

SULLIVAN COUNTY CLIMATE ACTION PLAN 2014

The Sullivan County Legislature has made a strong commitment to climate resiliency in government operations and throughout the community. Sullivan County will address the impacts of climate change by reducing the use of fossil fuels and other activities that produce GHGs and contribute to the County's carbon footprint; and by planning infrastructure and systems and encouraging long term economic development that will help the County and its residents withstand changes that cannot be mitigated.

*Addressing the
Challenge of
Climate Change
through Energy
Innovation and Low
Emissions
Development*

As of March 24, 2014

Acknowledgements

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The Sullivan County Climate Action Plan

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Resolution 53-10:	SC Climate Smart Communities Pledge
Resolution 25-12:	Agreement to Form the Mid-Hudson Sustainability Planning Consortium
Resolution 140-12:	Creating the Climate Action Planning Advisory Board

“A Roadmap for Climate Action Planning for Sullivan County,” *presented by SASD in January 2012*

Concept Paper: Liberty Community Energy District at the Sullivan County-owned Human Services Complex on Community Lane in Liberty, NY

Mid-Hudson Regional Sustainability Plan Project Idea Form: Region 3 Materials Management Administration

Mid-Hudson Regional Sustainability Plan Project Idea Form: Regional Composting Opportunities at NYS Correctional Facilities

Mid-Hudson Regional Sustainability Plan Project Idea Form: Survey of Funding Options for Regional Materials Management Facilities

Mid-Hudson Regional Sustainability Plan Project Idea Form: Transitioning from NIMBY to YIMBY

Sample Green Procurement Policy: Town of Cortlandt, NY

Sample Freecycling Program: Town of New Paltz ReUse Center Description and Donation Guidelines

Message from the County Legislative Chair



The Sullivan County Climate Action Plan is part of a process that began in 2005 with the creation of the Sullivan 2020 initiative and continued in 2007 with the County's Green Vision Statement, followed by a series of actions and resolutions relating to energy efficiency, renewable energy and the development of a green economy. The Climate Action Plan is the result of close collaboration among many divisions and departments, including the Division of Planning and Environmental Management, the Division of Public Works, the Department of Purchasing and Central Services, The Department of Public Health Services, the Department of Emergency Management/Homeland Security and the Department of Grants Administration, as well as the work of the Sullivan County Climate Action Planning Advisory Board and Sullivan Alliance for Sustainable

Development (SASD), a County-based non-profit organization that serves as consultants to the SC Office of Sustainable Energy.

Sullivan County is rural in character, and less densely populated than other any other county in the Mid-Hudson region. We have the advantage of plentiful open space, water and forested tracts, resources we seek to conserve and use wisely. We face challenges relating to aging housing stock and public facilities. Tourism is an important driver of our economy, and agriculture is poised for a revival. Both depend upon the environmental integrity of our land and water. We anticipate large scale development opportunities in the near future, projects that will only benefit from an enhanced understanding of our climate vulnerabilities and our determined efforts to build a resilient future. The Climate Action Plan provides the vehicle through which we can address these many challenges and opportunities for the benefit of all County residents. It is a living document that will grow and change with changing technologies and expectations and with the development of new financing opportunities.

In the near term, we will continue to pursue energy retrofits and renewable energy opportunities at our County facilities. Initiatives include upgrading the heating and air conditioning systems in County buildings, switching to energy efficient LED lighting, and the continuing conversation regarding the phasing-in of hybrid electric vehicles in the County fleet, all of which will generate significant operational cost savings in the coming years.

Central to the long term success of our plan is the creation of a culture of sustainability, starting with County employees and County operations. Some actions and policies can be mandated by the County Legislature, but our goal is to have all of our plan understood and embraced by everyone who works in a County facility and, eventually, by the entire community.

Life cycle cost accountability is a key principle in the creation of a culture of sustainability. We need to frame our decisions in the perspective of long term benefits and costs. Anything less than full

"Mitigating and adapting to climate change is entirely compatible with pursuing development . . . the right mix of policies, skills, and incentives can influence behaviour and encourage investments in climate-friendly businesses and activities. Thereby, we can help reduce greenhouse gas emissions and generate new economic opportunities and jobs. This calls for fully integrating thinking about climate change into how we go about our development work."

Helen Clark
United Nations Development
Programme

cost accountability forces taxpayers and posterity to bear the burden, and that is both unfair and inefficient.

Another key principle is the concept of **low emissions development**. This way of thinking goes beyond incremental efforts to reduce GHG emissions and adapt to the impacts of climate change. It proposes a renewed model for development that integrates climate issue awareness with all planning and development decisions, and opens up opportunities for long term economic growth that is climate-resilient and sustainable. This is our overarching goal for Sullivan County.

In order to achieve this ambitious goal, we will work to help all County employees understand the significance of climate change and the importance of individual action as well as broad policy commitments. We will encourage each department to be creative and resourceful in implementing energy efficiency measures and to recognize employees who make a special contribution to the County's energy efficiency and GHG reduction goals. And we will work with the numerous County agencies, educational institutions and non-profit organizations as well as local governments to realize this vision throughout our Towns and Villages and in the broader community.

Scott B. Samuelson

Chair
Sullivan County Legislature
December 2013

RESOLUTION NO. 53-10 INTRODUCED BY THE SUSTAINABILITY POLICY COMMITTEE TO ADOPT A CLIMATE SMART COMMUNITIES PLEDGE, AS DEVELOPED BY THE NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION.

WHEREAS, the Sullivan County Legislature unanimously adopted Resolution No. 429-07 on September 27, 2007 that committed to promoting a sustainable future by accepting a Green Vision Statement, and

WHEREAS, it is in the public interest to expand upon that commitment as detailed in Resolution No. 429-07 by adopting a climate smart communities pledge as developed by the New York State Department of Environmental Conservation, and

WHEREAS, the County of Sullivan (“County”) believes that potential climate change may pose a real and increasing threat to our local and global environments which is primarily due to the burning of fossil fuels; and

WHEREAS, the effects of potential climate change may endanger our infrastructure, economy and livelihoods; harm our farms, orchards, ecological communities, including native fish and wildlife populations; spread invasive species and exotic diseases; reduce drinking water supplies and recreational opportunities; and pose health threats to our citizens; and

WHEREAS, our response to potential climate change provides us with an unprecedented opportunity to save money, and to build livable, energy-independent and secure communities, vibrant innovation economies, healthy and safe schools, and resilient infrastructures; and

WHEREAS, the scale of greenhouse gas (GHG) emissions reductions required for climate stabilization will require sustained and substantial efforts; and

WHEREAS, that even if emissions were dramatically reduced today, communities may still be required to adapt to the effects of potential climate change for decades to come.

NOW, THEREFORE, BE IT RESOLVED, that the Sullivan County Legislature hereby adopts the following public policy goals, in order to reduce greenhouse gas emissions and adapt to a changing climate, the County shall establish public policy goals that will:

1. Pledge to Combat Climate Change by Becoming a Climate Smart Community

Set goals to reduce GHG emissions and adapt to predicted climatic changes. Establish a task force of local officials and community members to review the issues and propose a plan of action. Authorize the County Manager to designate a County employee as the point person who will oversee climate change initiatives and publicly report on progress. Work cooperatively with similar task forces in neighboring communities to ensure that efforts complement and reinforce one another. As an official signal of commitment and for access to technical resources, sign on to a widespread climate campaign.

2. Set Goals, Inventory Emissions, Move to Action

Gather data, inventory GHG emissions, and establish baselines for local government operations and community sectors as warranted. Develop quantifiable interim GHG emission targets consistent with emission reduction goals and propose a schedule and financing strategy to meet them. Encourage stakeholder and public input and develop an action plan. Report emissions to The Climate Registry (TCR), which has developed a standardized method for reporting

emissions inventories; use ICLEI and TCR's, or their equivalent, tools to track and evaluate progress.

3. Decrease Energy Demand for Local Government Operations

Adopt a goal of reducing electricity use by a reasonable level from projected levels on a timeline that can be achieved as recommended by the Commissioner of the Division of Public Works:

A. Existing Public Facilities. Inventory current building electricity usage and identify cost effective opportunities for conservation and efficiency retrofits. Obtain energy assessments from the New York State Energy Research and Development Authority (NYSERDA), the New York Power Authority, the Long Island Power Authority or other professionals. Consider actions such as purchasing energy efficient equipment and appliances, such as ENERGY STAR®; improving lighting, heating, and cooling efficiency; setting thermostats for maximum energy conservation; decreasing plug load from office equipment; and increasing pump efficiency in water and wastewater systems.

B. New Public Buildings. Achieve U.S. Green Building Council Leadership in Energy and Environmental Design standards (LEED) certification standards, or equivalent sustainable principles, practices, and technologies for all new county government buildings, in accordance with Resolution No. 429-07.

C. Infrastructure. Incorporate cost effective energy efficient technologies and operations and maintenance practices into county street lighting, traffic signals, and water and wastewater treatment facilities.

D. Vehicle Fleet and Commuting. Improve the average fuel efficiency of county government fleet vehicles. Discourage vehicle idling and encourage car-pooling for employees. Consider converting fleet vehicles to sustainable alternative fuels; and using electric vehicles where practicable.

4. Encourage Renewable Energy for County Government Operations

Supply as much of the local government's power, heat and hot water needs as practicable from solar, wind, and small hydro through purchase or direct generation, where cost effective.

5. Realize Benefits of Recycling and Other Climate Smart Solid Waste Management Practices

Expand the "reduce, reuse and recycle" approach to waste management in county government operations and in the whole community. Reduce the amount of solid waste generated -- promote backyard composting, and educate residents on how to prevent waste. Promote reuse or trade of reusable goods. Implement programs such as requiring duplex printing in government offices, compost food scraps and green waste, and adopt a comprehensive green purchasing program, as practicable.

6. Promote Climate Protection through Community Land Use Planning

Combat climate change by encouraging low-emissions development that is resilient to climatic changes. When assisting the Towns and Villages of Sullivan County: updating land use policies, building codes or community plans, encourage provisions to combat climate change; reduce sprawl; preserve and protect open space, biodiversity, and water supplies; promote compact, transit-oriented, bikeable and walkable communities; promote infill development; minimize new development in floodplains; maintain or establish healthy community forests; and promote best forest management practices and encourage tree planting, especially along waterways, to

increase shading and to absorb carbon dioxide. The County acknowledges that land use planning and zoning regulations are a matter of local authority reserved to the respective Towns and Villages of the County.

7. Plan for Adaptation to Potential Climate Change

Evaluate risks from potential climate change, set adaptation goals and plan for adaptation. Identify potential climate change impacts (such as flooding, drought, and extreme temperatures) that could affect the community. Factor risks into long-term investments and decision-making. Execute climate change adaptation and preparedness measures through county government planning, development and operations, giving priority to the highest risk areas.

8. Support a Green Innovation Economy

Identify opportunities to incorporate climate protection, sustainability and environmental goods and service industries into economic development plans. Encourage workforce development training and school curricula that support the emerging green collar job sector, including renewable energy and energy efficiency, as well as climate smart solid waste management practices. Procure climate smart goods and services for local government, as may be permitted and in compliance with all applicable laws and policies, including but not limited to the County's Procurement Policy.

9. Inform and Inspire the Public

Lead by example. Highlight county government commitment to reducing energy use, saving tax dollars, and adapting to changing conditions. Demonstrate the benefits of energy savings, energy efficiency, and renewable energy projects by hosting open houses; holding local meetings; working with school districts, colleges, and universities to develop climate change curricula and programs; and regularly communicating community climate protection goals and progress to constituents.

10. Commit to an Evolving Process

Acknowledge that research and policy on climate protection are constantly improving and evolving. Be willing to consider new ideas and commit to update plans and policies as needed. Compare successes, cooperate and collaborate with neighboring communities to redirect less effective actions and amplify positive results, and

BE IT FURTHER RESOLVED that the Sustainability Policy Committee of the Legislature shall report at least annually on the progress made related to a Climate Smart Communities Pledge, and

BE IT FURTHER RESOLVED that the County Manager shall assist the Sustainability Policy Committee with the development of the progress reports, by assigning appropriate county staff to work on the above goals, along with incorporating progress on these goals in the contract with Sullivan Alliance for Sustainable Development, or such other organization under contract with the County to provide similar services from time to time.

Moved by Mrs. LaBuda, seconded by Mrs. Goodman, put to a vote with Mr. Armstrong and Mr. Sorensen absent, unanimously carried and declared duly adopted on motion February 11, 2010

THE SULLIVAN COUNTY CLIMATE ACTION PLAN

Introduction

The Sullivan County Climate Action Plan documents the carbon footprint of the County, sets goals for the County-wide reduction of greenhouse gas (GHG) emissions, and recommends a range of actions for adapting to the impacts of climate change that cannot be mitigated through GHG reduction.

