with broadband service as a result of being able to work, shop, research, and communicate from home. More local research is needed to assess the transportation impacts of broadband. To support the Connect NY Broadband Grant Program, a local college or non-profit organization could undertake a regional survey on this issue with a focus on identifying opportunities to reduce VMTs and improve the economic conditions. This project could receive funding from various sources, transportation, technology and/or economic development organizations. Best practices and lessons learned should be distributed regionally.

Transportation Strategy: expand existing public transit services and establish new inter- and intra-county bus routes; provide better connections from regional passenger rail stations and airports to hamlets and cities

The large geographic area of the North Country and the low population density require a targeted approach to determining transit routes. A regionally conducted data collection process is necessary to determine the best locations to consider service expansion. The review of origin and destination data, as well as employment data should help this work. The NCREDC can also play a role in bringing important stakeholders to the process.

The region has limited rail and air travel connections allowing them to be easily targeted for improvements. The use of non-automobile travel will only become a viable option if travelers can be assured that intermodal connections are easily available and convenient. These connections should be integrated with tourist and employment centers, with public transportation as well as private transportation such as short and long-term auto rentals.

EXAMPLE PROJECTS

Provide planners and elected officials with lifecycle cost analyses

Local governments will benefit from having more complete transportation costs. For costs associated with traffic and maintenance of new road construction, truck versus rail for freight shipping, and public transit services. Use this as a tool to prioritize maintenance and funding. State DOT may support data collection efforts.

Increase system capability to withstand flooding and extreme weather

County transportation agencies will need to work with the state to review current highway design guidelines in light of possible increased localized flooding. Best practices may call for more adequately sized and properly maintained culverts. Recognize that high up-front costs may eliminate or mitigate serious damage from events, save costs and reduce environmental impact in the long term.

Create intermodal shuttle services

Public transit will be successful if transportation modes are linked together. Pilot shuttle services between trailheads and communities in regions like the Thousand Islands, Lake Champlain Valley, and the Adirondack Park will help. Tourism bureaus and recreational organizations can assist in defining needs. In addition, for residents, increase the availability of bus services within hamlets and cities, including low-cost fee programs for underserved populations [encourage the use of Job Access Reverse Commute (JARC) funding for route operations]. To help spur the use of transit into the region provide seasonal train-to-bus connections to selected tourist destinations, for example, from New York City and Albany to Lake Placid via Amtrak and a convenient dedicated shuttle. Equip trains and shuttles with gear storage for skis, bicycles, and other recreational equipment.

Transportation Strategy: develop publically available informational services and educational opportunities including a regional transportation website that links residents and visitors to transportation options and services

The lack of a MPO in the North Country means that each county and when applicable each jurisdiction, is responsible for providing local transit. This is also true for providing transit information. For the traveler who is remaining in the local area, this may be adequate, but for longer trips, or the need for regional trips, no single source is available. A regional website would provide all travelers with more timely and accurate information on travel options provide information on regional options and show how existing local transit can be linked together as well as acting as a hosting location for more non-traditional options, such as formal and informal ridesharing, jitney, taxi, pedestrian and bicycling information. For travelers coming into the region the site would provide the ability to design a complete travel experience from a single location. This functionality is critical to making transit a viable option for travel. No traveler will enter the region without a comprehensive picture of their travel needs.

Regional Transportation Website

Develop a regional transportation website that links residents and visitors to transportation options and services, including park-and-ride locations, rail and bus routes, carpool matching, and electric vehicle charging stations, scenic byway information, construction information, and links to the NYS 511 website. The region is currently developing a website to support visitors and tourism. This could be an enhancement to such a site.

Regional Transportation Summit

County transportation agencies with state support must develop a cooperative internal structure to support the improvement of transportation services and infrastructure. An annual regional transportation summit would provide a regional viewpoint, allow regional goals and strategies to be set across a wide variety of transportation systems and allow local transportation organizations to better coordinate with state partners. The summit could include discussions of infrastructure costs and maintenance, expansion and improvement of public transit, business and industrial shipping and freight needs now and in the future.

Improve signage

Through good government organizations such as ANCA, the region should continue to participate in regional efforts to improve signage and the branding of sub-regions of the North Country. Both visitors and local businesses will benefit from the region providing consistent, clear, and attractive signs, maps, and traveler resources that support positive tourist experiences, especially on the region's 10 designated scenic byways.

Implement a training and education program that can be shared by all counties for transit infrastructure maintenance

Working with State DOT develop New York State's best-trained highway and road workers at municipal, county, and regional levels, who share and adhere to best practices and exceed applicable guidelines and requirements. Train highway superintendents and staff on the proper use of road salts, best practices for ditching and hydro seeding, and practices to address runoff. Better training will lead to overall reductions in municipal costs and improvements in road conditions and safety as well as environmental impacts to adjacent lands.

Transportation Strategy: improve regional coordination of transportation infrastructure and services for residents, visitors and commercial interests

Unless an MPO is developed for the region, local governments, businesses, organizations and stakeholders will need to step in to provide coordination to create regional transportation benefits. A complex structure is un-necessary to begin to accomplish regional goals. During the development of this plan, Working Group members were able to come together to discuss and learn from each other and could have easily begun to develop solutions to issues. The region has distinct issues, from high levels of single vehicle mileage to limited capacity for rail operations – these are issues which can be addressed by various persons within various groups. The strategy which could be used here would be to coordinate a small group of people to act regionally to introduce transportation policy issues into existing organizations, raising awareness of key issues, and asking them to consider transportation as part of their ongoing mission.

EXAMPLE PROJECTS

Creation and Expansion of Multi-Use Trails

Local organizations working with DEC, APA and NYS Parks and Recreation can identify locations suitable for constructing or improving multi-use trails to provide more walking and bicycling options and connect services within communities.

Implement Complete Streets and other streetscape projects that emphasize pedestrian and cyclist safety and comfort

The region has above average Vehicles Miles Traveled (VMT). While a variety of transportation options are needed to give residents and visitors the ability to reduce their dependency on vehicles, one way is to increase the accessibility, safety and convenience of other transportation modes. In developed areas walking and bicycling are options that may need only small infrastructure improvements to dramatically improve user conditions and allow these modes to become more available.

Establish pilot programs for alternative transportation options

Support a new or existing, privately operated, pilot fleet of pedal cabs or e-cruisers in a tourist destination. These services have begun to be seen in Lake Placid or nearby Lake George and North Creek. These "new" modes of travel are revenue generating, fun and useful for both residents and visitors and are non-polluting. These services may reduce trips made by car and will provide seasonal employment opportunities.

Transportation Strategy: improve freight operations and include freight shipping and distribution strategies in county comprehensive plans and local industrial development plans as they are updated

The region has a history of industrial development and extractive industries that were supported by freight and shipping businesses over the last two centuries. The region has retained this infrastructure in some areas of the region and must work to encourage the use and expansion of these systems whenever possible. The use of these systems can mean reduced transportation time and costs for regional businesses. Most regional economic plans do take into account transportation options, but more could be done regionally to support these modes. Additionally, comprehensive plans should ensure that all possible transportation options are includes, including information on existing, yet unused Right of Ways (ROW) that could be considered for reuse or banked for future use within the region. The reuse of existing business and industrial areas can mean more sustainable land use patterns, the reuse of existing infrastructure and long-term reduced transportation costs.

Seven-County Shipping and Distribution Study

Evaluate principal existing shipping channels and opportunities, including regional case studies and comparison with similar regions. This project will require local county support. Economic development groups should undertake this work.

City/County Transportation Management Plans

Specific jurisdictions completing plans can develop management plans to expand public transit service in the region's small cities. For example, the Watertown public transportation system, Citibus, could be expanded to a countywide system in Jefferson County. Investigate and implement policy and management practices to increase intermodal connections on a countywide basis based on analysis of potential ridership demand.

Restoration of Rail Infrastructure from Carthage in Jefferson County across northern Lewis County to Newtown Falls in St. Lawrence County

This project is expected to continue as planned, despite the closure of Newtown Falls-Fine Paper Company's mill. Increased regional coordination is necessary to ensure the restoration and preservation of the rail line and to creatively and cooperatively seek to expand ton/mile volume along the corridor. The relative environmental benefit of shipping by rail (as opposed to moving freight by truck) should be included in any future analysis or proposal related to the corridor.

Preservation and Rehabilitation of the Adirondack Scenic Railroad Line from Remsen to Lake Placid

This project is consistent with this Plan's goals to preserve and improve aging transportation infrastructure and expand alternatives to single-occupant vehicle travel. The preservation and maximization of the Adirondack railway supports regional and state aims for greening transportation, enhancing tourism, and providing key infrastructure that would be available for future economic development opportunities. This plan also supports opportunities to concurrently accommodate and develop compatible recreational activities both along the railway corridor, where possible, and connecting to it. This should include the pursuit of enhanced recreational opportunities for biking, paddling, and snowmobiling, recognizing the success elsewhere, including at the southern end of this rail corridor, in maximizing the economic potential of existing trails and waterways by utilizing the railway for direct visitor access–even moving bikes, canoes, kayaks, and other equipment in a way that cannot be done otherwise to remote recreational assets. The announcement of the agreement between Iowa Pacific Holdings, LLC, and the Adirondack Rail Preservation Society (operators of the railroad) to pursue the introduction of overnight Pullman Car service between New York City and Lake Placid suggests that creative approaches may increase the economic benefit of the corridor.

Growing the Region's Agricultural Sector *(a case study)*

CHALLENGE:

There are real barriers that stop large institutions, like Paul Smith's College, from buying local food. Even when they want to find locally sourced foods there are significant hurdles. It's hard to coordinate buying from multiple small farms to get enough to serve 800 diners, and it's even harder for the smaller operations to get the kind of liability insurance that institutions, such as schools, require. Farmers do not want to place all their eggs in one basket, which means they cannot justify selling all they grow to one buyer, even if that makes life easier.

OPPORTUNITY:

Since smallness was a problem for the buyer and the sellers, combining the local sellers into a single group that the College could deal with might erase the main hurdles.

ACTION

Getting food under one roof works

Paul Smith's is working with Dan Purdy of Purdy and Sons in Sherburne, NY to put local farms under a single institutional roof. Purdy buys produce from local farms, freezes it, distributes it to places like Paul Smith's, and covers the additional liability the farmers need to access that market. "He's taking on the distribution problem," said Travis Zedick, Sodexo Food Service Manager at the College. "He has a facility where they freeze produce. So I can call him up and order 10,000 pounds of broccoli, he buys it, freezes it, and then sends it to me incrementally since we can't store that much produce at once – it's genius! And this is great for the farmers too, because they are guaranteed a large sale."

The school is also working directly with many Adirondack farms as well. "We are working with Harmony Hills Farm to buy their pork and beef," said Kate Glenn, Paul Smith's College Sustainability Coordinator.

RESULT

Building a model to grow the local food sector

The college is ready to act as a model for other institutions, and to test its system for locally sourcing food. Paul Smith's will track its progress using the Real Food Challenge, an external evaluation program that emphasizes local food. "The program creates a map of where your food comes from," said Glenn. "We can get an idea where we are at, and where we can improve."

"The goal is to have 20% of the food be 'real food' by 2020," added Zedick. A work-study student is currently entering the past year of Sodexo invoices into the Real Food system to be analyzed to see where the college stands.

The school is also starting to produce some of its own food for the St. Regis Café, a private restaurant on campus. The café and garden are used by the culinary program at the college, one of its flagship programs. "We try to incorporate local food whenever we can," said Chef Kevin McCarthy, faculty member in the culinary program. "One of our classes, American Gastronomy, recently prepared a meal using local spaghetti squash, tomatoes, and ground beef and served it at a local public school."

The program travels to local farms as part of their classes as well. "We go to Tucker Farms five to six times a year and use their beets and carrots," said McCarthy. "There's a difference between a carrot in August and carrot in October because the plant begins to convert starch to sugar with the frost, and we want the students to see that." The program also visits places like Asgard Dairy in the AuSable Valley, local slaughter houses, and has raised their own chickens on occasion. "We slaughtered them ourselves," said McCarthy. "When the students see the whole process, it's almost spiritual. Then when they get into the kitchen and are preparing the food they are more focused and are less likely to waste food and then just grab another chicken from the box in the freezer."

McCarthy also says it helps students learn how to use quality ingredients in their future careers. "There's a big difference between something picked yesterday and something picked two weeks ago and shipped. And the money they are spending stays local so the community wins. There has to be a professional standard to use local food whenever possible."

That community focus guides much of what the college is doing. "We're the college of the Adirondacks," said Glenn. "And we want to support our local area."

As part of that local commitment, Zedick hopes that other North Country institutions such as hospitals and schools will be able to benefit from the work the college is doing in negotiating the hurdles of buying local food. "We live in the Adirondacks, we support the Adirondacks," added Zedick. "We want to share our tactics on local food with other organizations. It's not about us and just what we can do here at Paul Smith's – it's about the sustainability of the region."

VII

Water Management

SAFEGUARD OUR ABUNDANT WATER RESOURCES

Whether one imagines the pristine lakes and mountain streams of the Adirondacks, the majestic Thousand Islands of the St. Lawrence River, or Lake Champlain nestled between the Adirondacks and Vermont's Green Mountains, they each evoke the North Country.

As one of the North Country's most valuable resources, water sustains the region's expansive ecosystems, serves as a recreational resource, and is relied on by residential households, agriculture, hydropower facilities, and other industries. The abundance of water in the North Country sets the region apart from many other areas of the United States, where this critical resource is becoming increasingly scarce. According to the NCREDC vision statement, pristine water is listed first among the five pillars of abundant natural capital on which future economic development of the region is to be based. Efficient use, reuse, and smart growth planning will enable the North Country to continue to benefit from its abundant, high-quality water well into the future. Water resources discussed in this plan include surface and groundwater sources, rainwater, waters used for recreation, water that sustains ecological habitats, wastewater, and storm water. This plan also discusses uses for potable water (municipal, well, surface, other), and industrial uses of water, including agricultural.

WATER MANAGEMENT WORKING GROUP

The 21 members of the Water Management Working Group included representatives from each of the seven counties, including county planning departments, municipal public works, private firms, non-profit organizations, academia, soil and water conservation districts, and NYSDEC. Further regional focus was brought by members representing DANC, the Ausable River Association, the Greater Adirondack Resource Conservation and Development Council, Paul Smiths College, and the Adirondack Council.

Through a series of working group and public meetings, regional stakeholders were called upon to help identify goals and strategies to protect and enhance water as a valued resource of the North Country. The group discussed regional goals to establish priorities for water management, opportunities and barriers, and implementation strategies to establish tools for regional and local stakeholders to achieve the goals developed during this process. Local governance issues were discussed to determine where policy changes could benefit water management goals.

Major themes that emerged from these discussions included:

- *Incorporating management practices to support the long-term availability and continued use of this resource.*
- *Promoting energy efficiency and a reduction of energy (and associated GHG emissions) used in water production and treatment.*
- *Supporting resiliency to flooding.*
- *Mitigating impacts on water quality, including those from invasive species and non-point source runoff such as from roadways and farms.*

Abundant water, usually thought of as a valuable resource, can turn into a problem if there too much of it. When Tropical Storm Irene marched through the North Country in August 2011, houses and businesses were washed away, power was lost, bridges and culverts were destroyed, and communities were isolated for weeks. The New York State "ClimAid Report" (NYSERDA 2011) predicts that the North Country will receive more severe and more frequent weather events in the future. These changes can have far-reaching ecological, economic, and safety implications. In addition to dealing with extreme weather, extended summer heat could lower shallow perched drinking water aquifers that provide drinking water to 30% of North Country residents (Figure 7-1). Other climate-related changes could threaten the vitality of red maple/fir forests, impact cold-water species such as brook trout, and damage native habitats in ways that encourage the introduction and growth of invasive species.