Part I of the Sullivan County Climate Action Plan addresses County operations. Greenhouse gas emissions from various County operations are analyzed. GHG reduction measures the County is already implementing are described, and additional greenhouse gas mitigation measures are identified. Individual chapters on energy, transportation, materials management, land and water use, public health and emergency management address mitigation and adaptation goals and measures for each of those sectors. The Plan suggests pilot projects to demonstrate new technologies and approaches to the challenges of climate change.

Part I also includes a schedule of priority projects that fulfill the needs of the County's Division of Public Works while implementing the most effective energy efficiency measures feasible. These projects can all be undertaken, and some can be completed, within the next five years. To pursue these projects, the County will seek creative and collaborative funding strategies utilizing all available incentives and opportunities from New York State Authorities such as the New York State Energy Research and Development Authority (NYSERDA) and the New York Power Authority (NYPA).

Part II of the Plan, *CAP in the Community*, outlines recommended town and community actions to address climate change. Part II includes available data on County-wide GHG emissions associated with residential, commercial and industrial energy use, domestic and commercial vehicles, agriculture, solid waste and wastewater treatment. Part II proposes actions for GHG reduction and climate change adaptation strategies for Town and Village governments, for businesses and community organizations, and for County residents.

A. Climate Science

Mounting scientific evidence supports the view that climate change is an urgent threat to the environmental and economic health of our planet, our country and our community, and that human activity is the major cause of these rapid changes. Among the documented effects are acidification of the earth's oceans, melting glaciers, rising sea levels, and more frequent and severe weather events such as hurricanes, typhoons and droughts.

At the heart of these changes is the phenomenon known as the greenhouse effect, in which gases dispersed in the atmosphere trap solar heat. The most relevant of these greenhouse gases (GHG) are carbon dioxide (CO₂), methane, nitrous oxide (NO₂), water vapor and ozone. The impact of the various GHGs is often expressed in CO₂ equivalents or CO₂e, a unit of measure that allows us to express the impact of different GHGs in terms of the amount of CO₂ that would produce the same amount of warming. CO₂e expresses the carbon footprint of an activity or collection of activities that produce a range of GHGs as a single, consistent number.

Up until about 200 years ago, the amount of CO₂ in the atmosphere was about 275 parts per million (ppm), a useful amount that made the earth warm enough for human habitation. However, modern human activity, most notably the extraction and burning of fossil fuels for transportation, electricity generation, and conditioning of buildings, introduces large amounts of carbon dioxide, methane, nitrous oxide and other heat trapping gases into the atmosphere. Collectively, these gases intensify the natural greenhouse effect, causing rapid changes in global climate patterns. In May 2013, atmospheric levels of CO₂ surpassed 400 ppm, an alarming milestone that signals the need for concerted, science-based efforts to reduce GHG emissions at every level of society, from our homes and vehicles to our businesses, industries, our municipal government operations, and at the state and federal level.

Sullivan County has already experienced changes to local and regional weather patterns and species migration. In particular, the County has documented unprecedented damage resulting from Tropical Storm Lee (September 2011), Hurricane Irene (August 2011) and Superstorm Sandy (October 2012). NYSERDA's 2010 report "Responding to Climate Change in New York State" anticipates changing temperatures that will result in more frequent and damaging storms accompanied by flooding and erosion, summer water shortages as a result of reduced snow pack, the introduction of new and damaging invasive species, higher incidences of asthma and heat-related illnesses, and the disruption of ecosystems, habitats and agricultural activities.¹

In 2010, the Sullivan County Legislature passed a resolution to join the Climate Smart Communities Program (CSC), an initiative of the New York State Department of Environmental Conservation. Municipalities that join the CSC Program pledge to address the problem of climate change by reducing their GHG emissions community-wide, and by developing strategies to adapt to the climate change impacts that cannot be avoided. In taking the Climate Smart Community Pledge, Sullivan County acknowledged that:

1. Climate change poses a real and increasing threat to our local and global environments;
2. Climate change is primarily due to the burning of fossil fuels;
3. The effects of climate change can endanger our infrastructure, economy and livelihoods, harm our ecological communities, impact our drinking water supplies and recreational opportunities, and pose health threats to our citizens;
4. Our response to climate change provides us with an opportunity to save money and to build a livable, energy independent and secure community, create a vibrant economy, maintain healthy and safe schools, and increase the resiliency of our systems and infrastructures;
5. The scale of greenhouse gas emissions reductions needed for climate stabilization will require sustained and substantial efforts throughout the community and at every level of government operation.

In addressing the projected impacts of climate change Sullivan County will engage in both mitigation and adaptation: reduction of the use of fossil fuels and other activities that produce GHGs and contribute to the County's carbon footprint (mitigation); and planning infrastructure and systems that will help the County and its residents withstand changes that cannot be mitigated (adaptation). Through the pledge and subsequent actions, the Sullivan County Legislature has made a strong commitment to achieve resiliency in government operations and in the community.

¹ NYSERDA. "Responding to Climate Change in New York State" 2010 [NYSERDA > Publications > Research and Development Technical Reports > Environmental Research and Development Technical Reports > EMEP Publications > Report 11-18 Response to Climate Change in New York State](#)

B. Background and Process: The Sullivan County Climate Action Plan

Sullivan County Actions to Date

Sullivan County has been working since 2005 to establish environmentally responsible policies and practices in County operations and to provide information and technical guidance to towns, villages and the general public. Major benchmarks in this process include:

In 2005, the SC Division of Planning and Environmental Management introduced the Sullivan 2020 initiative and published the Sullivan 2020 Toolbox, which addressed needs, set goals and objectives, and outlined best practices for land and water use, farmland protection, forestry, zoning, parks and recreation, information technology, composting, recycling, emergency management, housing, historic preservation, revitalization of villages and hamlets, diversification of agriculture, workforce development, tourism, arts and cultural development, facilities planning, health and human services, and education. Division of Planning staff made informational presentations to every town and village board, and provided access to the resources online and on CDs that were widely distributed.²

Also in 2005, the County commissioned a study of wind resources by Sustainable Energy Developments, of Ontario, NY. The study, entitled Market Assessment for Wind Energy in Sullivan County, NY, is available at the SC Division of Planning and Environmental Management web pages³

In 2007, SC adopted Resolution 429-07⁴, the County's *Green Vision Statement*, which included commitments to:

- Promote energy efficiency and resource conservation by requiring future County facilities to meet LEED or equivalent sustainable principles, practices and technologies.
- Provide technical assistance and education to municipalities regarding green building standards, renewable energy, and other best practices.
- Operate county buildings in a sustainable manner, conduct regular energy audits, decrease energy needs, increase energy efficiency, encourage alternative energy production.
- Establish benchmarks for measuring the County's progress on sustainability goals review the benchmarks annually and modify them to reflect progress and appropriate changes.
- Develop an environmentally friendly county fleet and vehicle replacement schedule considering hybrid and alternative fuel vehicles.
- Undertake to develop incentive programs with the Sullivan County Industrial Development Agency (IDA) to encourage the development of sustainable industries and projects that meet prevailing sustainable principles, practices and technologies.
- Coordinate with the Sullivan County Division of Health and Family Services to identify areas where environmental health and sustainable practices can be incorporated into their mission, educational programs and service delivery plan.

In 2008 SC adopted Resolution 343-08⁵ directing the County Manager to establish an Office of Sustainable Energy (OSE) to:

² The Sullivan 2020 Toolbox can be accessed at the Sullivan County Division of Planning and Environmental Management home page: <http://www.co.sullivan.ny.us/Departments/PlanningandEnvironmentalManagement/tabid/3225/Default.aspx>

³ http://webapps.co.sullivan.ny.us/docs/dpem/resources/Market_Assessment_for_Wind_Energy_in_Sullivan_Co.pdf

⁴ See the full document in the Appendix.

⁵ See the full document in the Appendix.

- Develop administrative directives to reduce the County’s energy consumption in all county facilities, and those policies shall assist the county with the realization of maximizing the potential savings in utility costs, and to reduce the county’s overall carbon footprint.
- Recommend measures for renewable energy generation for County facilities.

In 2009, the County installed a 15kW photovoltaic system at the Mobility Management Center in the Town of Bethel, New York. Data on the system’s energy production is streamed in real time at www.sustainablesullivancounty.org. Click on the “showcase of current projects” and then on the “Mobility Management Center” link to view streaming data.

Also in 2009, SC adopted Resolution 430-09⁶ to set a public hearing for a proposed local law “to amend the administrative code to create a sustainability policy committee.” The Committee was duly established on 11-19-2009 by L.L. No. 8-2009 to address:

- Sustainable principles, practices and technologies in future county facilities.
- “Green” building standards, renewable energy, and other “best practices.”
- Sustainable policies in current county facilities.
- County fleet review of hybrid and alternative fuel vehicles.
- Environmental health and sustainable practices of the Department of Public Health.
- Benchmarks for measuring progress on sustainability goals.
- Oversight of external education of sustainability policies.

In 2009, SC also adopted Resolution 225-09⁷ to contract with Sullivan Alliance for Sustainable Development (SASD), a County-based 501(c)(3), to provide consultation to the Sullivan County Office of Sustainable Energy (OSE) on energy management and sustainability policy for further implementation of the County’s “Green Vision.”

In 2010, SC adopted Res. 53-10⁸, the *Climate Smart Communities Pledge*, and subsequently joined the International Council for Local Environmental Initiatives (ICLEI), now known as ICLEI- Local Governments for Sustainability. ICLEI is an international association of local governments as well as local and national organizations, and provides research, best practices and strategies for assessment of GHG emissions and the development of workable strategies to address climate change.

In 2011 SASD launched an in-depth analysis of County buildings and facilities and review of existing energy audits to identify cost saving measures; began a County-wide information campaign for Green Jobs-Green NY home energy audits and retrofits through NYSERDA, funded through the American Recovery and Investment Act; and worked with the SC Division of Planning to represent the County on the Mid-Hudson Regional Sustainability Planning Consortium’s Energy Working Group.

In 2012, SASD presented a *Roadmap for Climate Action Planning for Sullivan County*⁹, outlining a rationale and work plan for fulfillment of County Resolution 53-10, the Climate Smart Communities Pledge. The Legislature subsequently adopted Res. 140-12¹⁰ to create the *Climate Action Planning*

⁶ See the full document in the Appendix

⁷ See the full document in the Appendix.

⁸ See the full document in the Appendix.

⁹ See the full document in the Appendix.

¹⁰ See the full document in the Appendix

Advisory Board, and appointed 15 Sullivan County residents to serve on the Board, with administrative support from SASD.

Also in 2012, the County installed a 49.92kW photovoltaic system at the Robert B. Travis Building on the County's Public Health campus in Liberty New York. The system was commissioned in October 2012. As of 3:00 PM on November 24, 2013, the system had produced 80,868.48 kWh of electricity and saved the County \$8,000 in electricity costs

In the summer of 2013, the Agriculture and Sustainable Policy Committee approved the formation of an informal "Interdepartmental Sustainability Working Group" to collaborate on the development of shovel-ready projects to reduce GHG emissions in County operations while addressing the pressing needs of the County Department of Public Works. The Working Group includes staff of the Divisions of Public Works and Planning, the SC Department of Grants Administration, and staff of SASD acting as advisors.

Collaboration and the CAP Advisory Board

The Sullivan County Climate Action Plan represents a collaboration among various County divisions and departments, including the Division of Planning, the Division of Public Works, the Department of Purchasing and Central Services, the Department of Public Health Services, the Department of Emergency Management/Homeland Security and the Department of Grants Administration, as well as the work of the Sullivan County Climate Action Planning Advisory Board and Sullivan Alliance for Sustainable Development, a County-based non-profit organization that serves as consultants to the SC Office of Sustainable Energy.

The SC Climate Action Planning Advisory Board was appointed in the spring of 2012 and convened its first meeting in July of that year. Staff from the SC Division of Planning and Environmental Management joined with staff of SASD to provide administrative support for these meetings. The Advisory Board met monthly from July 2012 through February 2013, during which time the Board reviewed and discussed existing plans from other municipalities; created a vision and goals for the Sullivan County Plan, mapped out the Plan's proposed scope and methodology. In March 2013, the Advisory Board began a series of workshops to collect ideas for specific goals and measures in the categories of energy, materials management and land and water use. SASD, in their role as consultants to the SC Office of Sustainable Energy, began a detailed review of the County's capital budget for buildings and vehicles, and participated in monthly meetings of the SC Long Term Care Council Transportation Subcommittee, which is in the process of devising a coordinated public transportation plan for the County, coordinated by the SC Division of Planning and Environmental Management.

The Plan draws upon other development plans completed or nearing completion by the County, including the SC 20/20 Planning Toolbox; the SC Economic Development Plan; the SC Transportation Plan (to be completed in 2014); the SC Upper Delaware River Local Waterfront Revitalization Plan, the SC Farmland Preservation Plan; and the SC Strategic Plan 2012-2014, as well as the SC Multi-Jurisdictional Hazard Mitigation Plan.

In addition, the Sullivan County Climate Action Plan seeks to incorporate the goals and objectives established by the Mid-Hudson Regional Sustainability Consortium, and to engage collaborative thinking to identify opportunities for economic development and regional leadership as part of our comprehensive response to climate change. In particular, the Plan notes the potential of recommended measures to:

- Engage the private sector in the creation and expansion of renewable energy, energy efficiency and other green economy enterprises.
- Generate jobs.
- Reduce GHG.
- Improve quality of life for SC residents.
- Improve the health of SC residents.
- Engage the interest and participation of the community at large.
- Engage local and regional NGOs and community organizations as collaborators and project partners.
- Engage participation and active learning in our County's schools.
- Be replicable and have regional significance.

The Plan identifies barriers to progress and proposes specific policy changes at the state and federal level that might help Sullivan County develop more effective energy projects and achieve resiliency goals more quickly. These suggestions appear at the end of each chapter.

Part II of the Climate Action Plan presents available data on County-wide GHG emissions. In Part II, the County recommends specific policies, measures and goals for Town and Village governments, businesses, and the community.

THE SC CLIMATE ACTION PLAN

PART I: County Operations

GHG Inventory: Sullivan County Operations

GHG Reduction Targets for County Operations

Table of Priority Projects for Energy Efficiency/Renewable Energy/Efficient Use of Space

Chapter 1: Energy

Chapter 2: Transportation

Chapter 3: Materials Management

Chapter 4: Land and Water Use

Chapter 5: Public Health

Chapter 6: Plan for Implementation: County Goals and Measures

Part I of the SC Climate Action Plan provides a detailed look at the County's climate-related vulnerabilities and possible actions relating to energy, transportation, materials management, land and water use, and public health.

Each chapter includes:

- A description of the risks and opportunities associated with climate change.
- A review of progress and actions to date.
- GHG reduction goals where applicable.
- Specific recommended measures and strategies to reduce GHG emissions and/or adapt to minimize vulnerabilities.
- Suggested possible policy changes at the State level.
- Potential collaborations that might be undertaken at the regional level, through the Mid-Hudson Regional Sustainability Planning Consortium, Mid-Hudson Regional Council, Patterns for Progress, and other non-governmental organizations with a regional scope.

GHG Inventory: Sullivan County Operations

Methodology and Model

A GHG inventory identifies activities that are responsible for GHG emissions, quantifies the level of each activity, and then calculates the associated emissions. For example, we know that burning fuel oil produces a correlating quantity of GHG emission. If we know that the County burns a certain quantity of fuel oil to heat its buildings each year, we can calculate the GHG emissions associated with that activity. By collecting and analyzing this data for each County facility, we can identify our most likely targets for GHG reduction.

Sullivan County performed a baseline inventory and analysis of energy use and calculated its GHG emissions for County operations in the 2011 calendar year (except where noted that 2010 data was used). This analysis resulted in an estimation of the GHG emissions for the County's operations at 8,674MTCO₂e¹¹.

To establish the baseline greenhouse gas (GHG) emissions of Sullivan County operations, data on the electricity, heating fuel oil and kerosene, and propane consumption of County operated buildings, parks, radio towers and traffic signals were compiled and converted to a British Thermal Unit (BTU) equivalent. This was translated into an industry standard measure of carbon dioxide equivalent, (CO₂e) using an EPA greenhouse gas conversion calculator¹². The same protocol was used to analyze the greenhouse gas emissions from the operation of the County motor vehicle fleet.

In addition, Sullivan County Division of Public Works has provided data on the carbon footprint of the County's current practice regarding municipal solid waste (MSW) and recyclables. MSW is currently trucked to Seneca Meadows Landfill in Waterloo, NY. Recyclables are trucked to ReCommunity Inc. in Beacon, NY. In the Materials Management chapter, this plan offers specific measures for reducing or eliminating this portion of the County's GHG emissions.

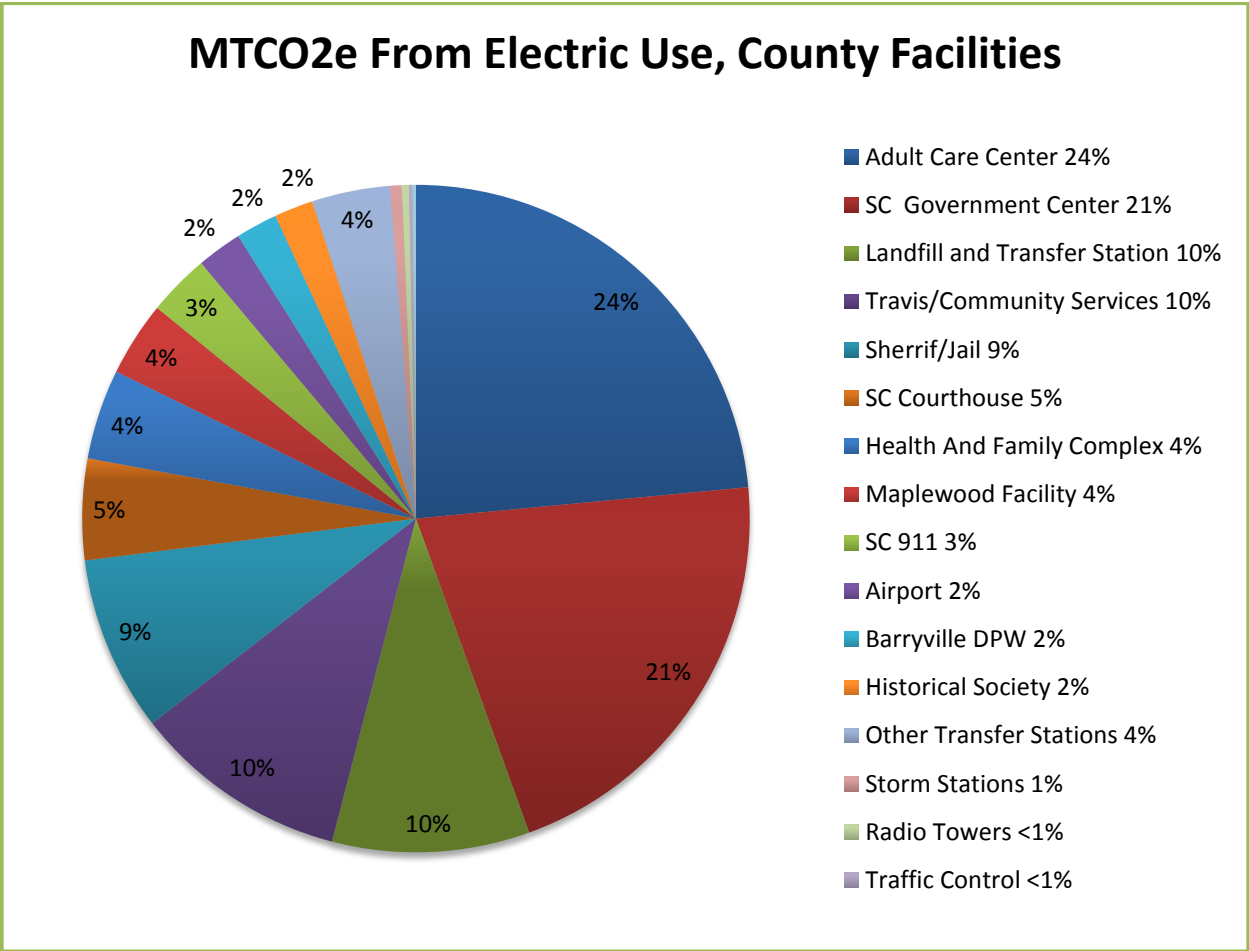
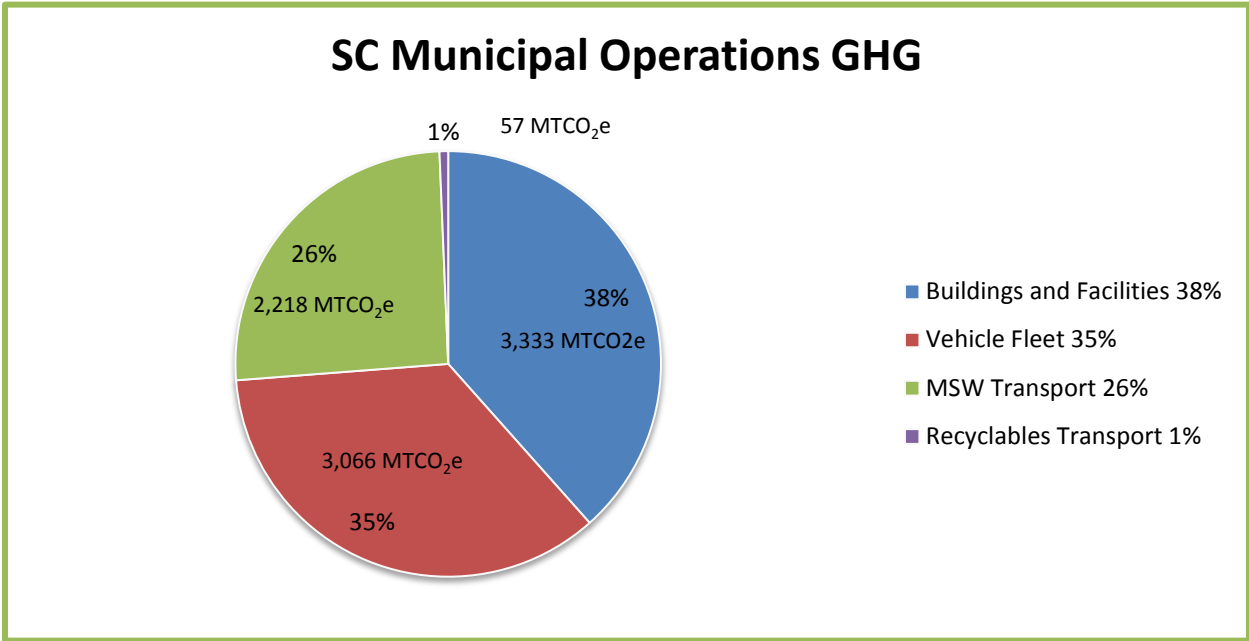
Chart 1: Summary of the GHG Emissions Associated with County Operations

Sector	MTCO ₂ e
Buildings and Facilities	3,333 MTCO ₂ e
Vehicle Fleet	3,066 MTCO ₂ e
MSW (transportation)	2,218 MTCO ₂ e
Recyclables (transportation)	57 MTCO ₂ e
TOTAL	8,674MTCO₂e

¹¹ CO₂ equivalent or CO₂e, is a unit of measure that allows us to express the impact of each different GHG in terms of the amount of CO₂ that would create the same amount of warming. CO₂e allows us to express a carbon footprint consisting of different GHGs as a single, consistent number.

¹² <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>

Charts 2 and 3 depict the proportion of GHG from buildings, vehicles, MSW transport and recyclables transport; and the amount of GHG from electricity use apportioned to each SC facility



Sullivan County Operations GHG Reduction Targets

Demand Reduction: The Plan sets a target goal of 50% reduction of GHG from County operations by 2020. The target will be met through demand reduction at County buildings and facilities, conversion of gas-powered County vehicles with hybrids, and reduction of the carbon footprint of the County’s current strategy of shipping MSW out of County.

Chart 4: Potential Demand Reduction by Sector

Sector	Target Reduction	Percentage reduction	Key Measures
Buildings	1,666MTCO ₂ e	50%	Energy efficiency GC and ACC DER at selected buildings
Vehicles	1,533MTCO ₂ e	50%	Replace 28 of 144 fleet cars with hybrids
Materials Management	1,109MTCO ₂ e	50%	Reduce or eliminate trucking of MSW Reduce recyclables Compost food waste
TOTALS	4,308MTCO₂e		

Renewable potential: SASD has mapped solar resources at all County-owned facilities and at town and village-owned sites. The resources include rooftops and land areas suitable for and large enough to support solar installations at a minimum of 50 kW (approximate size of the solar installation at Travis.). If all of this potential were to be developed, the electricity produced would total an estimated 28MW.

For practical purposes, SASD has selected the most advantageous locations on County-owned property and calculated the potential for energy production from ground-mounted solar installations (to avoid concerns about rooftop installations). Combined with the wind energy potential from the proposed Liberty Energy District, the total production is 9,051kW or 9.05MW, enough to power all of the County’s operations in County buildings and facilities. The resulting GHG reduction would be 2,954.7MTCO₂e.

Chart 5: Renewable Energy Potential

Building/Facility*	Solar Ground Mounted	Wind	Total kW potential	GHG reduction
Adult Care Center	250kW		250kW	105 MTCO ₂ e
SC Govt. Center	313kW		313kW	126 MTCO ₂ e
Health/Family/Community Services Complex	300 kW	2,000kW	2,300kW	126 MTCO ₂ e
Maplewood (DPW)	188kW		188kW	75.7 MTCO ₂ e
SC Airport/911 Facility	3,000kW		3,000kW	1,261 MTCO ₂ e
Lake Superior Park	3,000kW		3,000kW	1,261 MTCO ₂ e
TOTALS	7,051kW	2,000kW	9,051kW	2,954.7 MTCO₂e

*Facilities are ranked from highest energy consumption to lowest.