GOALS

Four regional goals were identified during the development of this plan:

1. *Maintain adequate water supply for future needs.*
2. *Promote watershed management planning on a regional or watershed scale.*
3. *Maintain and/or improve the quality of the region's water bodies and supply sources.*
4. *Reduce the energy used for water supply, distribution, and treatment.*

STRATEGIES

The following priority implementation strategies were established as the most essential to meeting these goals:

- *Implement programs to reduce system losses and conserve water supply.*
- *Support energy-efficient upgrades and encourage the use of renewable energy sources for water infrastructure.*
- *Support the development of watershed management plans.*
- *Reduce pollutant loads and non-point source impacts to water quality.*
- *Reduce the impacts of invasive species.*
- *Evaluate locations where engineering solutions may be needed to mitigate frequent flooding.*
- *Identify water management strategies needed to support the growth of businesses, industry, and recreation within the region.*

Water Management Goal 1: maintain adequate water supply for future needs

Water resources in the North Country are currently generous, and proper management of water resources will allow the region to maintain this supply in the future. However, changing climate conditions may lead to periods of drought, when water is needed most, or flooding, when storage capacity is already at its limits. Proper planning for these conditions will help manage the continued use of this essential resource and reduce the loss of infrastructure and crops. Specific objectives under this goal include maintaining aquatic base flow and natural habitats, maintaining a reliable water supply for residents, and providing the capacity to attract future economic growth in accordance with NCREDC goals.

Water Management Goal 1: maintain adequate water supply for future needs

OPPORTUNITIES

Abundant, high-quality natural water is a resource pillar for the region, as noted in the NCREDC plan. The North Country is fortunate to have access to ample water supplies and the opportunity to plan now for future water needs and management. As shown on *Figure 7-1 (on p. 213)*, the region relies on surface water for approximately 70% of its water needs, and groundwater sources for 30%. Groundwater data included withdrawals from domestic wells. In 2005, total water withdrawal in the North Country was approximately 83 MGD, less than 1% of total withdrawals in the state. In the same year, the North Country's withdrawal was only 32% and 34%, respectively, of that of its closest neighbors, the Mohawk Valley and the Capital Region.There are ample water resources in the region. Incorporating water management into comprehensive planning efforts and smart growth initiatives can help maintain this supply for future ecological, potable supply, and economic needs.

BARRIERS

Conservation of this resource must be coordinated and balanced with its importance as a drinking water supply and a resource for the local economy. For instance, the agricultural and dairy industries are two important economic sectors that require a reliable supply of high-quality water. Mitigating climate impacts such as flooding or drought must also be considered.

Water Management Goal 1: maintain adequate water supply for future needs

INDICATORS

These indicators provide a breakdown of water usage with respect to population and for each economic sector. Efficiencies, or reduction in water usage over time, can be tracked with these indicators. A reduction in per capita water use can also reduce the energy consumption and emissions associated with the production of water and treatment of wastewater. Both indicators are available from a nationwide USGS data set:

1. *Water use per capita (gallons per capita per day [gpcd])*
2. *Water use per sector (million gallons per day [MGD])*

BASELINE ASSESSMENT

Water Use per Capita

Water use per capita in the North Country region is approximately equal to the New York State average of 75 gpcd for domestic self-supply (individual wells) and 100 gpcd for publicly supplied water. Note that public uses include some commercial and light industrial uses, and any water withdrawn for use in other regions. *Table 7-2 (on p. 214)* provides a comparison of North Country water use with adjacent regions, New York State, and the United States.

Water Use per Sector

As shown on *Figure 7-2 (on p. 215)*, water use per sector shows that water withdrawn for public and domestic supply accounts for approximately 60% of regional usage, or 50 million gallons per day (MGD), followed by aquaculture and industrial supply, at 15.4% (13 MGD) and 13.4% (11 MGD), respectively. Mining, livestock, and irrigation use less than 10% of the region's water. No withdrawals were reported for thermoelectric use.

SUGGESTED TARGETS

Public supply is the sector with the largest use in the region. Primarily managed at the municipal level, use-reduction strategies such as leak detection in the distribution system and universal metering for customers can be implemented on a wide scale with measurable results.

- *Reduce public supply usage by 10% by 2020 (90 gpcd), 20% by 2035 (80 gpcd), and 30% by 2050 (70 gpcd).*

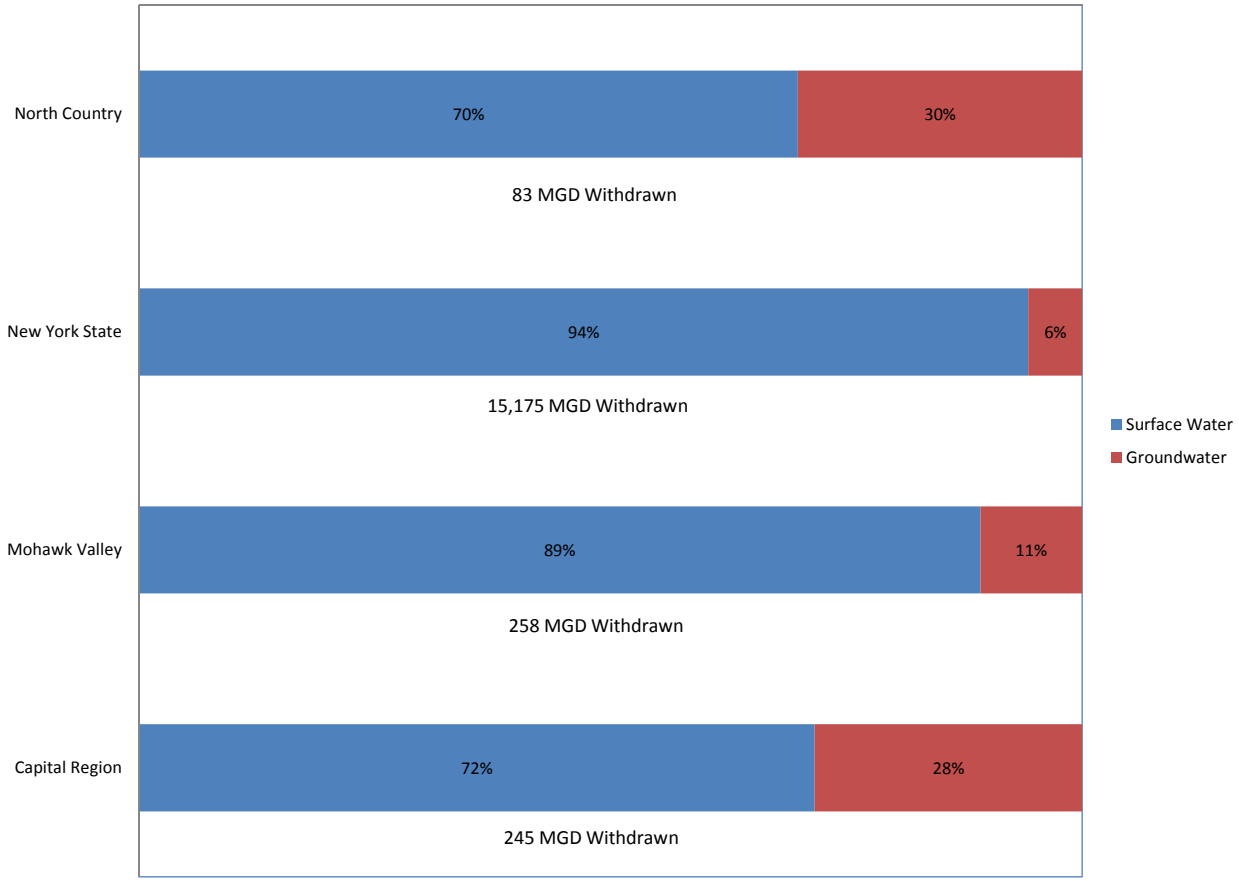


figure 7-1

WATER USE BY SOURCE, 2005

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

	Domestic Self-Supply (Individual Wells)	*Public Supply*
North Country Region	75	100
Mohawk Valley	75	91
Capitol Region	75	96
New York State	75	100
U.S. (low)	50	51
U.S. (average)	89	90
U.S. (high)	206	189

table 7-2

AVERAGE PER CAPITA WATER USE

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

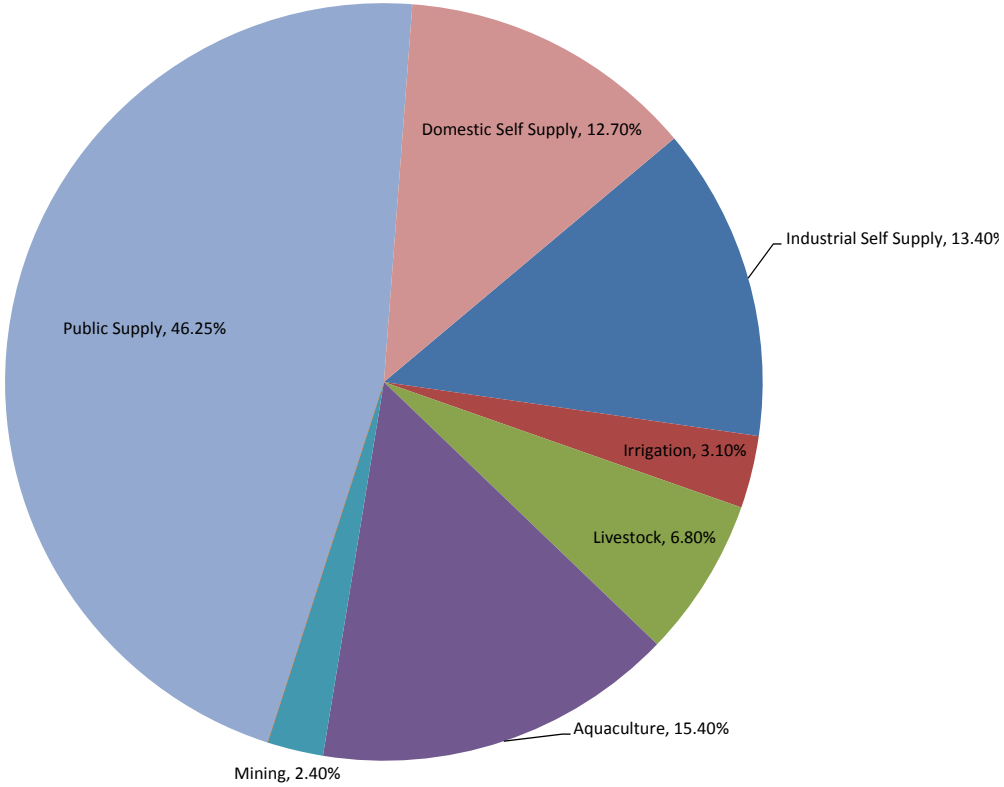


figure 7-2

WATER USE PER SECTOR, 2005

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

Water Management Goal 2: promote watershed management planning on a regional or watershed scale

Incorporate watershed management into regional growth strategies and comprehensive planning efforts. Consider impervious surface coverage as a watershed health indicator when planning future development.

Water Management Goal 2: promote watershed management planning on a regional or watershed scale

OPPORTUNITIES

Ample land is available in the North Country for the installation of infrastructure, retention areas, and maintenance of stream buffers and wetlands. Planning strategies should aim to make the most of this feature. The large land areas available may allow for less expensive, natural treatment technologies such as constructed wetlands, which consume less energy and have lower operational costs than traditional treatment methods. The construction of retention areas can maximize recharge and reduce flooding. Water conservation, water management planning, and the use of best management water and wastewater treatment practices can protect watersheds and reduce treatment costs for water and wastewater utilities.

BARRIERS

Watershed boundaries seldom match municipal boundaries. Planning at a watershed level rather than a jurisdictional level allows for a more effective evaluation of water use impacts on water resources and habitat. Limited resources and long transportation distances make it costly to provide water and wastewater infrastructure in the region and presents physical challenges to sharing resources among municipalities.

Water Management Goal 2: promote watershed management planning on a regional or watershed scale

BASELINE ASSESSMENT

Number of Watershed Management Plans

Watersheds are areas of land in which all water in, on, or below the land drains to a single location. The United States Geological Survey (USGS) classifies these boundaries by assigning a number identifier, or hydrologic unit code (HUC). Eight-digit HUCs define the largest watershed boundaries in an area; they are further subdivided into smaller watersheds (HUC-10) and local sub-watersheds (HUC-12).Within the North Country region are 21 HUC-8, 100 HUC-10, and 385 HUC-12 watersheds *(see figure 7-3 on following page)*. Of these, seven HUC-8 watersheds, covering approximately 33% of the region by area, currently have management plans. *Table 7-3 (on p. 220-221)* presents a list of available watershed management plans in the region. Information for this indicator was obtained by contacting regional stakeholders and performing an internet-based search.

Impervious Surface Coverage

Impervious cover (IC) is an indicator used to measure watershed health, based on the Impervious Cover Model (ICM). Under this model, stream segments with less than 10% IC in their contributing drainage area continue to function as high-quality streams and are generally able to retain their hydrologic function and support good to excellent aquatic diversity. Stream segments that have 10% to 25% IC in their contributing drainage area behave as impacted streams and show clear signs of declining stream health (CSN 2012). Use of this method to support planning and watershed improvements is most effective at the sub-watershed level (HUC-12). Approximately 208,000 acres, or 3.6% of the region, contain impervious (pavement or buildings) surface cover. *Figure 7-4 (on p. 223)* identifies areas of impervious surface coverage. A breakdown of impervious surface cover, by county, is presented in *Table 7-4 (on p.22)*.

INDICATORS

Percent impervious surface coverage is a general measurement of watershed health. It is best used at a local, rather than regional, scale to evaluate where improvements are needed within developed areas and to encourage watershed protection during development. Regional watershed management plans will identify those areas that have plans in place versus areas that may need additional technical support or funding.

1. *Percentage of regional watersheds with a watershed management plan.*
2. *Impervious surface area (acres, %).*

SUGGESTED TARGETS

Number of Watershed Management Plans

- *Prepare management plans for 50% of regional watersheds by 2020, 75% by 2035, and 100% by 2050.*

Impervious Surface Coverage

- *Reuse previously developed sites whenever possible.*
- *Limit new impervious development to 5% of total regional surface area by 2050.*

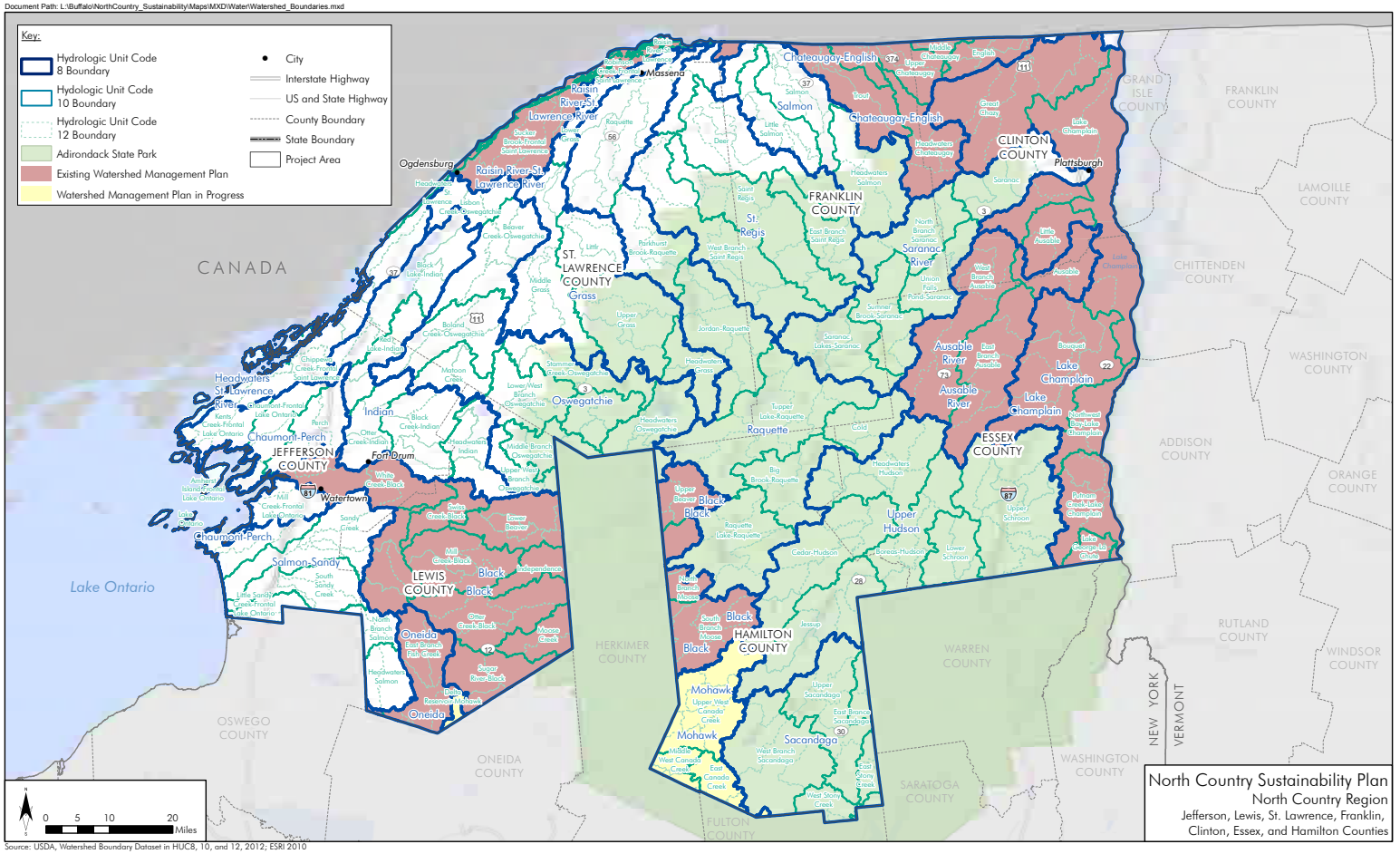


figure 7-3

WATERSHEDS OF THE NORTH COUNTRY REGION

Source: *USDA Watershed Boundary Dataset in HUC-8, 10, and 12, 2012. ESRI 2010.*

Watershed	*Geographic Coverage*	*Link*
Ausable River Watershed Management Strategy	Essex and Clinton Counties	*http://www.ausableriver.org/pdf/AusableWMPStrategy.pdf*
Black River Watershed Management Plan Watershed Characterization Report	Tug Hill Plateau, Lewis, Hamilton (and Herkimer) Counties	*http://www.tughill.org/wp-content/uploads/2011/10/7BRWFinal-DocumentPartI-May2010.pdf* *http://www.lewiscountysoilandwater.com/pdf/draft_characterization_report.pdf*
Chateaugay Lakes Watershed Management Plan	Franklin and Clinton Counties	*http://chateaugaylake.mylaketown.com/uploads/tinymce/chateaugaylake/Chateaugay%20Lakes%20Management%20Plan.pdf*
Chaumont-Perch	Jefferson County	Not Found
Grass	St. Lawrence County	Not Found
Indian	Jefferson County	Not Found
Opportunities for Action - An Evolving Plan for the Future of the Lake Champlain Basin	Lake Champlain Basin (Clinton, Essex Counties)	*http://www.lcbp.org/impofa.htm*
Mohawk River Watershed	Hamilton and Lewis Counties (extending into several others)	*Plan development in progress http://minerva.union.edu/garverj/mohawk/2011_symposium/18_Mosher.pdf*
Oneida Lake Watershed Management Plan	Southern Lewis County (extends into Oswego and Oneida Counties)	*http://www.cnyrpdb.org/oneidalake/*
Lake Ontario	Jefferson County	Not Found
Oswegatchie	Jefferson, Lewis, and St Lawrence Counties	Not Found
Raisin River-St. Lawrence River	St. Lawrence County	Not Found

table 7-3

WATERSHED MANAGEMENT PLANS (HUC-8 WATERSHEDS),
CONT'D ON SUBSEQUENT PAGE

Watershed	*Geographic Coverage*	*Link*
Raquette	Essex, Franklin, Hamilton, and St Lawrence Counties	Not Found
Richelieu River	Clinton County	Not Found
Sacandaga	Hamilton County	Not Found
Salmon	Franklin County	Not Found
Salmon-Sandy	Jefferson County	Not Found
Saranc River	Essex, Franklin, and St Lawrence Counties	Not Found
Schroon Lake Watershed Management Plan	Essex County (extends into Warren County). Part of the Upper Hudson Watershed	*http://www.warrenswcd.org/reports/schroon2.pdf*
Great Lakes - St. Lawrence River Basin Sustainable Water Resources Agreement	Jefferson and St. Lawrence Counties	*http://www.cglg.org/projects/water/CompactImplementation.aspv*
St. Regisv	Franklin and St. Lawrence Counties	Not Found
Additional Planning Documents		
Franklin County Water Quality Strategy	Franklin County	http://fcswcd.org/Water%20Quality%20strategy%202012.pdf
Sole Source Aquifer Determination for the Northern Tug Hill Glacial Aquifer	Jefferson and Lewis Counties	http://www.epa.gov/region2/water/aquifer/tughill/

table 7-3

WATERSHED MANAGEMENT PLANS (HUC-8 WATERSHEDS), *CONT'D*

County	*Percent Impervious Surface Area*
Clinton County	5.21%
Essex County	2.61%
Franklin County	2.27%
Hamilton County	0.90%
Jefferson County	5.98%
Lewis County	1.09%
St. Lawrence	2.56%
NORTH COUNTRY REGION	3.68%

table 7-4

PERCENT IMPERVIOUS SURFACE AREA, BY COUNTY

Sources:

Source: USGS - NLCD2006

Percent Developed Imperviousness - http://www.mrlc.gov/nlcd06_data.php.

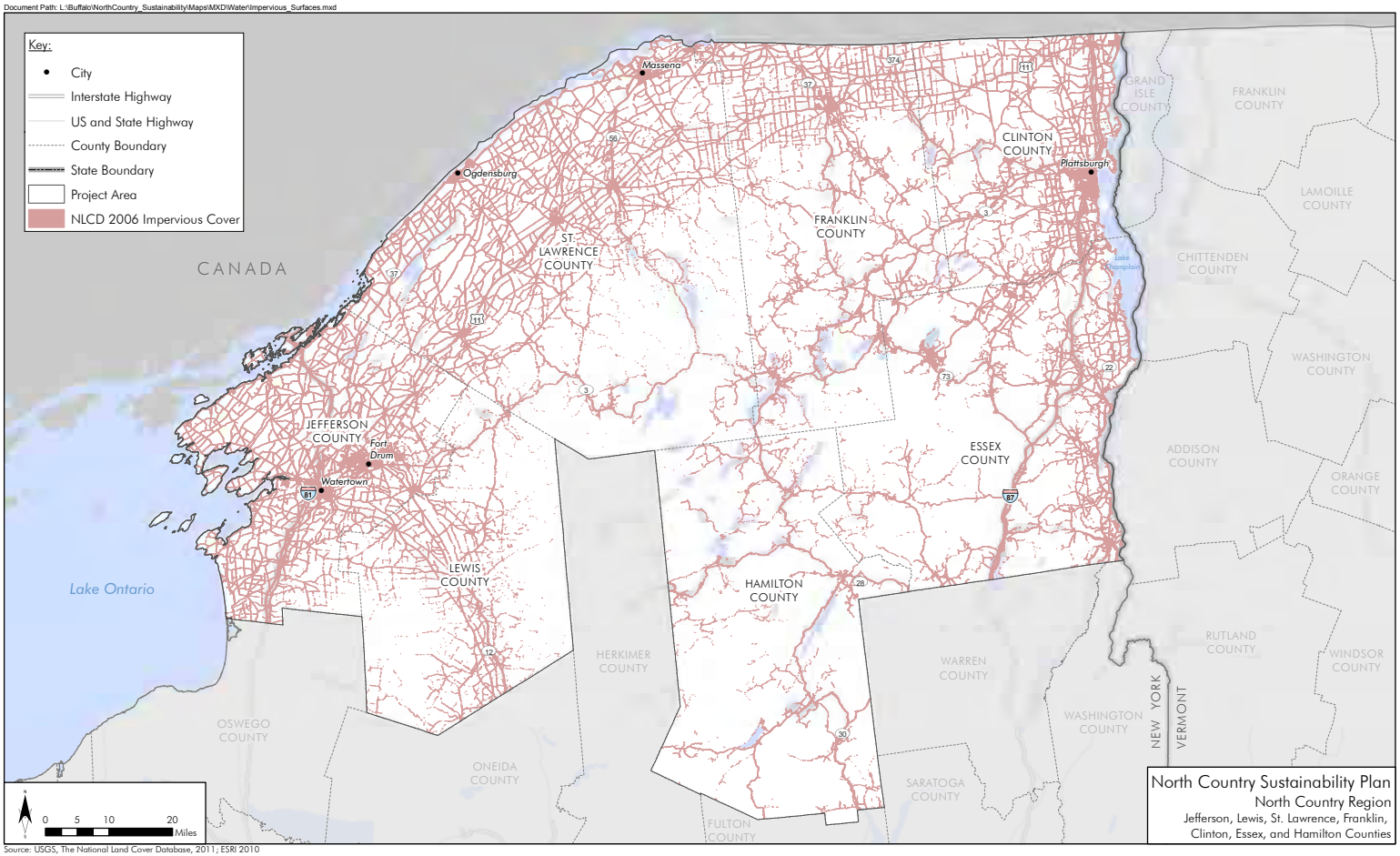


figure 7-4

IMPERVIOUS SURFACE AREAS IN THE NORTH COUNTRY REGION

Water Management Goal 3: maintain & improve the quality of the region's water bodies and supply sources

High-quality fresh water is one of the many natural features that enhance the region's landscape. It provides habitat to a wide variety of aquatic species, and millions of visitors are attracted to the region each year to fish, swim, paddle, and enjoy the beautiful vistas provided by its lakes and rivers (Visit Adirondacks 2013). In addition, private wells and public systems rely on the region's aquifers and reservoirs as their supply source. Watershed management and best management practices should be employed to prevent future impairments (reduce agricultural and road runoff, improve stream buffers, etc.) and to improve those water bodies already impaired.

Water Management Goal 3: maintain & improve the quality of the region's water bodies and supply sources

OPPORTUNITIES

Water quality standards and regulations were developed to protect both the natural environment and users of the resource. Over time, analytical methods have become more accurate, and additional knowledge is available regarding contaminants in our waters and the interactions of naturally occurring materials with chemicals and processes used in water and wastewater treatment. Treatment technology has also improved. With new information and available treatment methods, regulatory agencies are able to review and modify regulations.

BARRIERS

Regulatory changes (e.g., the disinfection by-product rule) can increase the cost of water and wastewater treatment. Facilities may have to invest large sums of money for upgrades or risk significant fines for noncompliance. These additional costs are often passed on to the community through increased water or sewer rates, or increased taxes. These costs also divert funds that may otherwise be available for alternative water treatment infrastructure investments.

Water Management Goal 3: maintain & improve the quality of the region's water bodies and supply sources

BASELINE ASSESSMENT

Stream Biological Impairments

Biological impairment data for stream reaches come from NYSDEC's biomonitoring program, which measures benthic macroinvertebrate communities that live in streams (primarily aquatic insects, worms, clams, snails, and crustaceans) as an indicator of water quality and non-chemical habitat impacts. The baseline inventory found that 81 of 687 assessed stream reaches are moderately to severely impacted (12% region wide).

Water Body and Stream Impairments

Water body and stream impairment data comes from the New York State Section 303 (d) List of Impaired/TMDL (Total Maximum Daily Load) Waters. This list identifies waters within the state that are unable to support their intended use and requires the development of a TMDL or other strategy in order to reduce the amount of pollutant loading to the water body. The baseline inventory identified 168 impaired water bodies (25.2% of total assessed water bodies and streams). To date, 666 of 1,275 water bodies (52%) within the region have been assessed.

Figure 7-5 (on following page) shows biomonitoring impairments for streams (orange and red dots) and water body and stream impairments in the North Country region (orange and red shading). Green coloring indicates no impairments, and blue indicates the water body has not yet been assessed.

INDICATORS

These indicators provide a standard measure of water quality and habitat in surface waters in the region. Statewide data is available for these NYSDEC data sets. Implementation strategies will focus on water quality projects that can measurably improve impacted waters.

1. *Stream biological impairments (NYSDEC).*
2. *Water body and stream impairments (NYSDEC 303(d) list).*

SUGGESTED TARGETS

Stream Biological Impairments

- *Reduce the occurrence of biological impairments by 5% by 2020, 10% by 2035, and 25% by 2050.*

Water Body and Stream Impairments

- *Complete assessments for 60% of water bodies and streams by 2020, 75% by 2035, and 100% by 2035.*
- *Reduce stream impairments by 5% by 2020, 10% by 2035, and 25% by 2050.*

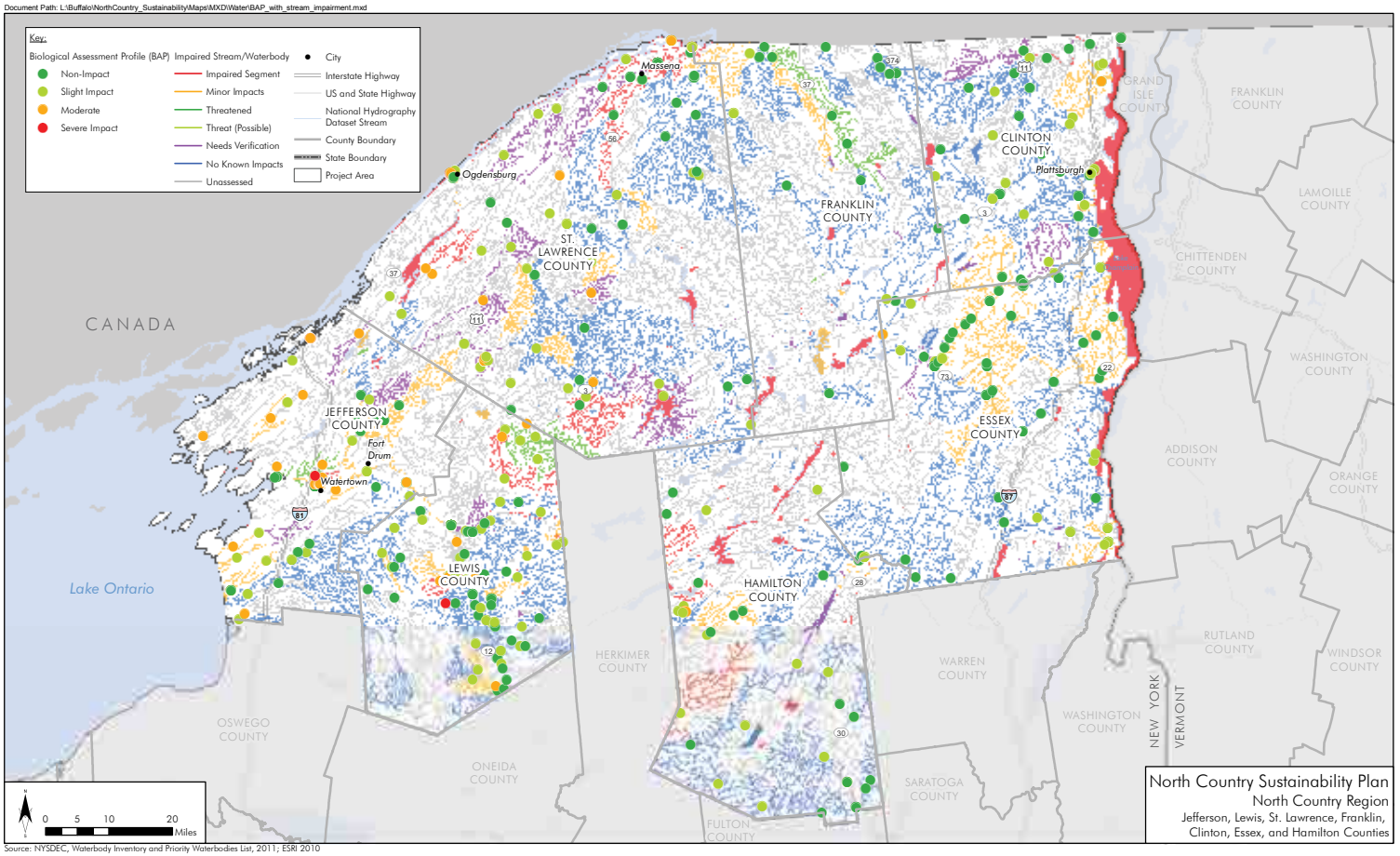


figure 7-5

IMPAIRED WATER BODIES AND STREAMS IN THE NORTH COUNTRY REGION

Water Management Goal 4: reduce the energy used for water supply, distribution, and treatment

It is essential to maintain and operate existing infrastructure more cost effectively while maintaining high-quality water treatment. A goal to reduce energy use can help achieve cost savings through direct measures (less energy use equals lower utility bills) and indirect measures (reducing plant influent reduces pumping rates). It also provides a step towards reaching the state's GHG reduction goals. The cost of operating a treatment facility and maintaining water and sewer infrastructure can place a financial burden on small towns and cities. The occurrence of sprawl adds to this expense, as communities expand and new infrastructure must be installed and maintained.