Priority Projects Identified in Collaboration with the SC Division of Public Works

Chart 7 on the facing page documents priority projects developed in collaboration with the Division of Public Works. These projects can all be undertaken, and some can be completed, within the next five years. The priority projects are:

- Replace HVAC rooftop units at Government Center in Monticello with right-sized Air Source Heat Pump (ASHP) heating and cooling units.
- Repair or replace the atrium skylight at Government Center, including possible PV array, which would help offset electricity costs at the GC.
- Change-out of interior and exterior lighting from fluorescent to LED lighting at Government Center
- Replace PTAC HVAC units at the Adult Care Center in Liberty with more energy efficient PTHP units.
- Commission a Space Study for all County facilities and operations, to study existing utilization of space and energy, engage occupants in guided needs assessment
- Conduct a feasibility study for the County Health Complex in Liberty to plan a deep energy retrofit, a synergistic approach that configures building envelope, lighting and HVAC using energy savings in each component to maximize energy and cost savings for the overall operations.
- Phase-In hybrid electric vehicles for County fleet. Replace conventional vehicles for selected uses with right-sized electric or hybrid vehicles per the vehicle replacement schedule. Pilot project: test suitable hybrid vehicles (1 each) for Public Health, Sheriff's Department and general government use (DPW).
- Support the hybrid electric vehicle phase-in with Electric Vehicle (EV) Charging Stations at SCGC and Liberty Health Campus

Chart 6: DPW Priority Projects for Energy Efficiency/Renewable Energy/Efficient Use of Space

	Project	Benefits/Cost Savings	Costs/Potential Funding or Financing	Multipliers	Estimated GHG Reduction
Government Center	HVAC/Government Center Replace HVAC rooftop units with right-sized Air Source Heat Pump (ASHP) heating and cooling units.	Eliminate 29,702 gallons fuel oil/year. Save \$120k/year or \$2.4 million over 20 years. Right sized system; computer controls, easier to balance; improved comfort; save staff time; weekend shut down mode and soft start/lower demand load create additional energy savings.	System Cost: researching; replacement is in the Capital Budget; DPW is updating the numbers; NYPA financing and comprehensive project management will include NYSERDA incentives.	Pave the way for solar installation at GC, for further reductions in energy costs and GHG reductions	1,102MTCO₂e per year
	Atrium Skylight at GC Repair/replace atrium skylight at GC, including possible PV array, which would help offset electricity costs at GC.	Skylight is leaking/requires repair; Improve energy efficiency	Cost: researching options Possibly fold into NYPA HVAC project at GC Funding: Researching NYSERDA existing facilities	PV array offsets GC electricity costs; Pilots solar installation options at GC	TBD
	Change-out to LED lighting at GC Interior and exterior lighting	25% reduction in electricity usage Reduction of demand charge	Researching costs Possibly fold into NYPA HVAC project at GC	Could eventually be powered by solar array at GC	TBD
ACC	PTACs at ACC Replace PTAC HVAC units at the ACC with more energy efficient PTHP units.	Energy Savings: 35% Cost savings: 50-60% over ongoing replacement of units with same model.	Cost: Right-sized PTHP units are 50-60% cheaper than current PTAC units, and they qualify for NYSERDA rebate.	Achieve greater energy efficiency and superior comfort for patients.	169MTCO₂e per year
All County Facilities	Space Study for all County facilities and operations Study existing utilization of space and energy, engage occupants in guided needs assessment. Involve outside facilitator.	Identify long term needs/solutions Formulate comprehensive use plan; Maximize efficient use of space; Identify opportunities to reduce energy demand and implement appropriate cost-saving energy retrofits; Guide Deep Energy Retrofits at selected facilities.	Cost: Staff time plus outside facilitator. County would be asked to provide plans/drawings Funding: Potentially eligible for NYSERDA Flex tech Feasibility Study	Increase productivity by helping staff achieve more efficient and comfortable use of space Identify opportunities for renewable energy, energy districts to maximize cost savings in conjunction with the solar and wind projects at Liberty Health Complex.	N/A

	Project	Benefits	Cost/Funding	Multipliers	Estimated GHG Reduction
Liberty Health Complex	Feasibility Study for Deep Energy Retrofit at Health Complex Feasibility study to plan a deep energy retrofit, a synergistic approach that configures building envelope, lighting and HVAC using energy savings in each component to maximize energy and cost savings for the overall operations.	Long term reduction in energy costs, building maintenance costs. Increase life span of the buildings. Improve indoor air quality and comfort.	Cost: \$75,000 for all of the buildings. Funding: Flex Tech/CFA plus County cost-sharing. Could be paid for from 1 year of cost savings from eliminating fuel oil at GC (see 1).	Moving to air source or ground source heat pumps maximizes the benefit of the energy produced at the site (solar and wind.)	N/A
	Phase-In of Hybrids, Plug-In Hybrids and Electric Vehicles for County Fleet Replace selected vehicles with right-sized hybrids, plug-in hybrid and electric vehicles per the vehicle replacement schedule. Pilot: 1 hybrid vehicle each for Public Health, Sheriff's Department and general government use (DPW).	Fuel cost savings Less maintenance GHG reductions	\$3-4,000 more per vehicle on State bid.		Potential 50% reduction in GHG from County vehicles through replacement of 28 cars with hybrids
County Vehicle Fleet	EV Charging Stations at SCGC and Liberty Health Campus	Facilitate use of plug-in hybrid and electric vehicles to achieve operational cost savings, maintenance reductions and GHG reductions.	\$1,500 per station		TBD
Traffic Signals	Change-out traffic signals for LED Replace County-owned traffic signals with LEDs.	Energy cost savings: as much as 75% per intersection Less maintenance with longer lasting bulbs (5 years vs. 1 year for incandescent lights.)	ROI is less than 12 months for most projects.	Increased safety from brighter, more visible signals LED technology with multiple diodes per light means lights rarely fail.	102.6MTCO₂e per year DONE

Chapter 1: ENERGY

OVERVIEW

Potential climate impacts relating to Energy Use: Continued use of fossil fuels will exacerbate the effects of climate change, including flooding, drought, invasive species, public health impacts, impacts on agriculture, and accompanying economic impacts. In addition, as the readily available supply of oil and gas dwindles, we are faced with the necessity of ever more costly, invasive, extreme and energy-intensive methods of extracting what remains.

Potential Climate Change Opportunities relating to Energy Use: By bringing energy innovation to the challenge of climate change, we can encourage the creation of energy sector businesses; energy efficiency and building retrofit businesses and community-based energy projects, and promote the work of architects and builders who bring cutting edge technologies to new construction. This will improve the quality of life for Sullivan County residents, and can have an impact on marketing/branding the County as an attractive and desirable destination for development that is respectful of our land and water.

BUILDINGS

38% of the County operations GHG comes from County-owned buildings and facilities.

49% of the GHG emissions of County buildings is generated from energy used to power and condition work spaces (heating and cooling, light, computers, printers, monitors), power traffic signals on county roads, operate emergency and DPW radio towers, waste transfer stations, and county parks. While the GHG is generated at the primary energy production facility, either coal-fired or hydro-powered electricity plant, its emissions are charged to Sullivan County.

The other 51% of the GHG emissions of County buildings is generated from the fossil fuels used on site to heat buildings and to provide process directed hot water for County facilities.

The Sullivan County building stock ranges in age and complexity from the 1890 Bushnell Building which houses the Sheriff's Road Patrol to the 2010, steel fabricated Emergency Services Training Center classrooms. Most County buildings were constructed at a time when there were no energy conservation construction codes resulting in both drastically energy inefficient buildings, and also tremendous opportunities for realized energy savings through aggressive building energy retrofits.

The County's ability to reduce the amount of GHG produced by operating government buildings will depend upon the level of work done to the buildings and the extent to which renewable energy systems are brought on-line. The most aggressive approach is to target the largest consumers of electricity and fossil fuels for deep energy retrofits (DER). This can reduce the amount of energy used to operate a building by up to fifty percent. As noted earlier, the oldest units of county buildings can offer the greatest energy savings through DER. This strategy allows buildings to be removed from fossil fuel heating systems, and combines synergies of heating and cooling through either air source or ground source heat pump technology and the continued deployment of robust renewable energy systems and innovative energy storage systems. An additional strategy is to replace existing electric heating and

cooling units with Energy Star or better units, on a scheduled basis consistent with life-expectancy. For example, replacing the existing PTAC units at the Adult Care Center with PTHPs will achieve an annual GHG reduction of 169 MTCO₂e.

Replacing existing lighting with solid-state lighting technology would further reduce GHG and operating and maintenance costs of lighting County facilities.

Progress To Date: Key actions

- Beginning in 2001, the SC DPW has replaced the incandescent light bulbs in all County maintained traffic signals with LED devices, reducing electric use by as much as 90% for these fixtures and reducing maintenance and replacement expenses.
- A 15kW photovoltaic system was installed at the Mobility Management Center in the Town of Bethel in 2009.
- A 49.92kW photovoltaic system was installed at the Robert B. Travis Building on the County's Public Health campus in Liberty in 2012.
- In 2005, the County commissioned a study of wind resources by Sustainable Energy Development (SED). The Wind Energy Market Assessment Study can be accessed at the Sullivan County Division of Planning and Environmental Management at http://webapps.co.sullivan.ny.us/docs/dpem/resources/Market_Assessment_for_Wind_Energy_in_Sullivan_Co.pdf
- Solar resources on municipal properties (County, Town and Village) in Sullivan County have been mapped and inventoried.

The SC Climate Action Pledge (adopted by SC Resolution 53-10 in 2010) includes provisions relating to energy in Goals 1, 2, 3, 4. These goal statements include the following specific measures:

- Gather data, inventory GHG emissions, establish baselines.
- Set goals to reduce GHG emissions.
- Join ICLEI.
- Decrease energy demand at County facilities
- Achieve US Green Building Council Leadership in Energy and Environmental Design (LEED) standards or equivalent in new County construction.
- Incorporate cost-effective energy efficient technologies in County infrastructure.
- Improve fuel efficiency, discourage idling, encourage carpooling for County employees and consider converting vehicle fleet to sustainable alternative fuels and using electric vehicles where practicable.

ENERGY GOALS AND MEASURES

GOALS

Our overarching goals address energy efficiency and energy production.

Goal 1: Reduce building energy use and GHG emissions through energy efficiency measures by fifty percent (50%) by 2020.

Goal 2: Shift to renewables at County facilities, including solar, wind, small hydroelectric and community/municipally-owned production.

All production of energy and energy use should be subject to life cycle cost analysis. Energy sources should be accountable for their full cost – including cost of extraction and transport, and the health and environmental costs associated with their processing and use.

RECOMMENDED MEASURES

Goal 1: Reduce building energy use and GHG emissions through energy efficiency measures by fifty percent (50%) by 2020.

Measure 1

Develop a long-term plan for building retrofits and scheduled equipment replacement to upgrade systems with optimally energy efficient renovations and technology.

Strategies:

- Conduct/commission a Space Study for all County-owned buildings and facilities, and assign or re-allocate space as needed for current and foreseeable future needs.
- Refine analysis of energy use and recommended upgrades, i.e. building envelope, HVAC and lighting systems, deep energy retrofits; develop detailed plans for each building; and designate buildings that can be meter-isolated for tests.
- Task the Interdepartmental Sustainability Working Group to develop grant-ready projects: research, scope, strategize and develop funding opportunities; involve building operations staff in this planning task.
- Commit to the option of new construction if the study indicates that that is the most cost effective and practical course of action.
- Perform Deep Energy Retrofits.

Measure 2

Use life cycle cost accounting to capture GHG reduction and energy cost savings.

Strategy:

- Identify issues and educate County employees on ways they can help conserve energy and document energy savings.

Measure 3

Strengthen the County's commitment to LEED or higher standards.

Strategies:

- Develop a protocol for ensuring that LEED standards or higher are met in all new construction.
- Add a commitment to LEED or higher standards for all renovations of existing buildings.
- Add a commitment to renewable energy installations at all new County facilities and major renovation projects.

Goal 2: Shift to renewables at County facilities, including solar, wind, small hydroelectric, and community/municipally-owned production.

Measure 1

Using the mapping and analysis of potential solar resources at County-owned facilities completed by SASD in 2013, explore the possibility of power purchase agreements (PPAs) for selected County facilities, including Mobility Management, SC Airport, Government Center, Liberty Health Complex, and the proposed SC Public Safety Campus.

Strategies:

- Develop an RFP to build out the solar potential at all County facilities by aggregating multiple projects at separate locations under one PPA (see sample RFP in the Appendices.)
- Explore renewable energy funding opportunities through the NY Sun Initiative, and possible projects with Integrys, the County's energy provider under contract through MEGA.
- Identify pilot projects to demonstrate new technologies at SC Facilities

ENERGY PILOT PROJECTS

Pilot Project: Biodiesel or Biomass Heating

Pilot a bio-diesel or biomass fuel conversion for heating at a mid-size SC facility such as the County Courthouse. Simultaneously, develop local production of the fuel crop (for example, rapeseed) and develop the local facility to process the crop into biofuel. Ideally, this local facility will be powered with renewable resources.

Benefits:

- Grant-fundable
- Replicable, job creating, GHG reducing and regionally significant (MHRP criteria)
- Links to local or regional agricultural production and diversifies agricultural economic opportunities.

Steps:

- Identify partners (SC Industrial Development Agency, SC Community College (SUNY Sullivan), Cornell Cooperative Extension, local farmers) and potential funding sources such as Sustainable Agriculture Research and Education (SARE) grants.)

Pilot Project: Liberty Energy District

Create a Community Energy District in Liberty that will integrate multiple systems to reduce energy usage (demand) and produce energy on site (supply). Components include: a deep energy retrofit (building envelope); energy efficiency retrofits for lighting; and a conversion from fossil fuel heating systems to a ground source heat pump district heating system or to stand-alone air-source heat pumps in each building. Net-zero energy usage will be achieved by installation of a 2MW wind turbine and by adding to the existing 49.93W PV array. Energy storage technology will allow the complex to utilize stored energy to offset peak demand load and will also allow the County to participate in utility demand reduction incentives. (See the full project description in the Appendices.)

Benefits:

- Meets the objectives of the Mid-Hudson Regional Sustainability Planning Consortium
- Energy cost savings
- Replicable, job creating, GHG reducing and regionally significant (Mid-Hudson Regional Sustainability Planning criteria)
- A model for similar projects at Sullivan County Community College, Sullivan County Government Center, the proposed Sullivan County Public Safety Campus, School Districts, Bethel Woods, health care facilities, and commercial enterprises.

Steps:

- Space Study
- Feasibility study for deep energy retrofits
- Feasibility Study for solar and wind (35% design report for wind has been completed.)
- Identify funding sources for each component through Cleaner Greener NY program.

Pilot Project: LED Lighting Change-out at Government Center

Pilot a change-out of interior and exterior lighting from fluorescent T-12 and T-8s to solid state (LED) at the Government Center in Monticello, as a demonstration of the cost savings and superior light quality of this technology for all County facilities.

Benefits:

- Energy cost savings through reduced energy demand and less kWh used
- GHG reducing
- A model for similar projects at all County-owned facilities.
- Better quality light
- 100% recyclable and removes hazardous substances from the workplace

Steps:

- Lighting study
- Benefit/Cost Analyses
- Issue a Request for Proposals (RFP) that includes the following elements: study of current fixtures; room to room analysis of lighting needs and quality of light (right-size/right fixture); LM80, LM79, and L70 tests for each type of bulb or fixture; resulting total harmonic distortion of the system should be no more than 5%.

Energy Policy Recommendations

The County could achieve greater success in reducing GHGs from fossil fuels and transitioning to renewable energy generation if New York State were to make certain policy changes. The County can pursue these changes through legislative resolution.

Ask New York State to:

1. Revise the New York State Energy Conservation Construction Code to require a passive house standard for new construction, and to mandate renewable energy installations, for all new public and commercial buildings. For example, Prince George’s County in Maryland has implemented a requirement of 1kW of renewable energy for every 1,000 square feet of gross floor space for all public buildings.
2. Create a state incentive for renewable energy technology and devices “made in New York.”
3. Add renewable energy installations to the range of approved measures under the Green Jobs – Green New York Program of home energy audits and residential retrofits.
4. Revise Public Service Commission tariff on street lighting to allow municipalities to change out street lights from conventional lamps to solid state lighting devices (LEDs).

Regional collaborations may be the best strategy for achieving objectives that are beyond the authority of the County Legislature. Sullivan County should work with the Mid-Hudson Sustainability Planning Consortium, Patterns for Progress, the Hudson Valley Regional Council and other regional entities to pursue these objectives:

1. Encourage the adoption of a net-zero energy use guideline for new housing construction, and explore ways to incentivize this through the efforts of Patterns for Progress, the Hudson Valley Regional Council, and Mid-Hudson Regional Sustainability Planning Consortium.

Chapter 2: TRANSPORTATION

OVERVIEW

Potential climate impacts relating to Transportation: The County fleet of gas and diesel fueled vehicles accounts for 35% of the total GHG emissions associated with County operations (separate from transport of County MSW and recyclables, which is addressed in the chapter on Materials Management). Continued use of fossil fuels to power our vehicles will exacerbate the effects of climate change, including flooding, drought, invasive species, public health impacts, impacts on agriculture, and accompanying economic impacts. In addition, numerous carriers that do business with the County provide transport in gas and diesel powered vehicles.

Potential Climate Change Opportunities relating to Transportation: Sullivan County has the opportunity to provide leadership in the region by phasing in hybrid, plug-in hybrid and electric vehicles for a sizeable portion of the County fleet, by installing electric vehicle charging stations at key locations throughout the County, and by creating a Coordinated Transportation Plan to achieve much higher efficiency in serving social services clients, employers and their employees, and the general public.

Vehicle Fleet

Sullivan County's vehicle fleet accounts for 35% of GHG emissions associated with County operations. 59% of these GHGs are related to diesel fuel utilized to power the bridge and road crew's heavy equipment (graders, dozers) and snow removal equipment.

The remaining 41% of these GHGs are related to the use of gasoline to power the smaller fleet vehicles for the sheriff's road patrol, county health staff, Office of the Aging programs and other county use vehicles.

Sullivan County can achieve an ambitious goal of reducing GHG emissions produced from its fleet vehicles by 50% by 2020. This could be accomplished easily by replacing 28 out of 114 of the current gasoline powered automobiles with hybrid vehicles. These can be phased in according to an established schedule so as to maintain fiscal order. An analysis of the specific use for each vehicle will further help identify the most appropriate type of drive train (hybrid, EV, etc.). For example, vehicles that are used for short distances would be well served by a total electric vehicle while vehicles used for longer duration trips, including sheriff activities, would be well served by hybrid vehicles. (See appendix for studies on hybrid vehicles used in law enforcement.)

The medium duty fleet of trucks average 9.45 miles per gallon fuel economy. Further analysis of the specific use of these vehicles and ascertaining "right size" vehicles is required to make sensible target recommendations of fuel reduction.

Driving behavior is also an important factor in reducing fuel consumption. Jack-rabbit starts, hard stops, idling an engine for prolonged periods, driving impatiently and over accelerating while climbing a hill are frequent, consistent fuel wasters. Vehicle maintenance is also a factor; recommended tire pressure and maintenance of brakes and filters also help maximize fuel efficiency. The County will provide all employees with information on fuel-conserving driving habits, and reinforce existing policies that prohibit idling of County vehicles.

Sullivan County Comprehensive Coordinated Transportation Plan

A number of County departments and associated agencies provide or coordinate transportation services for their clients, including Office for the Aging, Veterans Services, Public Health, Workforce Development, Independent Living, Inc., and the BOCES Transition Council. These services are contracted with local transportation providers in a piecemeal fashion, agency to agency. In 2013, the County established the SC Long Term Care Council Transportation Subcommittee to examine the transportation needs of these clients and formulate a more cost effective coordinated plan for the provision of these services. The County subsequently secured a grant from the USDA to fund the creation of a plan. This initiative will address a critical challenge to the wellbeing and economic viability of County residents. It represents an opportunity to incorporate the phase in of electric and hybrid vehicles by service providers, and to expand the available services to a broader range of County residents.

Progress To Date: Key Actions

- The County DPW has implemented a “no idling” policy for DPW staff.
- The County is developing a Comprehensive Coordinated Transportation Plan to formulate a more efficient and cost-effective system for transportation services provided by County departments and agencies.

The SC Climate Action Pledge (adopted by SC Resolution 53-10 in 2010) includes provisions relating to transportation in Goal 3.

This goal statement includes the following specific measures:

- Improve fuel efficiency
- Discourage idling
- Encourage carpooling for County employees
- Consider converting vehicle fleet to sustainable alternative fuels and using electric vehicles where practicable.

TRANSPORTATION GOALS AND MEASURES

GOALS

Our overarching goals address energy efficiency and fuel types relating to transportation.

Goal 1: Reduce fuel use by 50% through right-sized, energy efficient vehicles and the phase-in of hybrid, plug-in hybrid and electric vehicles.

Goal 2: Encourage fuel conserving driving habits and carpooling to reduce the carbon footprint of County employees.

Goal 3: Through the County's Comprehensive Coordinated Transportation Plan, encourage the conversion to hybrid and all-electric vehicles by carriers and transportation providers operating under County contracts.

All decisions about transportation should take into account the full cost and benefits of their implementation – including costs and benefits associated with productivity, health, and the environment.

RECOMMENDED MEASURES

Goal 1: Reduce fuel use by 50% through right-sized, energy efficient vehicles and the phase-in of hybrid, plug-in hybrid and electric vehicles.

Measure 1

Develop a long term plan for replacement of County vehicles with right-sized hybrid, plug-in hybrid or electric vehicles.

Strategies:

- Analyze the fuel consumption hours of use for the County's heavy vehicles such as road work equipment and plow trucks, and as these vehicles are replaced, verify that the replacement vehicle is right-sized and the most fuel efficient for the task.
- Adopt a formal Legislative County mandate for hybrid vehicles and commit to funding.
- Apply life cycle cost analysis to the vehicle replacement budget.
- Pilot the phase-in of hybrid, plug-in hybrid and all-electric vehicles for County health staff, Sheriff's department and general government use with vehicles as appropriate to use.
- Provide funding for diagnostic equipment and training for County personnel to maintain and service hybrid and all electric vehicles.

Measure 2

Support the use of electric vehicles by investing in solar powered EV charging stations at key County facilities and in the community.

Strategy:

- Pilot the installation of solar-powered electric vehicle charging stations at Government Center in Monticello and the Public Health Campus in Liberty.

Goal 2: Encourage fuel conserving driving habits and carpooling to reduce the carbon footprint of County employees.

Measure 1

Reduce fuel use for County vehicles.

Strategies:

- Establish and enforce an anti-idling policy for all County vehicles, and address the reasons for vehicle idling.
- Draft a County directive describing and promoting fuel-conserving driving habits for County employees.
- Encourage carpooling by County employees, possibly through the “request to attend” protocol in place for County employee travel.

Goal 3: Through the County’s Comprehensive Coordinated Transportation Plan, Encourage the conversion to hybrid and all-electric vehicles by carriers and transportation providers operating under County contracts.

Measure 1

Incorporate a requirement for energy efficient vehicles and hybrid, plug-in hybrid or electric vehicles as feasible in the County’s Coordinated Transportation Plan.

Strategies:

- Inventory transportation providers.
- Identify opportunities to document the fuel efficiency of providers’ vehicles.
- Address the feasibility of contract requirements or preferred provider status for providers that implement energy efficiency standards such as fuel efficiency vehicle standards, anti-idling policies, and other standards comparable to the County’s policies and procedures.

Transportation Policy Recommendations

The County could achieve greater success in reducing GHGs in the transportation sector if New York State were to make certain policy changes. The County can pursue these changes through legislative resolution,

Ask New York State to:

1. Ban ethanol as a gasoline additive, for the following reasons:
 - Ethanol has no proven fuel efficiency benefit.
 - Corn production for ethanol conflicts with feed production and drives up feed costs for New York's dairy farmers.
 - It takes a gallon of diesel fuel to produce a gallon of ethanol – the process is fuel intensive.
 - Ethanol damages small engines.
 - Ethanol damages fuel economy.

Regional collaborations may be the best strategy for achieving objectives that are beyond the authority of the County Legislature. Sullivan County should work with the Mid-Hudson Sustainability Planning Consortium, Patterns for Progress, the Hudson Valley Regional Council and other regional entities to help pursue the following objective:

1. Remove barriers to the efficient coordination of public transportation across county lines for employment opportunities.

Chapter 3 Materials Management

OVERVIEW

Potential climate impacts relating to Materials Management: The price we pay for the materials we use and the products we buy includes hidden costs that reflect their embodied energy – the energy required for their manufacture, packaging, transport, use, and ultimate “disposal” when their useful life is deemed over.

Approximately 42% of U.S. greenhouse gas emissions are associated with the energy used to produce, process, transport, and dispose of the food we eat and the goods we use. GHG-producing fossil fuels are used as feed stocks and used in manufacture and transportation of many of these items as well as final processing or disposal.¹³

Landfilling, incineration and other methods of “disposal” carry huge direct economic costs and potential GHG-producing emissions. Unless properly managed¹⁴, landfills create methane and other GHG emissions that contribute to climate change; these emissions must be collected and managed in accordance with NYS regulations. Urban memory still holds that landfills leach copious toxics in the form of leachate and landfill gas (LFG) to the environment. Here again, this is only true if the landfills/burn plants in question are not in compliance with State and Federal law. Modern (post-1988), properly-managed landfills and burn plants emit CO₂ and H₂O, with some trace elements; leachate collection systems, stack scrubbers and LFG collection systems mitigates these effects.