Water Management Goal 4: reduce the energy used for water supply, distribution, and treatment

OPPORTUNITIES

Water conservation programs such as universal metering, leak detection and incentivizing water-efficient fixtures for homes and businesses may reduce infrastructure operating costs. Low-impact development and green infrastructure may also reduce volume and pollutant loading to wastewater treatment facilities, thereby reducing wastewater treatment costs.

BARRIERS

Cost is a major obstacle to maintaining water and sewer facilities and infrastructure, as towns often lack the capital to make improvements. Sprawl and regulatory changes may result in added costs. Suburban and semi-rural communities on public water and sewer can be more costly to maintain than denser communities due to the distances involved in distribution and collection. *Table 7-1 (on following page)* provides a snapshot of water and sewer infrastructure costs as a percentage of overall expenditures for 2010. The table shows that water and sewer infrastructure is managed at the city, town, or village level, with costs averaging 12% to 22% of municipal budgets.

BASELINE ASSESSMENT

The baseline inventory found that, in 2010, $1.41 per gallon per day was spent on the operations and upkeep of water infrastructure regionally, and $2.37 per gallon per day was spent on wastewater infrastructure. Combined costs, by county, are shown on *figure 7-6 (on p. 231)*. Hamilton County incurred the highest combined cost of water and wastewater expenses, at over $12 per gallon per day. Essex County was the second highest at $6.32 per gallon per day. Clinton, Franklin, Lewis, and St. Lawrence counties each spent less than $1.50 per gallon per day. It should be noted that these costs represent a snapshot of a 1-year period and do not represent a long-term trend for water and wastewater expenses. blue indicates the water body has not yet been assessed.

INDICATORS

This indicator measures the annual cost of providing water and wastewater treatment within the region. Although not a direct measure of energy usage, energy costs typically account for 30% of conventional treatment costs. Energy improvements should also be measured on a per project basis.

1. *Cost per gallon per day treated, water/wastewater.*

SUGGESTED TARGETS

Due to the high degree of variability in the treatment processes used at the facilities, as well as in the volumes treated among different facilities, no target has been set for this indicator.

Area	*County*[1]	*City*[2]	*Town*	*Village*
Clinton County	0%	11.2%	8.3%	17.8%
Essex County	0%	—	23.5%	14.2%
Franklin County	0%	—	1.1%	24.1%
Hamilton County	0%	—	22.8%	14.3%
Jefferson County	0%	10.6%	24.4%	40.2%
Lewis County	0%	—	1.9%	23.7%
St. Lawrence County	0%	20.4%	2.0%	20.9%
AVERAGES	0%	14.1%	12.0%	22.2%

table 7-1

WATER AND SEWER INFRASTRUCTURE COSTS, IN 2010, AS A PERCENTAGE OF TOTAL JURISDICTIONAL EXPENDITURES

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

Notes:
1. No significant expenditures were reported at the county level. Hamilton and St. Lawrence counties reported costs at the county level less than 0.025% of total expenditures.
2. Data was reported for three cities in the region: Plattsburgh (Clinton Co.), Watertown (Jefferson Co.), and Ogdensburg (St. Lawrence Co.).

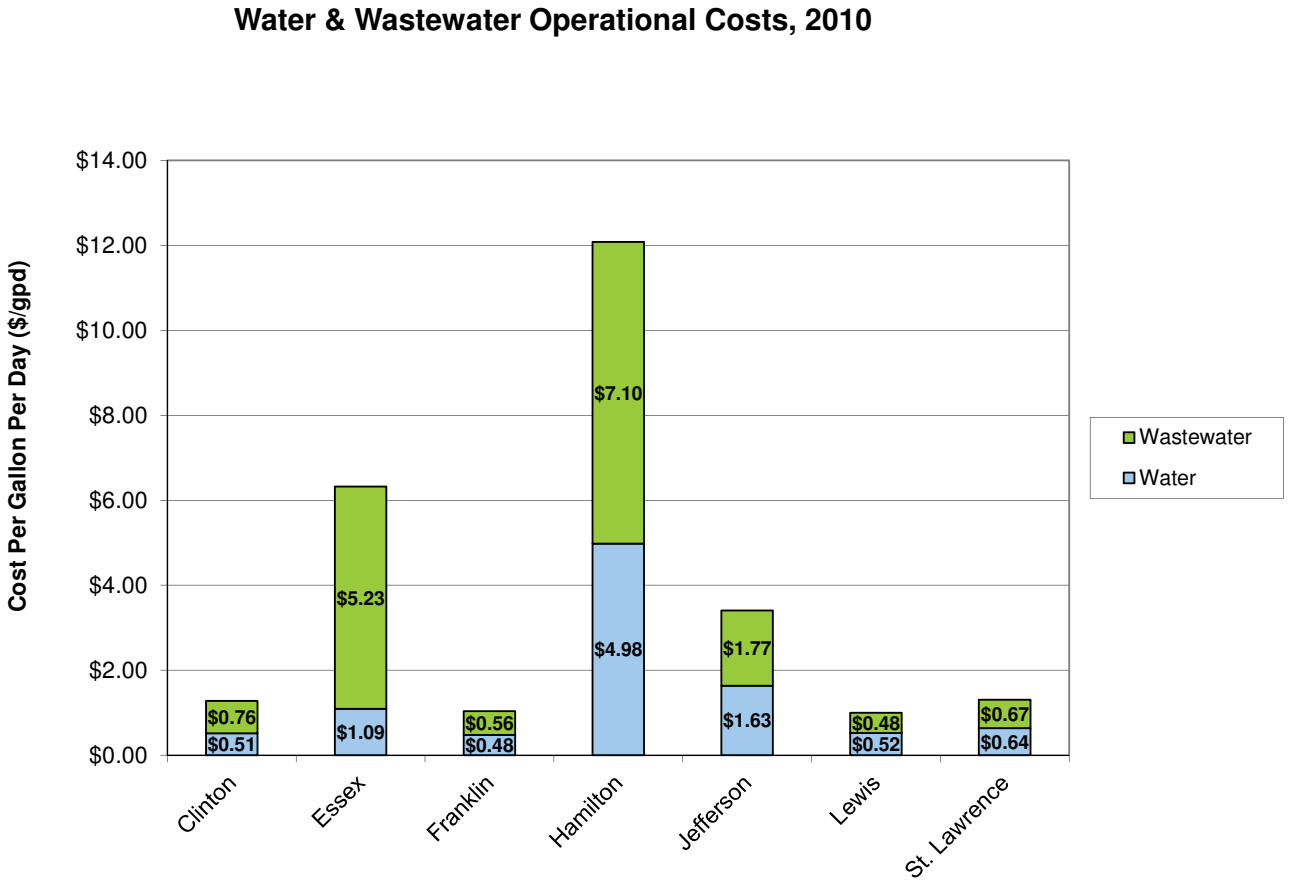


figure 7-6

WATER AND WASTEWATER OPERATIONAL COSTS, 2010

Sources:

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

2. 2010 NYS Comptrollers Office - Annual Public Expenditures for Water and Wastewater.

3. United States Environmental Protection Agency (USEPA) Enforcement and Compliance Online Database http://www.epa-echo.gov/echo/compliance_report.html

WATER MANAGEMENT
IMPLEMENTATION STRATEGIES

The following priority implementation strategies have been developed to meet the Water Management goals of maintaining adequate water supply for future needs, encouraging planning on a watershed scale, maintaining and improving the quality of the region's water bodies and sources, and reducing energy used for water supply, distribution, and treatment:

Implement programs to reduce system losses and conserve water supply.

Support energy-efficient upgrades and encourage the use of renewable energy sources for water infrastructure.

Support the development of watershed management plans.

Reduce pollutant loads and non-point source impacts to water quality.

Reduce the impacts of invasive species.

Evaluate locations where engineering solutions may be needed to mitigate frequent flooding.

Identify water management strategies needed to support the growth of businesses, industry, and recreation within the region.

Invasive Species Management in the Adirondacks

Many species of plants and animals currently in New York State have been introduced, either intentionally or unintentionally, by human activity. A small fraction of introduced species cause significant harm to our economy, environment, and health. These harmful species are deemed to be "invasive." Invasive species (IS) represent a clear and present danger to the biotic health of ecosystems, human health and safety, and the overall ecological balance of organisms across the landscape of New York. Source: (E & E 2011)

Water Management Strategy: implement programs to reduce system losses and conserve water supply

Although the region is marked by an abundance of water, changing climate patterns and economic drivers make proactive conservation an important strategy for the long term management of the region's water resources. Best practices implemented for municipal distribution and collection systems can reduce losses and potentially save operational costs. A switch to universal metering from flat fee metering can help municipalities' better track usage, as can the replacement of aging water meters. Incentivizing efficient irrigation systems (such as drip irrigation, or systems with moisture sensors) for agriculture and golf courses, can save water lost to evaporation, wind, or improper management. Water conservation can also provide an educational component for sustainability programs on college campuses and regional schools.

SUPPORTING PROJECT

Leak Detection and Water Meter Replacement Programs

Municipalities and water authorities can apply for Green Project Reserve funding, through the state revolving fund (SRF) for projects involving green infrastructure, energy, or water efficiency. These can include meter replacement projects and leak detection for public water systems.

Water Management Strategy: support the development of watershed management plans

Incorporate water supply management into comprehensive and master plans, and include planning for changes in weather patterns. Encourage educational programs that bring awareness to local watershed conservation and water quality issues. Planning from a watershed management level rather than a jurisdictional level includes coordination between stakeholders within the hydrologically defined watershed boundary. Watershed management plans aim to address priority water resource goals, including water quality and habitat, and can include involvement from local, state or federal resources, as well as special focus groups. A number of regional partnerships are already in place within the region and include but are not limited to the Lake Champlain Basin Program (LCBP), the NYS Tug Hill Commission, and the Mohawk River Watershed Coalition of Conservation Districts (MRWCCD).

EXAMPLE PROJECTS

Creation of a watershed management plan does not ensure protection; ongoing efforts must be taken by local municipalities and stakeholder organizations to uphold plan intentions. Specific actions that can be taken include:

- *Confirming that proper review is performed for proposed projects within the watershed area, including State Environmental Quality Review (SEQRA), Adirondack Park Agency (APA), and local planning criteria.*
- *Providing training workshops for municipal employees to educate them on best management practices related to water quality.*
- *Designating desired areas as "special groundwater protection areas.*
- *Coordinating volunteer monitoring efforts to collect data on lakes and streams subject to development. The primary organization currently doing this type of work is the New York State Citizens Statewide Lake Assessment Program (CSLAP) (see http://www.dec.ny.gov/docs/water_pdf/cslaparticle.pdf).*

Water Management Strategy: reduce pollutant loads and non-point source impacts to water quality

Soil and water conservation districts (SWCDs) work within each county of the region to conserve soil and water resources, control erosion, reduce flooding, protect public lands, improve water quality, decrease pollution, and promote agricultural BMPs for drainage and irrigation. Each district maintains a set of programs to provide technical, financial, and educational assistance to residents, government, and land owners to help them meet needs for natural resource conservation, management, and development.

Water quality programs from regional SWCDs have included those to minimize agricultural runoff; erosion control (hydroseeding, stream bank stabilization); water quality monitoring for private wells and septic systems, stormwater management, and conservation planning. SWCDs are an excellent resource for efforts to protect water quality in the region

The application of road salt is a major item of non-point source water pollution in the region. The Cary Institute of Ecosystem Studies (Kelly et al, 2010) evaluated the pros and cons of road salt alternatives in a 2010 report. They concluded that currently available alternatives all have environmental impacts in addition to added costs. Their recommendation for best management practices for road salt application is supported by a Canadian example which resulted in a 20% reduction in salt use from BMPs.

EXAMPLE PROJECTS

Agricultural Best Management Practices

In March 2013, Governor Cuomo announced a $12 million dollar program aimed at protecting the state's water bodies from agricultural runoff. Eligible projects include those that develop comprehensive nutrient management plans or implement best management practice systems to protect water quality while maintaining the economic viability of New York's diverse agricultural community. Examples of projects include grazing systems to prevent soil erosion, vegetative buffers along streams to filter runoff, and nutrient management systems for watershed protection. Funds will be managed through the regional SWCDs.

Wastewater Polishing Wetland

In the Town of Willsboro, a constructed wetland system was installed to reduce phosphorus loading from treated effluent being discharged into the Boquet River, a tributary of Lake Champlain. Through a series of treatment cells, the wetland system provides additional solids removal and phosphorus reduction using wollastonite tailings. The effluent is then directed to one of two catch basins prior to being discharged to the river. This project illustrates an alternative to conventional plant upgrades driven by regulatory changes and can be used as an example for other wastewater treatment facilities.

Water Management Strategy: support energy-efficient upgrades and encourage the use of renewable energy sources for water infrastructure

Energy efficiency improvements for water and wastewater facilities can reduce GHG emissions and operational costs for systems often facing steep upgrade expenses in order to maintain aging equipment or changing regulatory requirements. Municipalities should evaluate future energy needs and current performance when assessing plants for upgrades. Replacement of aging equipment can often result in more reliability and energy savings. Installation of high-efficiency blowers for wastewater facilities for example, can save 30-50% of a traditional blower's energy usage. These facilities offer innovative opportunities for the installation of renewable energy such as solar panels on roofs or open areas, anaerobic digesters for sludge handling, or strategies that reduce operation costs of pumping, aeration, and other energy intensive treatment processes. The USEPA provides a number of energy efficiency resources for wastewater facilities on its website, including information on energy self-assessment (*http://water.epa.gov/infrastructure/sustain/energyefficiency.cfm*).