Certain materials and substances pose additional threats. For example, pharmaceuticals in the water supply create a public health hazard, exacerbated by potential drought and flooding cycles related to climate change. Other hazardous wastes include paints, solvents and chemicals, and many typical household products such as bleach, pesticides, ammonia, and cosmetics, all of which pose a threat to water supplies if improperly disposed of. Household medical sharps pose another hazard and require proper handling.

Potential climate change opportunities relating to Materials Management: By implementing best practices for materials management, the County can create new opportunities for businesses that harvest methane as fuel, and harvest other waste for materials recovery and energy production. The New York State Department of Environmental Conservation’s publication entitled “Beyond Waste: A Sustainable Materials Management Strategy for New York State”¹⁵ provides a comprehensive guidance for materials management best practices.

Materials Management includes Procurement, Use, “Disposal” and Next Life. The use of this term, rather than the term “waste management,” is intended to convey a shift in thinking, in which materials and their embodied energy are reconsidered as the raw materials of a next generation of products or for

¹³ US EPA: Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices; 2009

http://www.epa.gov/region10/pdf/climate/wccmmf/Reducing_GHG_s_through_Recycling_and_Composting.pdf

¹⁴ Per NYSDEC Part 360 requirements, since 1988 all NYS landfills are required to capture CH₄ (methane) emissions as part of overall operating permit/LF Gas Management Plan.

¹⁵ <http://www.dec.ny.gov/chemical/41831.html>

the production of energy, rather than as waste to be disposed of – the basic premise of the “Cradle to Cradle” design approach developed by McDonough Braungart Design Chemistry and published in 2002.

Life cycle analysis reveals the direct and indirect “real cost” of items purchased – including operational and maintenance costs, worker exposure and worker productivity, and final disposal costs – in the purchase price of the item. This analysis enables the County to make sensible purchasing decisions that reduce disposal costs, lower operational costs (because of energy efficiency), reduce hazardous waste, and improve worker health and safety.

Municipal Solid Waste

With the closing of the SC Landfill in 2009, Sullivan County began contracting to have all municipal solid waste hauled to Seneca Meadows Landfill in Waterloo, New York for disposal. As a result, 55,000 tons of solid waste are transported to Seneca Meadows each year, at a cost of \$5.5 million. The fuel burned to transport this waste results in 4,435,860 lbs. or 2,218 tons of CO₂ each year – 26% of the County’s GHG emissions.

In 2010, the County implemented single stream recycling and now transports 2,600 tons of single stream recyclables under private hauling contract to ReCommunity Inc. in Beacon, NY each year. This practice produces 114,180 lbs. or 57 tons CO₂ from fuel consumption each year – 1% of the County’s GHG emissions.

Waste reduction, including municipal solid waste, construction and demolition debris and even recyclables (when no re-use of recoverable materials is available), should remain at the top of the County’s materials management hierarchy.

Waste-producing systems overall are not sustainable. In addition to the carbon footprint of the County’s waste management regime, the County is losing millions of dollars each year in materials that could be used to generate renewable energy, or be mined for the raw materials to produce the next generation of products.

Waste produced in County Operations

While data is not available in all categories for all facilities, Municipal Solid Waste (MSW), recycling and construction and demolition debris (C&D) have been analyzed for the three major County facilities: Government Center in Monticello, the Liberty Health Complex, and the Maplewood DPW facility.

Chart 7: Waste at County Facilities in tons (data for 2012)

Facility	MSW	C&D*	TOTAL Waste	Complex Cardboard	Complex Mixed Paper	Scrap Metal	Tires	TOTAL Recycling
Government Center	54.76	---	54.76	not available	not available	---	---	16.73
Liberty	58.13	3.84	61.97	5.04	1.82	---	---	18.90
Maplewood	11.76	7.84	19.60	.16	---	42.9	7.49	51.32
			136.33					86.95

*C&D = Construction and Demolition Debris

Purchasing

Sullivan County purchases approximately \$__million in goods and services each year. Traditionally, the main focus of purchasing policy has been to secure the lowest price. Seen through a sustainability lens, there is a need to redefine “best value” to include considerations of packaging, materials and methods of manufacture, distance travelled from manufacturer to the County, length of the product’s useful life, the amount of material that can be reused or reclaimed, and whether or not those recycling and reclamation services exist nearby. This life cycle analysis redefines most efficient use of tax dollars. It generates a “real cost” of items purchased, and enables the County to justify purchasing decisions that reduce disposal costs, lower operational costs (because of energy efficiency), reduce hazardous waste, and improve worker health and safety. This new paradigm of life cycle cost analysis makes obsolete the traditional practice of using the lowest bid as the only criterion for purchasing decisions.

In February 2014, the Sullivan County legislature passed Local Law 1 of the Year 2014, authorizing the County of Sullivan to award purchase contracts and contracts for services to competitive bidding under General Municipal Law § 103 on the basis of either the lowest bidder or “Best Value” as defined in §163 of the New York State Finance Law. The “Best Value” option may be used if it is more cost effective over time to award the good or service to other than the lowest responsible bidder based on factors such as lower cost of maintenance, durability, higher quality and longer product life. The County’s Director of Purchasing and General Services will devise an expanded policy for environmentally preferable purchasing.

Documents Management

The County has made considerable progress in implementing electronic storage of land records. Due to the high volume of vital records within the County Clerk’s Office and the limited amount of space, the office had continually faced concerns about storage space and about how to ensure the security of the records. The effort began prior to 2009 with grants secured through the NYS Local Government Records Management Improvement Fund (LGRMIF) for the purchase of scanning equipment, software and basic systems training of local staff, and the back file conversion of approximately 3,200 documents, and 3,500 subdivision and survey maps, which were scanned and digitally stored on the County’s server. Since 2009, the County has received LGRMIF grants that facilitated the scanning of an additional 1,116,500 pages of land records.

The back file conversion project uses IQS software to index and store the digitized records for easy access by staff and the public. It also allows the County to include these records in the disaster recovery plan; data is copied onto the county network and protected utilizing the existing MIS back-up system. Other benefits include: a complete database series on the network for filed and recorded subdivision maps; protection and preservation of records by limiting the frequency of handling; reduced staff time required for the retrieval of records; reduced storage space required for housing the records; improved overall image quality of recorded documents; and data interconnectivity between the County Clerk’s office and the Department of Real Property Tax Services.

Progress to Date: Key Actions:

- Recycling is encouraged in all County facilities and recycling containers are available throughout the buildings.
- Some green purchasing policies are in place for Green Cleaning Products, Recycled Manufactured Products, and Energy Efficient Products, Renewable Power Sources and

Alternative Fuel Vehicles (Article IX, Green Purchasing, § 140-9.1 of the County's procurement policy).

- Local Law No. 1 of 2014 authorizes the County to award purchase contracts and contracts for services to competitive bidding under General Municipal Law § 103 on the basis of either the lowest bidder or "Best Value" as defined in §163 of the New York State Finance Law.
- County printers and photocopiers are all-in-one units with duplex capability.
- The County Clerk has implemented ongoing scanning and back filing for more efficient, secure, and accessible storage and retrieval of County land records.
- The County's Recycling Program includes extensive public education and outreach.
- The County has expanded its program of supervised collection of pharmaceuticals for incineration, and is piloting a year-round collection point at the Fallsburg Police Station.
- The County has a hazardous waste collection program.
- The County promotes recycled-content purchasing options for paper and supplies.

The SC Climate Action Pledge (adopted by SC Resolution 53-10 in 2010) includes provisions relating to materials management in Goal 5, which includes the following specific measures:

- Expand "reduce, reuse, recycle" approach.
- Reduce the amount of solid waste generated.
- Promote composting of food scraps and waste.
- Promote reuse or trade of reusable goods.
- Require duplex printing and other conservation practices in County offices.
- Adopt a comprehensive green purchasing program.

MATERIALS MANAGEMENT GOALS AND MEASURES

GOALS

Our overarching goals address reduction of GHG emissions associated with the purchase, use, recycling and ultimate disposal of materials.

Goal 1: Create a Legislative mandate for reduction of waste in County operations by 20% by 2020, and commit to the funding, staffing, training and technical support needed to realize the County’s waste reduction goals.

Goal 2: Meet the County’s solid waste needs with a system that is environmentally responsible and sustainable in the long term.

Goal 3: Develop an “Environmentally Preferable” purchasing policy for all County procurement, and commit to the staff training and technical support needed to implement the policy.

All decisions about the food and goods we purchase, use and dispose of should be accountable for true costs associated with their manufacture, transport, use and ultimate disposal – including the health costs and environmental costs.

RECOMMENDED MEASURES

Goal 1: Create a Legislative mandate for reduction of waste in County operations by 20% by 2020, and commit to the funding, staffing, training and technical support needed to realize the County’s waste reduction goals.

Measure 1

Establish a Zero Waste Policy at all County events and facilities. Zero waste means that disposable materials are minimized or eliminated and that nothing is sent to the landfill.

Strategies:

- Ban polystyrene cups and plates at County facilities and events, and specify the use of alternative, biodegradable products made from food starches.
- Develop a program for composting of all food scraps at County facilities.
- Work with area institutions like Sullivan County Community College and Cornell Cooperative Extension to share strategies and best practices for comprehensive “sustainable campus” initiatives.

Measure 2

Educate all County employees about the importance of materials management goals and the specific actions and measures that will ensure success.

Strategies:

- Encourage materials conservation, and build understanding of the costs, revenue potential and value of the materials used.
- Educate County employees about the importance of waste reduction and recycling and implement a system to enable them to compost at County facilities.
- Reward success and give formal recognition to employees who are creative and pro-active in achieving the County's materials management goals.

Measure 3

Reduce paper use and proliferation of document storage space by moving to electronic storage and retrieval of all documents not required by law to be archived on paper.

Strategies:

- Establish a working group of representatives from each division or department to identify departmental needs and technical specifications.
- Develop an RFP for technical assistance for design and implementation.
- Select data file system that will allow all written documents will be stored electronically. The system will have a multiple key word search engine so that file retrieval is quick, easy and flawless.
- Develop training protocol to ensure that every County employee can store and retrieve documents as needed.

Goal 2: Meet the County's solid waste needs with a system that is environmentally responsible and sustainable in the long term.

Measure 1

Perform a comprehensive analysis of the costs and carbon footprint of the County's current waste policy. Ensure staffing and resources to implement the analysis.

Strategies:

- Assess monthly gas emissions at the SC Landfill Phase I.
- Assess leachate produced by the SC Landfill Phase I.
- Analyze cost of maintenance of the closed Phase I facility (estimated by the NYS Department of Environmental Conservation as a 30 year+ commitment of funds post-closure.
- Analyze annual financial cost (\$5.5 million) and carbon footprint (2,277MTCO₂e) of the County's current practice of transporting solid waste to other NY counties or states for disposal.

Measure 2

Identify and analyze possible alternatives to the County’s current practices for disposal of MSW.

Strategies:

- Develop, analyze and implement a workable plan. For example:

Scenario 1: Explore the possibility of a state-of-the-art regional waste facility built in collaboration with neighboring counties, all of which currently export solid waste to other regions for disposal.

Scenario 2: Explore the potential for a new, state-of-the-art Phase 2 facility in Sullivan County to handle the County’s waste in a responsible manner that does not burden others with the problem of disposal. A new state-of-the-art facility would include:

- Food waste composting (saleable product).
 - Harvesting of methane as fuel (saleable product).
 - Technology for recovering biofuels (saleable product), such as technology developed by Taylor Biomass in Montgomery, NY.
 - Reclamation of recyclable materials such as building materials (saleable product)¹⁶.
 - A plan for future capping with solar technology for energy generation (can be net-metered to other County facilities to lower energy bills)
 - Landscaping strategies that include use of native groundcover to create wildlife habitat and reduce or eliminate mowing and use of other heavy equipment.
 - A mix of compatible public and private initiatives and businesses to fully exploit the commercial value of the energy generated and materials that can be harvested as feed stock for new materials and products.
- Develop a pilot program for freecycling of reusable goods and materials, and create a centrally-located Sullivan County site for this facility. Commit to dedicated staffing for the facility, and create guidelines and a public information campaign to promote freecycling.
 - Work with local hospitals and pharmacies to publicize sharps collection and make it easier for patients to use these services.

Goal 3: Develop an “Environmentally Preferable” purchasing policy for all County procurement.

Measure 1

Apply life cycle cost analysis to identify best practices.

Strategies:

¹⁶ See information about the Town of New Paltz ReUse Center at <http://www.townofnewpaltz.org/recycling-reuse/pages/reuse-center>

- Implement criteria based upon the following: minimal packaging, use of recycled materials where possible, locally grown or manufactured products energy efficiency in leased equipment and services, and the shortest shipping route for purchases.
- Urge the adoption of similar standards by manufacturers and providers of services who contract with the County.
- For the County’s computers and printers, encourage purchase of future “consumable-using” devices that include a no-cost return policy for “empty” supply units, and refillable or recyclable (at vendor cost and determination) replacement options
- Prioritize local purchasing to favor local production and distribution of goods and services.
- For County events and concessions, facilitate use of locally-sourced food and ingredients such as those produced at new Cornell CCE Commercial Kitchen.
- Specify environmentally safe cleaning products for use in all County facilities.