EXAMPLE PROJECTS

Municipal Solar Cooperative

Eight municipalities in Jefferson and St. Lawrence counties joined together to form a municipal co-op seeking opportunities for energy savings at municipally owned buildings. Eighteen solar installations were funded through NYSERDA, resulting in over 450 kW worth of solar projects in the region. Unique procurement methods resulted in projects coming in under budget; as a result, each municipality was able to add another array to their project. The photovoltaic systems power wastewater treatment plants, highway garages, transfer sites, municipal buildings, recreational arenas and pavilions, and libraries. These installations provide significant cost savings for tax payers in each municipality. This can be used as an example for replication in other counties. Solar installations at water and wastewater facilities can reduce GHG emissions and the cost of treatment. NYSERDA funding mechanisms are currently available for solar installations.

Alternative Sludge Disposal

A Jefferson County wastewater treatment facility is considering modifying their sludge-handling operations to add anaerobic digestion. Key benefits of this type of project can include energy generation for plant operation, a reduction in fuel oil used to ship sludge off site, reduction in the volume of landfill-disposed wastes, and the creation of fertilizers for use in land application.

Water Management Strategy: support programs that reduce the impacts of invasive species

Invasive species issues in the region are strongly oriented toward prevention, although there are locations where management is needed and underway. Identifying active prevention, control, and management activities and determining their geographic scope may provide a measure of the degree to which invasive species concerns are being addressed in the region. The Partnerships for Regional Invasive Species Management (i.e., the Adirondack Park Invasive Plant Program and the St. Lawrence Eastern Lake Ontario [SLELO] PRISM) serve as both a driver of invasive species initiatives and a repository for invasive species information, activities, and data.

Climate change can also impact the spread of invasive species. Warmer water temperature in the St. Lawrence Seaway may allow more invasive species to enter the waterway. Invasive species such as Chinese clams and hogweed have already become a serious issue in many areas of the North Country. Some invasive species, such as the Fanwort, which is native to the Carolinas, are better adapted to warmer temperatures and will spread much faster as water temperatures increase (TNC 2013).

SUPPORTING PROJECT

Invasive Species Prevention

Support the goals of the New York State Invasive Species Management Strategy through regional invasive species action groups, including the St. Lawrence Eastern Lake Ontario (SLELO) Partnership for Regional Invasive Species Management (PRISM) and the Adirondack Park Invasive Plant Program. The Adirondack Regional Invasive Species Initiatives has several projects are underway and in need of funding to expand their scope, and several projects are in their infancy and require start-up support. The work builds upon current efforts underway by more than 30 partners in the region through the Adirondack Park Invasive Plant Program to develop shared solutions to protect the region from the negative impacts of non-native invasive species. SLELO's efforts are focused on the Tug Hill Invasive Species Prevention Zone (ISPZ), and include early detection monitoring and control at priority sites, restoration of habitats impacted by invasives, public outreach for forest pest prevention, and collaboration and information sharing with regional partners and the public. In 2012 SLELO began maintaining a database for mapping tracking information on invasive species in the Tug Hill ISPZ.

Water Management Strategy: evaluate locations where engineering solutions may be needed to mitigate frequent flooding

The damage caused by Hurricanes Irene and Sandy were cited in meetings and discussions as evidence that the region needs to be better prepared for extreme weather events and flooding. These storms had tremendous cost impacts on the North Country, especially with Irene where towns like Keene were nearly swept away by flooding (Rubin 2011). Particularly with regard to runoff and drainage, counties would be well served by regular best practices education and training for highway superintendents and staff regarding ditching and culverts, hydro-seeding, winter road maintenance, and general maintenance schedules, etc. Historically, culverts and small highway bridges have been built to accommodate normal high water levels. These structures are sensitive to climate-related impacts, including damming by ice during thaws and by blockage with debris during floods. In addition, passages under roads, when undersized, can serve as barriers to be movement of fish, amphibians, and other wildlife. With the potential for floods and droughts to be more severe and more frequent, the risks to fish and other wildlife could increase. Building culverts and bridges larger to accommodate floodwaters and deeper to ensure fish passage during drought can mitigate these effects. Natural drainage corridors such as wetlands, ponds and streams should also be conserved and maintained with adequate buffer capacity to convey, store, and filter storm water.

Each region of New York State has its own unique topographical, water management, and infrastructure challenges, and the North Country region cannot assume that the state will take the lead in mandating or encouraging new guidelines for considerations such as culvert-sizing, asset inventories, maintenance schedules, etc. However, participation by North Country transportation experts and leaders in the NYS 2100 Commission will help ensure a cooperative approach to addressing infrastructure and maintenance needs.

SUPPORTING PROJECT

Community and Aquatic Ecosystem Resilience to Climate Change

The Champlain Valley suffered widespread damage due to extensive spring flooding and Tropical Storm Irene in 2011. There was extensive and costly damage to private property and to transportation infrastructure, including culverts and roads, across the northeastern U.S. Locally, the Ausable watershed experienced severe impacts, with many roads destroyed and millions of dollars of damage to public and private property. Following the storm, awareness of economic and safety issues associated with stream crossings and an opportunity to build on current work focused on the ecological value of culverts developed. Outreach efforts to local highway departments in the watershed led to understanding about their culvert priorities: which culverts are the sites of frequent flooding, which culverts require ongoing maintenance, which culverts are likely to fail in future storms, and what are the obstacles to upgrading these culverts. As a result, the partner organizations (The Nature Conservancy, Ausable River Association, SUNY Plattsburgh, United States Fish & Wildlife Service) have identified a select set of culverts that are ecological and community priorities for upgrade or replacement. "Problem" culverts have the greatest potential to block the movement of stream dependent organisms, cannot withstand high water volumes and floating debris, and present frequent maintenance problems for local towns.

Water Management Strategy: identify water management strategies needed to support the growth of businesses, industry and recreation within the region

Evaluate water resources in areas targeted for growth and industrial development. Develop water management strategies that support these planned uses while maintaining watershed quality. Adequate water supply and water infrastructure is essential for the region to attract new businesses and continue to grow existing economic sectors, including winter and summer recreation and tourism. Downtown centers looking to revitalize and attract new business may require additional water supply and a possible shift from septic systems to centralized wastewater treatment.

Expanding industries look to make use of available local water and wastewater infrastructure when selecting a location. In nearby Johnstown and Edmeston NY, Greek yogurt companies Fage and Chobani provide significant local employment opportunities. In Edmeston, Chobani repurposed a former Kraft factory, making use of a previously developed site. Both were able to work with local municipalities to obtain the necessary water supply and wastewater treatment capacity to operate their facilities.

Although a direct economic benefit for local jobs, integrating a value-added product like Greek yogurt, with well-planned water management, and existing local industries (such as dairy farming) would create an even greater synergistic impact both regional economic development and the long term success of the product.

Warmer temperatures can have a significant impact on the seasonal recreation activities that provide a strong tourism base for the region. Less ice and snow in the winter will lead to a shorter winter sport season. For areas such as Lake Placid and the Olympic Training Center, this may prove to be a considerable issue, as athletes and tourists come to these areas to participate in and train for winter sports. The resulting loss in revenue may have a considerable effect on the region's economy. Warmer water temperatures may reduce the region's habitats for trout and other cold-water fish species. While the habitats for fish species more suited to warmer water may expand, periods of increased water temperature variation will make it more difficult for either type to thrive, thus reducing total fish populations in the region.

SUPPORTING PROJECT

Aquifer Analysis and Management Tool Development

Regional aquifers provide municipal drinking water and furnish clean water to local streams and rivers, which promotes recreation, fishing, and aquatic habitat. The Tug Hill is one such aquifer. Municipalities served by this aquifer have implemented summer water conservation measures more frequently as climate has changed and uses have increased. One of the major users of water from this aquifer is Great Lakes Cheese in Adams, New York. Completing testing and modeling needed to support a detailed aquifer study will allow municipal, industrial, and individual users to better understand the capacity of the aquifer. A programmatic approach to this process will enable its replication for regional aquifers. This will provide more effective management of source-water aquifers throughout the region.

Growing a Better Option for Food *(a case study)*

CHALLENGE:

Most school budgets do not have the flexibility to serve meals that meet minimum standards of nutrition or taste. Even when there are farms down the street, most lunch menus are built around inexpensive ingredients that are manufactured far from the school community. The food is of low quality, and the school's tax-funded budget dollars leave the region.

OPPORTUNITY:

Keene Central, in Essex County, is a small school, and its small appetite might make it the right scale to add local ingredients to its daily menu. A local food project could also support area farmers and provide innovative education programs for students and the community.

ACTION

Gardens, greenhouses and orchards

Keene tried out a wildly different food system, including a large garden, greenhouse, orchard, and composting program that the entire school community helps to implement throughout the year.

"We worked with Essex Farm," (a community-supported agriculture farm-to-buyer operation on Lake Champlain), café staff manager Julie Holbrook explained, "to create a 'school CSA share,' which provides most of our eggs and vegetables; we also get grass-fed beef from Ben Wever Farm."

The greenhouse is a recent addition that will eventually permit the school to produce some of its own food year-round. It will also include a small trout hatchery in its water-tank, which will be aerated with a solar powered generator and monitored by high school science classes.

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RESULT

A better diet for a small community school

Holbrook and her colleagues Jocelyn Lopez and Shannon Shambo cook completely from scratch, make all their own bread, and "hide" zucchini and other vegetables in soups, burritos, and desserts. Each fall, they harvest and process voluminous quantities of local produce, often with teams of town volunteers to help clean, blanch, and freeze the produce in preparation for the school year.

Holbrook, who recently assisted the Schroon Lake schools to implement a similar café and garden initiative, said "I love what I do and believe that it is our responsibility to feed children well so that they can function to the best of their abilities."

"I think kids eat more balanced, healthy meals if they know where the food comes from and help to grow and sometimes cook it themselves, so our students plant seeds, weed, water, and harvest," continued Holbrook. "The Home Economics classes often help us prepare meals and learn their own skills at the same time. Spanish classes make salsa; at holiday time younger children make cookies; it all adds to what they are learning."

It is this school-wide support and involvement that has Holbrook most excited. "This school community is so incredibly supportive that I don't even have to think twice about permission and viability, they make it happen no matter what! The bottom line - the community as a whole is what makes this happen for the kids."

VIII

Materials (Waste) Management

TRANSITION FROM LINEAR WASTE STREAMS TO INNOVATIVE REUSE OF MATERIALS

Most communities in the North Country Region are undergoing a transformation in how they perceive, manage, and dispose of their unwanted material. What was once considered just waste, which required collection, transportation, and disposal for a fee in a landfill, has now become the raw material for other uses, with opportunities for re-use, sales, job creation, and cost savings.

While not a new idea, this change in perception is supported by the 2010 NYSDEC materials management strategy, Beyond Waste. Developed by subject matter experts, including the region's Solid Waste Planning Units, officials, and stakeholders, Beyond Waste presents a comprehensive strategy for achieving sustainable goals and targets in New York State. As in Beyond Waste, this Plan also uses the terms "materials" and "materials management" in place of "waste" and "waste management" when referring to activities at the upper end of the hierarchy such as; reduction, reuse, recycling. The term "disposal" includes municipal waste combustion, landfilling, and export for ultimate disposal. Materials are not waste until they are destined for a landfill or municipal waste combustor. (NYSDEC 2010a)

The region's materials and solid waste management initiatives are led by its Solid Waste Planning Units. A Planning Unit may have one or several counties within its jurisdiction and is responsible for providing oversight and guidance, and in some cases, management, for solid waste facilities and programs. Each Planning Unit is obligated by the State to develop and follow a Local Solid Waste Management Plan (LSWMP) specifically to address the waste management needs and trends within their constituency.

This sustainability plan encourages transforming the concept of "waste" that needs landfilling, into the concept of materials that can be utilized for economic development. Reductions in natural resource consumption and greenhouse gas (GHG) emissions are added benefits that accompany the transition of waste into useable materials.

TRANSITION FROM LINEAR WASTE STREAMS TO INNOVATIVE REUSE OF MATERIALS, *cont'd.*

GOALS

Two regional goals were identified during the development of this plan:

1. *Reduce the amount of solid waste generated*
2. *Increase the percentage of materials recycled or reused*

STRATEGIES

The following implementation strategies were established as the most essential to meeting these goals:

- *Conduct regional research on material management contracting and disposal fees to help determine best practices that can be shared regionally to improve local decision-making for material management.*
- *Encourage counties and planning units to adopt single-stream or zero-sort recycling.*
- *Increase the number of composting and digester facilities to reduce the volume of food and yard waste sent to landfills, and to create a useable product (fertilizers).*
- *Explore and promote market opportunities for recyclable and recovered materials.*

The outcomes of these efforts are intended to overlap with the other economic and sustainability goals within this plan by (a) increasing regional employment, (b) reducing transportation miles and costs, and (c) reducing energy consumption and GHG emissions through reduced transportation and landfilling needs. An additional benefit will be extending the life of existing landfills and reducing the need for landfill expansion within the region. The key challenge in the North Country, as elsewhere in New York State and nationally, is to foster and achieve a paradigm shift in how individuals, businesses, and policy makers view materials typically targeted for disposal. This material is not just waste; it is a resource to be extracted, managed and remarketed. While the region as a whole has not as yet made this shift, communities, individuals, and private companies are beginning to embrace the vision.

Two examples include:

1. Casella's Zero-Sort program*: a single-stream recycling program that has increased overall participation rates in recycling in every area where the program is offered.*
2. The Town of North Elba anaerobic digester: *a project currently in the planning stage, it will remove organic materials from the waste stream and divert it to a digester. The process will reduce the volume of disposed waste, generate energy, and reduce GHG emissions from landfills. It will also provide local employment and create valuable secondary products such as compost.*

Is Renewable Energy Contagious?

Outside of policy debates over tax credits and carbon pricing, something much simpler may be holding back the spread of renewable energy: its novelty. A joint study between Yale and NYU found a "peer effect" among neighbors with solar installations. When one household installs solar, researchers found that it increases the likelihood that nearby houses will follow suit. The study attributed findings to both word-of-mouth information sharing and a culture of one-upmanship. The results held true even after controlling for other possible influences, such as regional marketing efforts and clustering between people of similar environmental preferences. A review of the data found that 10 extra installations in a zip code increase the probability of another homeowner adopting solar by 7.8 percent. If a zip code experiences a 10 percent increase in solar installations, the adoption of solar will increase by 54 percent, according to the study.
Source: (Peer Effects in the Diffusion of Solar Photovoltaic Panels, September 2012 Marketing Science.)

REGIONAL PLANNING UNITS AND FACILITIES DESCRIPTIONS

The LSWMPs are developed and implemented by Solid Waste Planning Units. Each unit serves as the management agency for materials handling operations and state-level reporting within the area it covers. The North Country region has five Planning Units, one each for Clinton, Essex, Franklin, and Hamilton counties, and one that serves Jefferson, Lewis, and St. Lawrence counties as part of the Development Authority of the North Country (DANC). Below is a brief overview of each Planning Unit, including infrastructure and operations within their jurisdiction, as reported in their respective LSWMP and Appendix C of NYSDEC's Beyond Waste. *Figure 8-1 (on following page)* provides a graphical overview of active and inactive solid waste facilities throughout the region.