Materials Management Pilot Projects

Pilot Project: Re-Use Facility for Sullivan County

Promote the exchange of reusable goods and materials (freecycling) at the Sullivan County landfill in Monticello or another suitable site.

Re-use and freecycling programs are in place in a number of NYS counties including Ulster and Madison. Clean, good quality reusable or surplus goods and materials are collected for distribution or sale to interested purchasers. These programs require clear guidelines, a secure, climate-controlled building and supervision by trained DPW personnel.

Benefits:

- Valuable materials such as surplus construction materials (windows, doors, unused insulation and tile), art supplies, and good quality household wares can be redistributed instead of disposed of in the landfill.
- Reduced GHG associated with long-distance transport and disposal of materials.

Steps:

- Draft guidelines¹⁷.
- Create a space at or adjacent to the Sullivan County Landfill in Monticello or another suitable, centrally-located site.
- Create a public information campaign to promote freecycling of appropriate goods and materials.
- Move to action.

Pilot Project: Composting at a Sullivan County Facility

Pilot composting projects at Sullivan County facilities such as Lake Superior State Park or Fort Delaware, and facilities where food is served such as The Adult Care Center or the SC Jail. Potential project partners include SUNY Sullivan (Sullivan County Community College) and Cornell Cooperative Extension.

Benefits:

- Reduce volume of MSW going to landfills.
- Create a valuable and saleable product.
- Reduced GHG associated with long-distance transport and disposal of materials.

Steps:

- Draft guidelines.
- Create a space at or adjacent to the Sullivan County Landfill in Monticello or another suitable, centrally-located site.
- Provide information and staff support to ensure appropriate materials are composted.
- Move to action.

¹⁷ The Town of New Paltz (Ulster County) ReUse Center Guidelines can be found in the Appendix and at <http://www.townofnewpaltz.org/recycling-reuse/pages/reuse-center>

Materials Management Policy Recommendations

The County could achieve greater success in reducing GHGs in the transportation and landfilling of waste materials if New York State were to make certain policy changes.

Ask New York State to:

1. Develop a mechanism and funding stream to encourage regional facilities. (See Mid-Hudson Regional Sustainability Project: “Materials Management Administration.”)¹⁸
2. Re-examine DEC solid waste management protocols.
3. Restore funding and re-establish innovative agricultural and composting projects at NYS correctional facilities. (See Mid-Hudson Regional Sustainability Project: “Regional Composting Opportunities at NYS Correctional Facilities.”)¹⁹
4. Ban polystyrene, and create guidelines to eliminate thermal plastic film as packaging for fresh food products in supermarkets.

Regional collaborations may be the best strategy for achieving materials management objectives. Sullivan County should work with the Mid-Hudson Sustainability Planning Consortium, Patterns for Progress, the Hudson Valley Regional Council and other regional entities to help pursue the following objectives:

1. Develop strategies and outreach to counteract NIMBY response to siting of solid waste facilities. (See Mid-Hudson Regional Sustainability Project: “Transitioning from NIMBY to YIMBY.”)²⁰
2. Collect pertinent data and develop a regional plan for funding sustainable MSW infrastructure. (See Mid-Hudson Regional Sustainability Project: “Survey of Funding Options for Regional Materials Management Facilities.”)²¹
3. Work on a ban of plastic/paper bags, or a fee protocol. Research the need for home rule exemption in order to implement, and share information statewide to help municipalities adopt this rule. (*The Town of Bedford Climate Action Plan states that Pace University Land Use Law Center has offered to study these options for them.*)

¹⁸ A project description for Materials Management Administration is included in the Appendix.

¹⁹ A project description for Regional Composting Opportunities at NYS Correctional Facilities is included in the Appendix.

²⁰ A project description for Transitioning from NIMBY to YIMBY is included in the Appendix.

²¹ A project description for Survey of Funding Options for Regional Materials Management Facilities is included in the Appendix.

Chapter 4 LAND AND WATER USE

OVERVIEW

Potential climate impacts related to Land and Water Use include flooding, drought, erosion, impacts on drinking water supplies, invasive species, public health impacts, impacts on agriculture, and accompanying economic impacts.

In addition, climate impacts to land and water tend to have a cascading effect on the economy as well as the environment. These include negative impacts on recreation and tourism; stresses on agriculture, aquatic habitat and streambeds; expenses related to public safety, emergency planning, and damage to property and infrastructure.

Sullivan County has the highest percentage of open space in the Mid-Hudson Region. However, much of this land (83%)²² is in private hands. Safeguarding this open space is a particular challenge.

Potential climate change opportunities related to Land and Water Use: By practicing and promoting best practices for land and water use, we can mitigate some of the causes of climate change and identify the most effective adaptation strategies, enhance public safety and build the resiliency of County systems and facilities.

The Sullivan County Climate Smart Communities Pledge specifies that the County should encourage **low emissions development**. This concept represents an integrated, holistic approach to climate change, one that integrates long-term climate change management as an integral part of all development decisions. In place of isolated efforts to reduce GHG-producing emissions or adapt to individual impacts of climate change, a policy commitment to the low emissions development involves many sectors and many stakeholders, and incorporates a range of actions – mitigation, adaptation, smart growth, environmentally responsible economic development – and financing options to ensure climate-resilient development.

Agriculture is significant to Sullivan County's economy. The County has an interest in preserving agricultural working lands and encouraging the development of the agricultural sector, priorities that are also important to the development of an effective response to climate change. Sullivan County will enhance local resiliency by working to build a strong local food system with a high percentage of home grown and locally sourced food, by expanding accessibility to locally produced food, by protecting our farm land, by promoting sustainable agricultural practices, and by supporting programs and initiatives that increase the productivity and economic sustainability of the farm sector.

The goals and measures contained in the Land and Water Use section of the Sullivan County Climate Action Plan address actions such as building standards for SC facilities; water conservation at County facilities; tree planting and tree replacement; promotion of transit oriented development; low maintenance and GHG reducing alternatives for landscaping at County facilities, best practices for road construction and maintenance, preservation of high quality agricultural lands and the development of a

²² Open Space Institute report Private Lands, Public Benefits; March 2011
http://www.osiny.org/site/PageServer?pagename=Research_Catskills_PrivateLands_PublicBenefits

robust local food system. All of these goals and measures address improved resiliency and adaptation to climate change. All address the need to reduce GHG, although these are not quantifiable at this time.

Progress to Date: Key Actions

- In 2004, the Sullivan County Division of Planning and Environmental Management introduced Sullivan 2020, a comprehensive Strategic Plan.
- SC Open Space Plan, *Conserving Open Space & Managing Growth: A Strategy for Sullivan County*²³, was introduced in 2008. The open space plan addresses resources related to agriculture, biodiversity, recreation and culture, water consumption and flooding, growth and development.
- In 2013, the Division of Planning and Environmental Management drafted a plan for an Upper Delaware River local waterfront revitalization program, aimed at developing recreational river access and enhanced appreciation of the Upper Delaware as a strategically important watershed, a recreational resource, a national park, and a focus for sustainable tourism in the region. The plan is scheduled for completion in 2014.
- In 2013, the Sullivan County Division of Planning and Environmental Management initiated an update of the Agricultural and Farmland Protection Plan²⁴, with oversight by the SC Agricultural and Farmland Protection Board, made up of citizen stakeholders with requisite expertise. They are assisted by the SC Agricultural Advisory Board. The revised plan is scheduled for completion in 2014.
- SC DPW has reduced mowing of 50 acres at the SC Landfill to one time per summer, resulting in a 4.4 ton per year reduction in CO₂ emissions from mowing at the facility, reduction in fuel use and CO₂ emissions associated with mowing at this site.
- The County has in place a policy to build to LEED or comparable standard for all new construction of County buildings.

SC Climate Action Pledge provisions relating to land and water use: Goals 6, 7, 8.

These goal statements include the following specific measures:

- Encourage low-emissions development that is resilient to climatic changes.
- Encourage SC Towns and Villages to include provisions to combat climate change in their revisions and updates of land use policy, building codes and community plans.
- Preserve and protect open space, biodiversity and water supplies.
- Reduce sprawl, promote infill development, and promote compact, transit-oriented, bikeable and walkable communities.
- Minimize new development in flood plains.
- Maintain or establish healthy community forests, promote best forest management practices and encourage tree planting, especially along waterways to increase shading and absorb CO₂.

²³ http://webapps.co.sullivan.ny.us/docs/dpem/resources/Final_OS_Plan%20%282%29.pdf

²⁴ <http://webapps.co.sullivan.ny.us/docs/planning/SullivanProtectionPlan1999.pdf>

LAND AND WATER USE GOALS AND MEASURES

GOALS

Our overarching goals are to mitigate and adapt to the potential impacts of climate change by using best practices for construction, development, conservation, flood control, and the protection of open space, water supplies and biodiversity.

Goal 1: Preserve and expand open space, parkland and forests in the County.

Goal 2: Encourage low emissions development that is resilient to climate change and reduces GHG emissions.

All decisions that affect land and water should be accountable for their full costs – including health costs, productivity costs, and environmental costs, and long term implications for climate change.

RECOMMENDED MEASURES

Goal 1: Preserve and expand open space, parkland and forests in the County.

Measure 1

Establish policies and implement measures to protect, maintain or establish County and community forests, promote best forest management practices and encourage tree planting, especially along waterways to increase shading and absorb CO₂.

Strategies:

- Develop a master plan for Lake Superior State Park.
- Develop a tree replacement policy at a ratio of 2:1 on County properties.
- Develop a plan for dealing with the Emerald Ash Borer and Hemlock Woolly Adelgid, both to address prevention of damage and to deal with the loss of trees due to these invasive pests.
- Develop a plan for dealing with invasive plant species in order to preserve native plants and biodiversity.

Measure 2

Develop policy and protocol to identify properties strategically located to enhance flood control, contiguous forested lands and recreational opportunities for inclusion in the County's open space plan.

- Work with the Office of the Treasurer and the Division of Real Property to identify properties subject to foreclosure as candidates for expansion of existing open space.
- Work with the Delaware Highlands Conservancy and other land trusts to identify high priority properties for protection.

Goal 2: Encourage low emissions development that is resilient to climate change and reduces GHG emissions.

Measure 1

Implement low emission development standards in all new construction and renovation of County facilities.

Strategies:

- Develop a master plan for Fort Delaware.
- Conserve water by implementing waterless urinals, high-efficiency/automatic shut-off faucets, low flush volume toilets and gray water for toilets.
- Achieve net zero energy use (See the Liberty Energy District Pilot Project.)
- Provide open space within developments.
- Locate new buildings in proximity to existing infrastructure such as roads and transportation.
- Require state-of-the-art storm water management techniques.
 - Redesign water basin collection to avoid directing run-off to rivers and streams.
 - Identify alternatives to the practice of roadside ditching for stormwater management, such as bio swales.
 - Use permeable paving for parking areas as practicable.
 - Use native plants and groundcovers.
 - Plant and preserve trees.
- Develop a protocol for low impact/low maintenance landscaping that prevents erosion, uses native plants, and reduces mowing at all County facilities.
 - Reduce number and size of lawns on County property.
 - Research and implement alternative low-growing ground covers to replace grass.
 - Use native plants and groundcovers.
 - Plant and preserve trees.
- Develop the new Sullivan County Public Safety Campus as a pilot project that models low emission development standards and practices. (See the Public Safety Campus Pilot Project.)

Measure 2

Promote sustainable agriculture.

Strategies:

- Promote organic farming.
- Support “buy local” food marketing campaigns.

Measure 3

Encourage smart growth and low emissions development.

Strategies:

- Work with the SC Industrial Development Agency to establish standards and create tax incentives for smart growth, energy efficiency, renewable energy and other best practices. Low emissions development will achieve the following:

- Reduce sprawl
 - Conserve water
 - Achieve net zero energy use
 - Provide open space within developments
 - Promote development in proximity to existing infrastructure such as roads and transportation
 - Require low-impact landscaping
 - Require state-of-the-art storm water management techniques
 - Promote compact, transit-oriented, bikeable and walkable communities
 - Encourage developers to incorporate values of historic preservation through adaptive re-use and the principle of using “embodied resources” – a green principle that sets value on using existing buildings and materials wherever possible.
- Model “Transfer of Development Rights” (TDR) for Towns and identify likely “sending” and “receiving” locations within the County (based upon analysis of the carrying capacity).
- Develop low emissions standards and work with Town Planning Boards to encourage their adoption; and create a protocol for including low emissions development in the County’s GML 239 review process.
 - Model land use and zoning ordinances for solar and wind installations.
 - Model building code provisions to encourage low emissions development.

Land and Water Use Pilot Projects

Pilot Project: A Public Safety Campus for Sullivan County

Pilot a project that provides an energy-efficient, centrally located public safety campus that houses all elements of public safety, such as the jail, probation, sheriff's road patrol and 911 emergency command center.