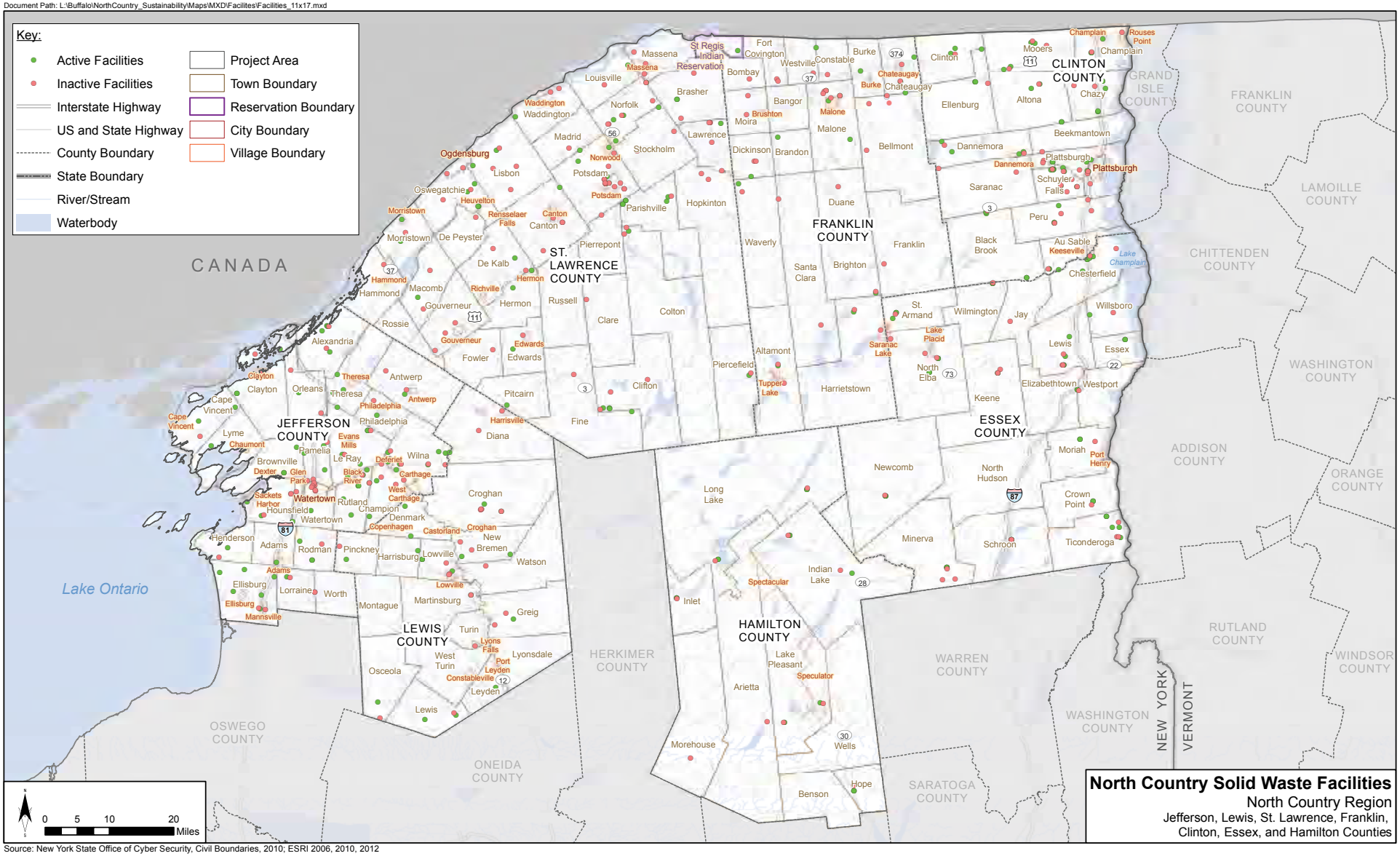


figure 8-1

SOLID WASTE FACILITIES IN THE NORTH COUNTRY REGION

CLINTON COUNTY PLANNING UNIT

Clinton County serves as the Planning Unit for all municipalities within the county. The County owns the Clinton County Landfill, 12 transfer stations (three of which also have recycling and materials recovery), and one materials recovery facility (MRF). In 1996, Clinton County entered into a 25-year lease agreement with Casella Waste Systems, Inc., which assumed responsibility for operating and providing financial assurance for the entire Clinton County solid waste system. In addition to the above facilities, Casella Waste Systems, Inc. is responsible for the closure and post-closure monitoring of three unlined landfills within the county. The facilities accept waste from regional Planning Units, as well as from out of state. Waste and recyclables are also accepted from residents and businesses. All materials received at these facilities are processed at the MRF or transported to the Clinton County Landfill. Although haulers in the county are not required to deliver collected waste or recyclables to Clinton County facilities, nearly all waste is delivered to the Clinton County Landfill (NYSDEC 2010a).

ESSEX COUNTY PLANNING UNIT

Essex County does not have a LSWMP on file with NYSDEC; therefore, limited information is available. Disposal of the county's MSW is primarily divided between the Franklin County Landfill (55%) and the Clinton County Landfill (44%), the latter of which is operated by Casella Waste Management (NYSDEC 2010a). NYSDEC reported that the county has 15 active transfer stations, all of which are also registered recyclable handling and recovery facilities. There is one MRF, the Essex County Materials Recovery Facility in Elizabethtown.

FRANKLIN COUNTY PLANNING UNIT

Franklin County Solid Waste Management Authority (Authority) serves as the Planning Unit for all municipalities in Franklin County. The Authority owns and operates one landfill and four transfer stations. The Malone facility also operates as a recyclable handling and recovery facility. The other three transfer stations accept recyclables from residential and commercial generators. As of 2008, the Authority was actively pursuing a landfill expansion project to extend the life of the landfill by 12 to 20 years. Also in 2008, the Authority instituted flow control of MSW, industrial waste, and construction and demolition (C&D) debris, and now all waste generated in Franklin County is received at the Authority's landfill. The Authority's landfill accepts waste from Essex, Clinton, Jefferson, and St. Lawrence counties, as well as from Canada. The southern portion of Franklin County experiences a large population increase in summer, especially in the Saranac Lake area, which increases waste generation seasonally (NYSDEC 2010).

HAMILTON COUNTY PLANNING UNIT

The LSWMPs are developed and implemented by Solid Waste Planning Units. Each unit serves as the management agency for materials handling operations and state-level reporting within the area it covers. The North Country region has five Planning Units, one each for Clinton, Essex, Franklin, and Hamilton counties, and one that serves Jefferson, Lewis, and St. Lawrence counties as part of the Development Authority of the North Country (DANC). Below is a brief overview of each Planning Unit, including infrastructure and operations within their jurisdiction, as reported in their respective LSWMP and Appendix C of NYSDEC's Beyond Waste. Figure 8-1 provides a graphical overview of active and inactive solid waste facilities throughout the region.

DEVELOPMENT AUTHORITY OF THE NORTH COUNTRY

DANC severs as the Planning Unit for all municipalities in Jefferson, Lewis, and St. Lawrence counties, including Fort Drum. Within each of the three counties, the local county solid waste authority manages varying portions of the waste and recyclables generated. The remainder is handled by individual municipalities, private haulers (Casella being one of the largest), businesses, and residents, who use the counties' transfer stations and recycling centers, although they are not obligated to use these facilities. Nearly all MSW from the transfer stations is brought to the DANC SWMF. At Fort Drum, federal employees collect, transport, and prepare Fort Drum's MSW for shipment to the DANC SWMF. Fort Drum operates and maintains its own NYSDEC-registered solid waste transfer station. However, in 2005 the Army deeded the operations and maintenance of Army Family Housing to private companies, which contract with Waste Management, Inc. (WM) to collect and transport MSW and recyclable material to the Jefferson County transfer station (NYSDEC 2010a).

NORTH COUNTRY LANDFILLS

The three active MSW landfills in the North Country are located in Franklin, Clinton, and Jefferson counties. *Table 8-1 (on following page)* shows the capacity of each of the landfills as of 2010. Based on the amount of waste each landfill is permitted to accept each year and the remaining permitted capacity of each landfill, these landfills have a combined minimum remaining permitted life of 42 years. Unless sustainable materials management measures are improved, the North Country's landfills may reach capacity in a relatively short time period.

NORTH COUNTRY TRANSFER STATIONS AND RECYCLABLE HANDLING AND RECOVERY FACILITIES

Sixty-nine active NYSDEC-registered transfer stations are located in the North Country region, as well as 36 active recyclable handling and recovery facilities. *Table 8-2 (on p. 249)* shows their distribution by county as of 2010. Where feasible, the use of these facilities can be expanded or improved upon to increase the capacity of the region to handle and sort recyclables, or process organic materials. Additionally, as new markets for materials handling and reuse develop, this may lead to greater opportunities for recyclable handling and recovery facilities.

Recycling Patterns

In a study of solid waste composition conducted in 2010 for Jefferson, St. Lawrence, and Lewis counties, recyclables made up nearly 25% of the Metropolitan Solid Waste (MSW) stream.
Source: (SCS 2011, Regional Solid Waste Management Plan. Prepared for the Development Authority of the North Country.)

Facility Name	*Landfill Gas Recovery*	*2010 Waste Quantity (tons)*	*Annual Permit Limits (tons/year)*	*Remaining Capacity Under Permit (tons)*	*Minimum Projected Permitted Life (years)*
Franklin County Regional Landfill	No	49,230	125,000	366,358	3
Clinton County Landill	Yes	154,998	175,000	5,259,600	30
Development Authority of the North Country Landfill (Jefferson County)	Yes	215,857	346,320	3,047,111	9

table 8-1

SOLID WASTE FACILITIES IN THE NORTH COUNTRY REGION

Source: NYSDEC, 2012
http://www.dec.ny.gov/chemical/47984.html
accessed September 10, 2012.

County	*Transfer Stations*	*Recyclable/ Recovery Facilities*
Clinton	12	4
Essex	15	16
Franklin	4	2
Hamilton	7	8
Jefferson	19	0
Lewis	4	0
St. Lawrence	8	6
Total	69	36

table 8-2

SOLID WASTE FACILITIES IN THE NORTH COUNTRY REGION

Source: NYSDEC 2012
http://www.dec.ny.gov/docs/materialsmineralspdf/rhrflist.pdf and
http://www.dec.ny.gov/docs/materialsmineralspdf/tslistregist.pdf,
accessed on February 8, 2013.

MATERIALS WORKING GROUP

The 13 members of the Materials Management Working Group included representatives from county Planning Units, municipalities, private companies, academia, and NYSDEC. Further regional focus was brought to the group by representatives from DANC, Casella Waste Management, and educational institutions, including the Cornell Cooperative Extension and Lake Placid High School (Essex County).

The Working Group drew upon NYSDEC and its statewide Beyond Waste strategy to establish goals for waste management in the region. Early on, the group chose to adopt the vision of "Materials Management," through which unwanted materials are treated as a resource with the potential to be transformed into a valuable commodity, suitable to feed a recycled materials market or be transformed into energy or organic-rich material. Typical waste and materials management practices throughout the region were evaluated to determine appropriate strategies for materials management that would be economically viable while also providing the opportunity to reduce associated GHG emissions. The vision of transforming waste into a resource was supported by residents and regional stakeholders, who convened at one or more public events held during this project's planning process and showed great interest in promoting opportunities for materials recovery, reuse and recycling, energy generation, and composting projects.

OPPORTUNITIES

Statewide estimates of the organic content of MSW are 30% (NYSDEC 2010a). In a solid waste composition study conducted in 2010 for Jefferson, St. Lawrence, and Lewis counties, organic material made up 37% of the MSW waste stream (SCS 2011). Benefits exist from the reduction or elimination of organics from the waste stream, including significantly reduced volumes of disposed MSW, extended design life of existing landfills, and reduced GHG emissions in new/active landfills. Market opportunities for organic materials include locally produced mulch and fertilizers, and energy generation from anaerobic digesters.

BARRIERS

Barriers are ubiquitous in the materials management sector, ranging from changing the behavior of materials generators to encouraging capital investment in organics management infrastructure and markets for post-consumer organic products. Barriers specific to the North Country region include:

- ***Insufficient public education,*** *including the large seasonal/tourist population, on the appropriate methods of separating organics and food waste from the disposal stream.*
- ***Wildlife concerns,*** *which can constrain backyard composting of food residuals, particularly in areas contiguous to animal habitats.*
- ***Temperature constraints,*** *low ambient temperatures during winter months reduce the rate of decomposition, particularly for outdoor and small-scale composting methods.*
- ***Lack of sufficient and consistent organic materials streams*** *to support a self-sustaining organics recycling industry.*
- ***Lack of local laws/zoning/regulations*** *that incorporate the siting and operation of local organics management facilities such as transfer stations, digesters, and composting piles.*

GOALS

The following sections present a baseline assessment of existing materials management and recycling data in the region, noting existing infrastructure, activities, and trends that impact materials management. Sustainability goals are then presented along with relevant sustainability indicators and targets by which to monitor and quantify progress over time.

While carrying out the baseline assessment, it was found that data were not collected, treated, or presented in the same manner across counties, or even within individual communities. Going forward, it would be valuable to set a standard set of data quality objectives based on best practices in the region. This would allow planners to make decisions based on comparable and replicable datasets, which would better inform investment and project siting decisions.

Materials Management Goal 1: reduce the amount of solid waste generated

The overreaching objective is to achieve a reduction in solid waste generation and disposal through strategies that would result in a net economic and environmental benefit to the region.

Materials Management Goal 1: reduce the amount of solid waste generated

BASELINE ASSESSMENT

Estimates of MSW disposal rates for each of the seven North Country counties, as reported by the Planning Units, are presented in Table 8-3. As noted, some counties include C&D materials in their per capita disposal calculations, which can contribute to inflated reported values. For consistent future reporting, it is recommended that planning units use the same methodologies to calculate these two metrics, such as those provided by NYSDEC. In addition, rural areas tend to generate a greater amount of agricultural waste, which is combined with the total MSW disposal rates. This makes rural residents appear to be larger waste generators. To provide a more representative average, the per capita disposal rate for each county was weighted according to population.

As shown in *table 8-3 (on following page)*, the regional disposal rate is estimated to be approximately 3.2 pounds per person per day, which is 0.9 pounds per person per day less than the New York State average. Assessed individually, only Clinton and Hamilton counties exceed the state rate. These two counties attribute their higher rates to the inclusion of C&D waste in their totals, as well as to the influx of the seasonal and tourist population associated with the Adirondack Park, which has approximately 200,000 seasonal residents and receives 7 to 10 million tourist visits annually (Visit Adirondacks 2013).

INDICATORS

Per capita MSW disposal rate (excludes recycled MSW and construction and demolition [C&D] materials). As defined by NYSDEC, MSW includes materials generated by the residential, commercial, and institutional sectors; it does not include C&D debris, biosolids (or sewage sludge), or industrial waste. Monitoring disposal rates for MSW provides data on citizen awareness of materials disposal options and, therefore, can be used as an indirect indicator for other non-MSW waste streams. Furthermore, every reduction in the amount of MSW disposed, provides direct benefits in terms of reduced GHG emissions, energy savings, and reduced cost to transport and manage those materials.

SUGGESTED TARGETS

In line with the goals set in NYSDEC's Beyond Waste, this plan strives to achieve a progressive reduction in the amount of MSW destined for disposal, to 0.6 pounds per person per day by 2030 (NYSDEC 2010a). The per capita disposal rate targets are:

- *1.7 pounds per person-day by 2020*
- *0.5 pounds per person-day by 2035*
- *0.1 pounds per person-day by 2050*

County	*Disposal Rate (lbs/day)*
Clinton County	4.6
Essex County	3.2
Franklin County	2.6
Hamilton County	8.1
Jefferson County	3.8
Lewis County	2.4
St. Lawrence	3.1
North Country Region[1]	**3.2**
New York State	**4.1**

table 8-3

PER CAPITA MSW DISPOSAL RATES

Sources:

Clinton County: *Integrated Solid Waste Management Plan 2012. High disposal rate attributed to large seasonal population flux and the inclusion of C&D materials in reported MSW values.*

Essex County: *Data not available. Estimated based on average of neighboring counties and counties of similar population density.*

Franklin County: *Franklin County Solid Waste Management Plan 2006, Disposal and recycling data based on 2004 values.*

Hamilton County: *Draft Solid Waste Management Plan Update 2012. High disposal rate attributed to large seasonal population flux and the inclusion of C&D materials in reported MSW values.*

Jefferson, Lewis, and St. Lawrence counties: *Regional Solid Waste Management Plan 2011.*

New York State: *Beyond Waste, NYSDEC 2010.*

Notes:

1 Weighted average according to population.

Materials Management Goal 2: increase the percentage of materials recycled or reused

The objective of this goal is to increase the proportion of materials recovered from the waste stream, and to create new markets for materials formerly thought of as waste. In doing so, the region aims to reduce its environmental impact and foster an economically self-sustaining recycling industry.

Materials Management Goal 2: *increase the percentage of materials recycled or reused*

OPPORTUNITIES

Efficient reuse, recovery, recycling, and composting of regionally generated materials can take advantage of existing opportunities in the region. Notably, the infrastructure and systems that are necessary to support a functional materials recovery system are largely in place. Regional opportunities to reduce the volume of MSW and recover recyclable materials can significantly reduce the volume of MSW disposed in landfills, resulting in increased landfill design life, and a reduced need for new landfills. Cost and energy savings can be realized by reducing the amount of virgin materials that initially need to be processed. Market opportunities for post- and discarded pre-consumer products can be developed.

INDICATORS

Recycling rates track the amount of a given material that is recovered from a waste stream and used to make new products; this includes the removal of organics from MSW for composting. The most commonly reported recycling rates by regional Planning Units are for the MSW and C&D waste streams. Due to the difficulty in measuring and tracking materials reuse (much of it occurs outside of a formal materials management systems in places such as thrift stores, garage sales, online swaps, etc.), recycling rates were selected as an indirect measurement by which to monitor the health of the recycled products market.

1. *Percent of total solid waste stream that is recycled (includes MSW, organics, and C&D materials)*

Materials Management Goal 2: reduce the amount of solid waste

BARRIERS

New York State and the communities across the North Country have made significant progress in establishing successful waste-reduction and recycling programs, as shown by the rise in recycling rates between 1987 and 1997. However, progress in the last decade has stalled (NYSDEC 2010a). As shown in *figure 8-2 (on following page)*, NYSDEC estimates that across the state, paper still makes up the largest component of the disposed waste stream at 27%, followed by organics (24%) and plastics (17%). Barriers that currently hamper recycling from reaching its full potential include:

- ***Insufficient public education,*** *including the large seasonal/tourist population, which needs to be made aware of the materials recycling and disposal options available to them.*
- ***Lack of incentives and education*** *to encourage consumers and large-quantity generators to purchase and use reusable and recyclable materials.0.1 pounds per person-day by 2050.*
- ***An inadequate local market for recycled materials*** *across all seven counties that would be able to financially support a more robust recycling industry.*
- ***Lack of funding and programs*** *for existing facilities and haulers to convert or update their equipment and processes, or to obtain permits in order to adapt to a changing market.*

BASELINE ASSESSMENT

Estimates for recycling rates for each of the seven North Country counties, as reported by the Planning Units, are presented in *table 8-4 (on p. 259)*.

SUGGESTED TARGETS

In line with the targets presented in Beyond Waste (NYSDEC 2010a), this plan sets a goal of achieving a recycling rate of 50% by 2020. The working group recognizes that this is an aggressive target but hopes to emphasize the important role recycling can play in reducing waste and creating new opportunities, such as the expansion of these materials as a resource and the creation of new businesses and jobs in the region.:

- *50% materials recovered by 2020*
- *70% materials recovered by 2035*
- *85% materials recovered by 2050*

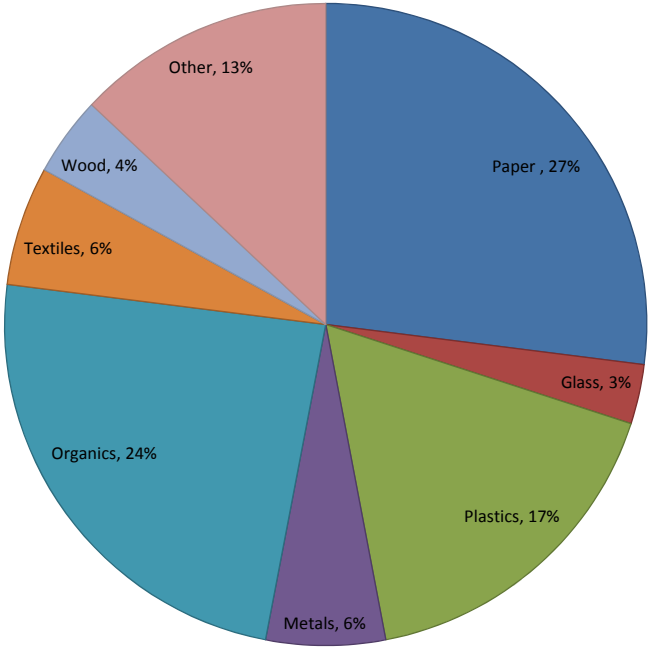


figure 8-2

ESTIMATED MSW DISPOSED OF IN NEW YORK STATE, 2010

Source: *New York State Department of Environmental Conservation, Beyond Waste, 2010.*

County	*Recycling Rate*
Clinton County	3%
Essex County	8%
Franklin County	14%
Hamilton County	6.5%
Jefferson County	16%
Lewis County	9%
St. Lawrence	5%
North Country Region[1]	**8%**
New York State	**35%**

table 8-4

PER CAPITA MSW DISPOSAL RATES

Sources:

Clinton County: *Integrated Solid Waste Management Plan 2012.*

Essex County: *Data not available. Estimated based on average of neighboring counties and counties of similar population density.*

Franklin County: *Franklin County Solid Waste Management Plan 2006, Disposal and recycling data based on 2004 values.*

Hamilton County: *Draft Solid Waste Management Plan Update 2012.*

Jefferson, Lewis, and St. Lawrence counties: *Regional Solid Waste Management Plan 2011.*

New York State: *Beyond Waste, NYSDEC 2010.*

Notes:

1 Weighted average according to population.

WATER MANAGEMENT IMPLEMENTATION STRATEGIES

To reach the Beyond Waste 2030 goal of 0.6 pounds per person per day, the region will have to reduce its disposed MSW by 81% (NYSDEC 2010a). As shown by the data in *table 8-4 (on previous page)*, the region's recycling rates are far below the state average. To reach the 2020 goal of 50% recovered materials, the region will have to increase its recycling rate by 42%. The strategies identified to help reach these goals are:

Compare contracting and disposal fee mechanisms between counties and planning units to determine the most effective operational structures for reducing waste generation and incentivize the collection of marketable recyclables and recovered materials.

Encourage counties and planning units to adopt single-stream or zero-sort recycling.

Increase the number of composting and digester facilities to reduce the volume of food and yard waste sent to landfills, and to create a useable product (fertilizers).

Explore and promote market opportunities for recyclable and recovered materials.

Materials Management Strategy: conduct regional research on material management contracting and disposal fees to help determine best practices that can be shared regionally to improve local decision-making for material management

Providing information to counties and planning units will allow them to make the best local choices for management of materials, will help them maximize profits from resale and improve environmental quality.

SUPPORTING PROJECT

Complete Regional Recycling Assessment

A regional organization or academic institution can develop and complete a study to compare contracting and disposal fee mechanisms between counties and planning units to determine the most effective operational structures for reducing waste generation and incentivize the collection of marketable recyclables and recovered materials. Share information regionally.

Materials Management Strategy: encourage counties and planning units to adopt single-stream or zero-sort recycling

Single stream and zero-sort recycling can produce significant increases in participation of recycling programs. These programs are one of many important tools that can be implemented by local government to increase the rate of recycling.

EXAMPLE PROJECTS

Increase Zero-Sort/Single-Stream Recycling

Work with local jurisdictions to increase adoption of these programs. Casella Waste Systems, Inc.'s Zero-Sort single-stream collection system has demonstrated that along with appropriate education, recycling quantities range from 8.71 to 11.34 pounds per home per week (lb/home/week). These rates represent a 16 to 62 percent increase in recycling quantities in comparison to previous programs. When single-stream recycling is provided along with automated carts, recycling quantities average 12.66 lb/home/week, which is a 71 percent increase above previous levels.

Public Messaging on Reducing Food Waste

Provide instructions on the proper care and storage of foods to reduce food waste and save money. Average US households waste an estimated 25% of their food each year. It is estimated that a household can save over $2,000 annually through better practices (Bloom 2010).

Establish Pilot for Institutional Waste Reduction

Research has shown that concepts such as the "trayless campus" program can reduce food wastes at colleges and universities. Develop and test this concept at various educational institutions, including public schools and higher educational facilities. Adapt and expand program based on local results.

Expand or Replicate North Country Recycles in Other Areas

Expand existing program to wider audience. North Country Recycles is a DANC initiative in cooperation with Jefferson, Lewis, and St. Lawrence counties, the City of Watertown, and NYSDEC. Activities under North Country Recycles are managed by a recycling coordinator who works with the counties to provide education on recyclable items, increase electronic waste recycling, and find markets for recycled materials.

Materials Management Strategy: increase the number of composting and digester facilities to reduce the volume of food and yard waste sent to landfills, and to create a useable product (fertilizers)

The increased use of composting and anaerobic digesters has multiple benefits, from reducing the heaviest waste materials (and thereby having the greatest impact on reducing tipping fees) to being easily converted into useable secondary products, these actions show large potential benefits within the region.

EXAMPLE PROJECTS

Install Composting and Anaerobic Digester Facilities

Anaerobic digestion of food waste and other biosolids provides opportunities to capture energy from methane gas, produce a valuable soil amendment, and reduce greenhouse gas emissions while lowering the volume of MSW. The USEPA estimates that if 50% of nation-wide food waste were removed from MSW, power to 20 million homes could be generated (http://www.epa.gov/waste/conserve/foodwaste/fd-anaerobic.htm).

Initiate Home-based Composting Program

Removing food wastes from the waste stream before it leaves the home can significantly reduce waste management costs. In addition, personal composting can bring benefits by improving local soils and providing low cost solution for garden soil improvements. Through an educational campaign provide information on composting and determine methods for providing incentives or rebates for backyard composting bins.

Materials Management Strategy: explore and promote market opportunities for recyclable and recovered materials

The North Country has begun to embrace the shift from seeing what is thrown away as waste, to being a useable, potentially profitable material. Some materials are easier to market than others. Additional work must continue to seek out new markets and uses for collected materials, as well as look for new and inexpensive ways to collect, manage and market formerly unprofitable materials.

SUPPORTING PROJECT

Use Agricultural Plastic Balers and Create New Markets for Plastic

Expand the program that is recycling agricultural plastics. The current program is a partnership with Cornell University's "Recycling Ag Plastics Project" (RAPP), the Champlain Watershed Improvement Coalition of New York, Inc. (CWICNY), and the Clinton County Soil and Water Conservation District, who have increased recycling efforts for hard-to-recycle agricultural plastic refuse. The "Big Foot 300" agricultural plastics baler enables the collection and compression the loose plastic into marketable 40-inch cubes. The 1,200-pound bales of plastic it collects are recycled and reused in a variety of products, including plastic lumber. As a result of the success of this program, further efforts are underway to expand the number of plastic balers available to farmers in the western Adirondacks and throughout New York State.

Powering Small Communities *(a case study)*

CHALLENGE:

It's usually true that more of something you buy the cheaper the price you can negotiate. That can be a tough rule when you are a small community and lack the clout needed to get the best price.

OPPORTUNITY:

By banding together, could communities form a consortium that could increase their buying power, and let them all share in the cost benefits?

ACTION

Band together to buy in bulk

Eight municipalities and school districts including the towns of Clayton, Alexandria, Orleans, Rodman, and the Village of Governor, City of Ogdensburg, Jefferson-Lewis BOCES and the Thousand Island Central School District got together to cut their electric bill. Together they purchased total of 18 solar arrays (over 450 kW).

"I think it's pretty neat that we could get the consortium together to get the buying power," said Augusta Withington, founder and owner of Fourth Coast Inc. who coordinated the project. "All of the towns had leftover money and used it for an additional array."

"Working together as a consortium made our buying power stronger – it allowed us to buy more," said Kevin Rarick, Supervisor for the Town of Orleans in Jefferson County.

"Rather than buying a pickup truck's worth, we were able to buy a tractor trailer's worth," added Clayton Town Supervisor Justin Taylor. "Fourth Coast had a relationship with all of the communities, and the town of Clayton was willing to take the lead on the project."

Funding for the project came through a NYSERDA grant the application for which Fourth Coast submitted on behalf of the consortium. "This is a wonderful example of how NYSERDA's funding worked – it did what it was supposed to do," said Withington.

RESULT

Cutting bills in half

Consortium members are reaping the benefits of solar. "That project has cut our electric bills in half and we had no bill on the highway garage for a couple months," said Rarick. "I've been extremely happy with the project and with Fourth Coast," continued Rarick, whose town of Orleans put solar arrays on the municipal building, highway garage, library, and landfill building. "Of everything we've done so far, I've found nothing negative."

"Rarely does a community get to take part in a project that actually pays for itself – here you are saving money," said Rob Campany, Project Manager and Engineer for Fourth Coast. "By focusing on municipalities and school districts, the project literally affects every taxpayer in town – everybody can say that they benefitted."

The municipalities also saved money by using the municipal workforce to help install the arrays. "We were able to integrate the towns, cities, and school district employees," continued Campany. "I think it educated a lot of people how this technology works."

"Our primary motivation was to capture a renewable energy source and to decrease the town's electric bill," said Taylor. We wanted to look at this issue from a regional perspective and use the consortium to help."

"Town members are excited about it," continued Taylor. "Not only are they excited because the government is saving money, but a number of private businesses have installed solar and taken advantage of the tax credits and NYSERDA funding.

The Town of Clayton will save an estimated $17,000 each year on their electric bill. And, over the lifetime of the system (about 25 years), Fourth Coast estimates that the solar arrays will save over 2300 tons of carbon dioxide, which in terms of carbon dioxide reduction is the equivalent of planting over 55,000 trees in that time span.

The benefits of the project have not gone unnoticed. Not only have businesses in the Town of Clayton added solar arrays, but they have attracted outside interest as well. "Since we did this project, we've had a number of other municipalities come and check out our facilities," said Taylor.

"I know other municipalities who are interested in doing this, because they saw what we did," said Withington. "I can tell you which towns would do it, and the others would fall in line if we received more funding." The Town of Orleans was even able to find funding for an additional solar array at their sewage plant. "If we knocked down our sewer bill, that would be amazing," said Rarick. "These municipalities have led by example for the role they've played, and hopefully they will be applauded for this," said Campany.

In the Town of Clayton, where private businesses and homes have followed the town's lead, Taylor summed it up this way. "The dinner conversation has changed to 'look at my electric bill; it used to be $250 and now it's $40!'"

IX

Implementation

INTRODUCTION

The Working Groups that came together for this plan represented schools, local government, non-profit organizations, and the private sector. Their collective input provided the framework of this plan as they came together to discuss local and regional priorities, opportunities and barriers, ongoing efforts, and successful case studies. Although communities throughout the region have their own unique characteristics and needs, continuing a regional collaborative effort allows them to share ideas, resources, and long-term goals. Extending efforts beyond municipal boundaries helps stakeholders understand the synergies and differences between their neighboring communities and the needs of the various community members. This wider understanding can be used to develop more effective local planning, which can strengthen an individual community and complement the goals of its neighbors..

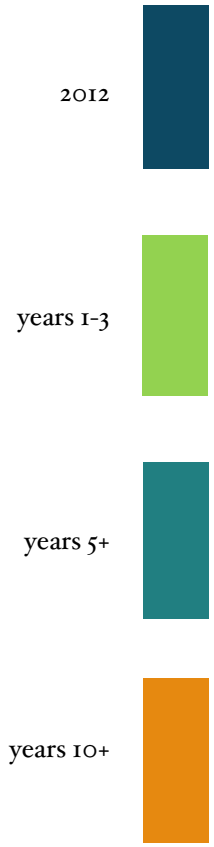
This chapter outlines the steps needed to bring the goals established in this Plan from concept to reality as projects that will support the NCREDC Plan and continued economic growth in the region. To move this plan forward, continued cooperation among stakeholders across the region is essential.

This plan is the starting point for a long-term commitment made by the region to build economic growth on the platform of its abundant natural resources, its clean energy resources, its agricultural and forest productivity, and its entrepreneurial people. It recognizes the sustainability challenges facing the region such as transportation infrastructure. It also recognizes the already significant role the region is playing helping the state meet its renewable energy targets.

Is Renewable Energy Contagious?

Outside of policy debates over tax credits and carbon pricing, something much simpler may be holding back the spread of renewable energy: its novelty. A joint study between Yale and NYU found a "peer effect" among neighbors with solar installations. When one household installs solar, researchers found that it increases the likelihood that nearby houses will follow suit. The study attributed findings to both word-of-mouth information sharing and a culture of one-upmanship. The results held true even after controlling for other possible influences, such as regional marketing efforts and clustering between people of similar environmental preferences. A review of the data found that 10 extra installations in a zip code increase the probability of another homeowner adopting solar by 7.8 percent. If a zip code experiences a 10 percent increase in solar installations, the adoption of solar will increase by 54 percent, they said.

The paper, "Peer Effects in the Diffusion of Solar Photovoltaic Panels," was published in the September 2012 issues of Marketing Science.



2012

DEVELOP PLAN

- *Set goals*
- *Identify projects*
- *Develop implementation strategy*

years 1-3

IMPLEMENT SHORT-TERM PROJECTS

- *Plan supported projects; case studies for replication, pilot studes*
- *Public outreach and education*
- *Re-measure baseline*

years 5+

IMPLEMENT MEDIUM TO LONG-TERM PROJECTS

- *Build on successful projects and programs*
- *Identify gaps to fill*
- *Adapt to new technologies / changes in economic conditions*

years 10+

EVALUATE AND ESTABLISH FUTURE GOALS

- *Success stories*
- *Lessons learned*
- *Next steps*

IMPLEMENTATION TIMELINE

The timeline provides an overview of the process: which actions have been completed to date and the next steps to meet the targets set forth in this plan. An annual review of progress and achievement towards the recommended targets is suggested in order to benchmark progress and continually re-evaluate goals.

CONTINUING THE REGIONAL EFFORT

To establish continuity as this effort moves from planning to implementation, it is recommended that the seven-county consortium remain in place as central stakeholders of the plan under the leadership of a Sustainability Working Group to be established by the NCREDC co-chairs. Their continued coordination would help in future planning efforts, the collection of data, and project updates. As representatives of the region, their strength lies in the ability to easily access and engage hundreds of regional stakeholders and the general public.

As the future leaders of this plan, roles have been established for them and are described below. These roles will focus efforts and allow consortium members to distribute and manage tasks under the plan. Future maintenance of the plan may not be a funded effort; therefore, it is important that adequate support be provided to the consortium by stakeholders and supporters of the plan in the region.

INTEGRATE WITH THE NCREDC

The NCREDC was established as part of a statewide economic plan under Governor Andrew Cuomo's leadership to create economic development goals and strategies from the ground up. The North Country plan was selected as one of four top plan awards across the state in 2011 and was recognized as a top performer in 2012. The concept of sustainability was built into the plan from the beginning. "With the combination of a much-sought after quality of life, a rich and abundant natural resource base, and entrepreneurial and talented people, the North Country is ripe for the kind of thoughtful and targeted investment that will secure its local economies for generations. To achieve its Vision, the Council's work will capitalize on the region's shared assets: the iconic 1,000 Islands and Adirondacks; the opportunities presented by the border with Canada; some of the best clean water resources in the Northeast; significant agricultural and forest reserves; abundant "clean" energy; incomparable four-season recreational opportunities and its talented labor pool and entrepreneurial population" (NCREDC 2011).

This sustainability plan drives specific actions and strategies that support implementation of the NCREDC plan. Many of the NCREDC projects funded in 2011 and 2012 are included as examples of sustainability in action. Many of the people who worked on the NCREDC, either as members of the Council itself or as key participants on Council teams, have been involved in the sustainability plan. This plan strongly recommends that the NCREDC co-chairs establish and assign leadership to a Sustainability Working Group under the auspices of the NCREDC. They would be tasked with facilitating implementation of the Sustainability Plan, coordinating with the Consortium and other organizations throughout the region that are working on relevant projects.

Efforts already underway at the time of this plan, including projects funded with NCREDC resources, reflect the strength that comes from collaboration and an established set of regional goals. North Country stakeholders are encouraged to submit project applications through the Consolidated Funding Application (CFA) process administered by New York State and reviewed by the NCREDC.

ADOPT PROJECT SCREENING CRITERIA

Currently, the NCREDC maintains a priority project scoring matrix, which includes a section on Sustainability, Environmental Impact, and Infrastructure. It is recommended that a project screening criteria based on the goals and strategies presented in this Plan, be used to supplement the existing NCREDC priority project scoring matrix.

A number of ongoing projects in the region that will support the goals of this plan already have considerable planning and development behind them, as well as a local champion to shepherd them to success. New projects and ideas continue to emerge and be developed by regional governments, businesses, not-for-profits, and residents.

GUIDE AND OVERSEE PLAN OBJECTIVES

The aforementioned NCREDC Sustainability Working Group would be responsible for monitoring progress, guiding Plan updates where appropriate, particularly as part of the 2013 NCREDC report, and supporting efforts to implement the Plan. The Working Group would also be encouraged to seek funds to support oversight and monitoring of the Plan to ensure that this does not become an unfunded mandate and, therefore, less effective. Other responsibilities include:

- *Scheduling a review of the plan with stakeholder groups within each county to discuss plan objectives and strategies.*

- *Working with County planning offices to ensure support is available to them when applying for funding opportunities. Training on Consolidated Funding Applications (CFAs) could be provided by the regional Sustainability Working Group through the NCREDC in the form of worksheets and guidance documents.*

ENABLE KNOWLEDGE SHARING

As the largest geographic region in the state, connecting communities in the North Country region can be difficult due to the long distances between them. It is essential to open communication pathways that are ongoing and accessible to the greatest number of people. Knowledge sharing can be used to present successful projects and ideas, lessons learned, new information or technologies, and funding strategies.

One of the major advantages this planning process offered was the ability to connect regional stakeholders under common areas of expertise as Working Groups. This approach allowed plan objectives to be developed by the region, rather than driven by top-down directives. Continuing this approach by bringing together local representatives in the context of this Sustainability Plan will improve the ability to share information in the future.

Several annual events, such as the North Country Clean Energy Conference and the Common Ground Alliance, already exist in the region and can be used to provide a forum for future discussions and presentations of plan updates. In addition, coordinating the NCREDC public meetings and internal meeting schedules with such events will help keep this Plan front and center and maintain its momentum.

A best management practices database should be created. Case studies, contact information for projects underway, and guidance for implementation should be made available to stakeholders and communities. It is also recommended that the consortium continue to maintain a central location for public documents and contact information on the internet. Plan information is currently available at: *http://www.adirondack.org/green*.

TRACK PROGRESS

A BASELINE INVENTORY of sustainability indicators was prepared as part of this plan and is included in Appendix B. The inventory is organized by focus area and identifies the metrics (indicators) that will be tracked in order to measure progress toward plan goals. Each indicator is defined by what it measures. The inventory includes the data sources used in the baseline inventory, plus an explanation on how the indicator value was calculated.

IT IS RECOMMENDED that the region prepare an annual sustainability scorecard to measure progress against the baseline inventory. In order to do this, a list of ongoing projects, by year of inception, should be maintained along with the data that shows their contribution to plan goals. Descriptive information about ongoing projects can support the annual inventory by discussing project phases and upcoming plans or programs.

IT IS IMPORTANT to understand that only readily available data sets (typically state and federal data) were used for the baseline inventory in order to provide consistency across the regions of the state. These data sets are typically collected on a routine basis; some annually, and some as infrequently as every 5 to 10 years (such as the United States Census). Individual projects should independently calculate their contribution to project goals in order to show progress that may not be immediately captured by these data sets. The calculations provided in the baseline inventory can be used as a guideline to determine individual project contributions.

AT THE TIME of the preparation of this plan, no individual entity has been assigned responsibility for tracking the indicators and updating the baseline inventory. It is recommended that the State provide funding to conduct this tracking and the responsibility for tracking be assigned to the regional Sustainability Working Group within the NCREDC.

SUPPORT EDUCATION AND PUBLIC OUTREACH

Advancing environmental and sustainability literacy in the North Country is a goal that permeates every level of the sustainability planning process. In order to achieve success, most implementation strategies require a degree of active public participation. This compliance will not be possible without educational strategies that seek to not only inform but to empower North Country citizens, businesses, and institutions to take action. This level of education can take many forms, including institution-based education through school systems, outreach events and programs through regional not-for-profits, and advertisements in media such as newspapers and radio. Educational and outreach initiatives are occurring in every corner of the North Country region (see case study Sustainability Programs in Education, and the Informal Community Education text box); however, to achieve many of the goals outlined in this planning process, additional support is needed.

The following strategies are suggested:

- *Encourage the 10 institutions of higher education in the region to include sustainability programming in their curriculum.*
- *Build on the existing range of extracurricular school activities for sustainability, including after school programs, clubs, conferences, and science fairs.*
- *Promote community-based educational programs, such as the Sustainable Living Project, that teach workshops and classes on sustainability concepts, including increased cultivation and processing of local and seasonal foods, renewable energy and energy efficiency, homestead skills, etc.*
- *Support programs such as the Cornell Cooperative Extension or the Solar Home Tour, which facilitate the exchange of relevant ideas and knowledge.*
- *Use volunteer members within communities for pilot programs to grow support for sustainable initiatives from the ground up, such as the Tupper Lake biomass pilot.*
- *Provide annual recognition and incentives to community members and organizations demonstrating outstanding leadership in sustainability.*
- *Create annual networking opportunities through knowledge exchange tours showcasing a new set of projects, similar to the public meeting format organized for the Regional Sustainability Plan. In this case, the sponsoring community would host and organize the tour.*
- *Identify strategies for community public outreach to discuss Sustainability Plan objectives and initiatives with members of local communities. Use their input to guide future plan updates.*
- *Support the creation of an online data base highlighting best sustainability practices.*
- *Encourage all institutions of higher education to create a Sustainability Coordinator position.*
- *Support existing efforts to convene a regional Sustainability in Education Working Group through the NCREDC structure.*
- *Encourage media campaigns similar to the DANC's efforts to raise recycling awareness with regional youth.*

BUILD GOVERNANCE INFRASTRUCTURE

Local governments will be instrumental in facilitating and achieving the goals set out in the North Country Regional Sustainability Plan. It is recommended that best practices be shared and efforts undertaken to work with local governments to strengthen their ability to govern and promote sustainable communities. These recommendations are also incorporated into the focus area strategies.

Focus area strategies:

- *Encourage all communities to join DEC's Climate Smart Communities program.*
- *Improve, enforce, and in some cases create local zoning law. Assign a region-wide zoning outreach representative to support local communities with the upgrade of their zoning laws.*
- *Encourage the adoption and/or update of comprehensive plans across the region.*
- *Re-evaluate village tax structures to encourage dense growth and discourage urban sprawl.*
- *Assess the potential for streamlining and sharing services between municipal governments.*
- *Encourage regional municipalities to establish themselves as models for energy efficiency upgrades, and/or adoption of renewable-energy-based electricity and heating.*
- *Update/adopt regional/county solid waste plans to include comprehensive recycling policies (including organics).*

BEYOND THE NORTH COUNTRY

North Country residents are traditionally self-reliant as evidenced by the many projects that have independently surfaced during this planning process. However, opportunities for collaboration and education can help facilitate shared learning and cross-community innovations. The ideas presented below are not a mandated list of regional initiatives; they are suggestions and illustrations of what the North Country can do to further integrate sustainability into its economic development planning.

The North Country enjoys close relationships with the counties, states and nations along its borders. Strong cultural, social, economic, and geographic relationships extend across these borders; therefore, encouraging exchanges between these adjoining regions would greatly benefit the sustainability planning process.

Suggestions:

- *The Adirondack Park, which extends beyond the North Country to include parts of Herkimer County (in the Mohawk Valley Region) and Warren County (in the Capital Region) has traditionally struggled from a lack of regional planning efforts, as the Park is commonly split across many jurisdictions and rarely treated as a single resource. Acknowledging the Park as a single entity, including the aforementioned non-North Country counties, will help.*

- *Many of the communities surrounding the Adirondack Park could benefit from the influx of tourists by developing infrastructure such as lodging and dining services. Cross-regional cooperation aimed at the development of tourism, travel, and branding opportunities would encourage such development.*

- *Improvements in public transportation would necessitate cross-county, interstate, and international coordination.*

- *The North Country region boasts a wide range of natural resources; however, due to particular geographical limitations, the region would be challenged with meeting all of its needs locally. Developing economic relationships with neighboring regions would facilitate the exchange of locally produced commodities such as biomass harvested from Northern Forests for food products imported from more temperate regions to the south, east, and west.*

- *Regional cooperation among the North Country, Mohawk Valley, and Capital District regions is important to ensure that cross-regional issues such as tourism, agriculture, infrastructure, and transportation are developed in a coordinated and comprehensive manner. The NCREDC and local government officials have a history of working closely with their counterparts in these regions to support planning efforts, including working cooperatively on Consolidated Funding Applications. Enhancing this trend will assist in the implementation of the sustainability planning process.*

X

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This report was prepared by a consortium of North Country municipalities led by Essex County and their planning team in the course of performing work contracted for and sponsored by the New York State Energy Research and Development Authority. The opinions and analyses expressed in this report do not necessarily reflect those of NYSERDA or the State of New York.

OUR ECONOMY
North Country Regional Sustainability Plan

Appendices:

A. Consortium and Working Group Member List
B . Summary of Baseline Data
C . Greenhouse Gas Inventory Template
D. Implementation Strategies
E. List of Potential Projects
F. Stakeholder Engagement Process

Projects included in the appendices or within the content of this report are meant to provide examples of potential ways to address the strategies identified in the report and were submitted to the planning consortiums as part of the public outreach efforts by the consortium. These projects are in no way prioritized or guaranteed to receive funding through Phase II Implementation Funding of the Cleaner, Greener Communities Program. Projects not listed in the appendices section or content of the plan will have equal opportunity to submit an application for funding through Phase II. Regardless of being listed in the plan, a Consolidated Funding Application must be submitted in order to be considered for funding in Phase II. All projects must address the qualifications and eligibility requirements as listed in the Cleaner, Greener Communities Phase II solicitation notice.