Benefits:

- Centralize all elements of the justice/public safety system in one location
- Reduce cost of travel for probation officers
- Provides efficient workspace for Sheriff's road patrol
- Energy efficient building design eliminates use of fossil fuel for heating
- Meets county mandate to build to LEED or similar standard
- Provides a model of smart land and water use for new public buildings
- Provides opportunity to integrate renewable energy systems to power the facility
- NYSERDA incentives available through PON 1601 - New Construction Program

Steps:

- Implement space study to define branches of public safety to be housed in the facility
- RFQ for qualified architectural firm to draw plans and put to bid
- Write innovation grant to seek funding from NYSERDA as a demonstration project
- Move to action

Pilot Project: Reduce Mowing and Introduce Innovative Groundcover at County Properties

Expand the County's successful implementation of reduced mowing and sustainable, "low mow" primary vegetative cover at the County Landfill in Monticello to other County properties wherever feasible. This practice provides biomass carbon sequestration benefits as well as nesting habitat for protected Bobolinks, Savannah Sparrows, Tree Swallows and Eastern Bluebirds; native vegetation includes milkweed, which benefits Monarch Butterflies, and asters, which benefit Honey Bees and other native pollinators.

Background: Since 2010, Sullivan County DPW has reduced mowing on 50 acres of landfill site from 5 times per year (monthly from May to September) to 1 time per year. This has resulted in an 80% reduction in CO₂ emissions from mowing at the site, from 5.5 tons per year to 1.1 tons per year. This once a year mowing protocol has been extended to the newer, 40-acre Phase 1 portion of the capped landfill site. In the future, it may be possible to harvest available biomass from these parcels, provided NYS regulators would permit such activity.

The carbon calculation is based upon the following data: 50 acre footprint; fuel use = 22lbs of CO₂ per gallon burned; 100 gallons of fuel is used per month to mow 50 acres; mow 5x per year (monthly from

May through September); 500 gallons fuel per year; 500 gal. @22lbs CO₂ per gallon = 11,000lbs CO₂ (5.5 tons) per year.

Benefits:

- Reduced GHG.
- Conserve equipment.
- Less staff time spent mowing.
- Carbon sequestration from vegetative ground cover.
- Native plants create habitat for birds and beneficial insects.

Steps:

- Catalogue mowing sites on County properties.
- Identify suitable locations such as SC Airport and other fields currently mowed by County staff.
- Move to action.

Land and Water Use Policy Recommendations

The County could achieve greater success in its mitigation and adaptation strategies relating to land and water use if New York State were to make certain policy changes.

Ask New York State to:

1. Direct counties and town governments to eliminate the practice of ditching for stormwater management and develop bioswales and other more effective methods for stormwater management.
2. Recognize the importance of the Power Purchase Agreement option as a key strategy for municipalities to secure renewable energy generation, and revisit any potential barriers in the form of state procurement policy laws that may be interpreted as prohibiting Legislatures from encumbering future Legislatures with buy-out agreements.

Regional collaborations may be the best strategy for achieving objectives that are beyond the authority of the County Legislature. Sullivan County should work with the Mid-Hudson Sustainability Planning Consortium, Patterns for Progress, the Hudson Valley Regional Council and other regional entities to help pursue the following objective:

1. Develop guidelines for new residential construction to reduce stormwater runoff to rivers and streams. Educate builders and code enforcement officers about the benefits and cost effectiveness of strategies such as directing roof runoff to underground dry wells and rain gardens, to recharge the aquifer.

Chapter 5 PUBLIC HEALTH

OVERVIEW

Potential climate impacts relating to Public Health: Climate change and public health are inextricably linked, and climate change has the potential to harm human health in ways both direct and indirect. For example, extreme weather events can cause physical injury as well as long term health damage stemming from flooding, water contamination, and stress. Extreme heat events can cause heat prostration and heat stroke as well as respiratory difficulties. Warming temperatures also contribute to cascading effects such as new and invasive plant species, mold, smog, wildfires, pollens and vector-borne diseases. The burning of fossil fuels is in itself a direct cause of respiratory problems.

Specific Climate-related Health Impacts:

- More heat-related deaths and illnesses.
- Diverse consequences as a result of more intense rainfall and flooding events, such as household mold.
- Worsening air quality due to increasing smog, ozone, wildfires, pollens, molds, and related respiratory health impacts, exacerbated by exposures to toxic cleaning products.
- Changing patterns of vector-borne and other infectious diseases, including Lyme disease and other tick-borne bacterial diseases; introduction of new strains of raccoon rabies moving up from the South; and West Nile Virus and other vector-borne diseases.
- Risks to water supply, recreational water quality, and food production due to shifting precipitation patterns, flood contamination and concentrations of pharmaceuticals in water.

Public health issues relating to climate change often intersect with materials management and land use issues. Some examples include:

- Pollution of drinking water supplies and recreational waters from improper disposal of pharmaceuticals.
- Water- and food-borne diseases caused by flooding due to poor management of storm runoff and sewerage overflows associated with excessive impermeable paving.
- Respiratory and other health damages, and pollution of drinking water supplies and recreational waters, due to the use and disposal of toxic chemical cleaning products.

Potential Climate Change Opportunities relating to Public Health: As we address climate change in the context of public health, the County has the opportunity to identify key strategies for adaptation that will help us prepare more effectively for anticipated health impacts and identify the resources needed in order to implement adaptation strategies. Deep Energy Retrofits (DER) and other strategies for reducing the GHG of buildings can also improve the air quality of Sullivan County's government buildings, especially if they include specific measures designed to help adapt to the anticipated health effects of extreme heat events.

The promotion of organic agriculture and locally grown food reduces GHG by eliminating petroleum-based fertilizers and reducing the carbon footprint associated with transporting food over long distances – hidden costs that are revealed by life-cycle analysis. Efforts to improve distribution and access for SC residents will also help build their healthy resilience and ability to cope with the other health impacts of climate change.

Areas in and around Monticello, Liberty, White Sulphur Springs, and Ferndale have been identified by the USDA as “food deserts,” defined as communities where a high number of households are without vehicles, are more than ½ mile from a supermarket, and are categorized as low income. Smart growth policies, with their emphasis on healthy, walkable communities, access to public transportation, access to high quality food and enhanced sense of community can help improve public health and quality of life, attributes that can enhance the image of the Catskills as an attractive place to live and work.

Progress to Date: Key Actions:

- Prescription drugs take back days have been expanded from once per year to four times per year, with year-round collection at the Town of Fallsburg Police Station.
- SC Public Health Department has a program to help SNAP recipients have better access to fresh local produce.
- The Wellness Committee has encouraged Farm to School Programs to get fresh local produce into school cafeterias.
- As funding permits, the SC Public Health Department has engaged in community education about vector-borne diseases and awareness of climate related health issues such as heat stroke, household mold, and heat related health threats.

SC Climate Action Pledge provisions relating to public health are found in Goal 7. This goal statement includes the following specific measures:

- Evaluate risks from potential climate change
- Set adaptation goals and plan for adaptation
- Identify potential climate change impacts (such as flooding, drought, and extreme temperatures) that could affect the community
- Factor risks into long-term investments and decision-making
- Execute climate change adaptation and preparedness measures through County government planning, development and operations, giving priority to the highest risk areas.

PUBLIC HEALTH GOALS AND MEASURES

GOALS

Our overarching goals address public health impacts of climate change.

Goal 1: Protect the health of County employees and visitors to County buildings and facilities.

Goal 2: Identify best policies and required resources for an effective County Health response to climate-related health issues.

Our investments in public health pay off in reduced future health care costs and reduced suffering by our citizens. All decisions about these investments should take into account not only the cost of their implementation, but the future costs they help us avoid – including health costs, productivity costs, and environmental costs.

RECOMMENDED MEASURES

Goal 1: Protect the health of County employees and visitors to County buildings and facilities.

Measure 1

Implement green building and building operations policies.

Strategies:

- Mandate healthy materials and systems in all County facilities.
- Implement mold abatement initiatives.
- Prohibit toxic cleaning products in County facilities.

Goal 2: Identify best policies and required resources for an effective County Health response to climate-related health issues.

Measure 1

Prepare for climate related public health impacts.

Strategies:

- Work with area hospitals and health professionals to achieve better tracking and compilation of statistics relating to incidence of climate-related health impacts.
- Research invasive plants and the link to allergies, asthma and respiratory disease, and implement and strengthen efforts for control and prevention of their proliferation.
- Engage in educational outreach to build awareness of risks associated with ticks, mosquitos, bats and health threats such as rabies, all of which may increase as a result of warming temperatures.
- Protect the food supply and build the resiliency of County residents by promoting healthy eating habits and the supply of healthy, locally grown foods.
- Promote organic farming and local farmers' markets to support availability of healthy foods.
- Address the lack of access to high quality fresh produce in USDA identified "food deserts" in Sullivan County.

Measure 2

Implement policies to protect water and air quality.

Strategies:

- Mandate full disclosure of industrial chemical processes by businesses and industries seeking to do business in Sullivan County.
- Promote organic farming.

Public Health Policy Recommendations:

The County could achieve greater success in addressing public health issues related to climate change if New York State were to make certain policy changes.

Ask New York State to:

1. Build disposal costs into the cost of household medical sharps.
2. Discourage or ban the production and sale of GMO foods in New York State.
3. Mandate full disclosure of industrial chemical processes by businesses and industries seeking to do business in New York State.

Regional collaborations may provide opportunities to address health related climate issues such as invasive vegetation and disease bearing insects. Sullivan County should work with the Mid-Hudson Sustainability Planning Consortium, Patterns for Progress, the Hudson Valley Regional Council and other regional entities to pursue the following:

1. Develop a regional response to mosquito control (West Nile virus) and other insects related to vector-borne illnesses, and to the influx of new varieties of ticks and other health threats.
2. Develop a regional response to invasive plants linked to allergies, asthma and respiratory disease.
3. Develop a regional approach for better collection and interpretation of data from hospitals and health professions, to track and analyze health impacts relating to climate change, such as heat related illnesses, rabies, West Nile, Lyme Disease, asthma and other respiratory illnesses.

Chapter 6 EMERGENCY PLANNING

OVERVIEW

Potential climate impacts relating to Emergency Planning: Emergency planning efforts are inextricably linked to the impacts of climate change. Extreme weather events such as Tropical Storm Lee, Hurricane Irene and Superstorm Sandy have brought prolonged power outages, disruptions to communications systems, mobility problems due to downed trees and electric lines, flooding, damage to buildings and residences and the need to shelter displaced persons. Extreme heat events have necessitated the creation of cooling centers and community protocols for checking on the safety of vulnerable citizens. In particular, the SC Department of Emergency Management has identified the County Government Center in Monticello as highly vulnerable due to its complete dependency on commercial domestic power service. In the event of a prolonged power outage, government operations must be shut down; the current back-up system provides about 4 hours of energy, just enough to shut down computers and evacuate the building.

Potential Climate Change Opportunities relating to Emergency Management: As we address public safety in the context of the known impacts of climate change, we have the opportunity to identify key vulnerabilities, build more resilient systems and infrastructure, and work collaboratively with other counties to maximize our effectiveness. By addressing the need for power backup at the Government Center in the context of overall reduction of energy demand and implementation of more resilient systems, we can ensure continuity of essential government services and enhance the building's utility as a shelter in time of emergency.

The NYS Ready Commission/NYS Respond Commission joint report, published in October 2013, offers a number of specific recommendations for a comprehensive approach to emergency preparedness in the face of continued climate change in New York State²⁵.

The NYS 2100 Commission report, entitled "Recommendations to Improve the Strength and Resilience of the Empire State's Infrastructure," also makes a strong connection between emergency management and effective response to climate change. The report contains many useful recommendations, from the designation of wetlands, floodplains and forests as critically important natural infrastructure that needs to be protected through land use practices, to specific recommendations for policy changes at the state level that will encourage the creation of low-carbon "power islands" and micro-grids to increase the resiliency of the power supply. The NYS 2100 Commission report has also contributed to our emergency planning and policy recommendations²⁶.

²⁵ The NYS Ready Commission/NYS Respond Commission joint report can be found at www.governor.ny.gov/assets/documents/NYS-Ready-Respond-Update_10282103.pdf

²⁶ The NYS 2100 Commission report can be found at <http://www.rockefellerfoundation.org/uploads/files/7c012997-176f-4e80-bf9c-b473ae9bbbf3.pdf>

Progress to Date: Key Actions

- Sullivan County revised and updated its FEMA-recognized Comprehensive Hazard Mitigation Plan for 2012-2013. The plan has identified common washouts, vulnerable bridges, utility wires and other infrastructure needs.
- The Sullivan County Emergency Operations Center in White Lake includes offices, classrooms for emergency services training and a garage that houses vehicles and equipment critical to public safety response. During an emergency such as Superstorm Sandy, the facility provides a coordinated response and communications center for County personnel (County Manager, Emergency Services coordinator, Department of Public Works), NYS Police, Sheriff's office, public utilities such as NYSEG, Orange and Rockland and Central Hudson, the National Park Service, and other agencies.
- The County is completing a network of emergency radio towers and interoperable communications system for fire, police and other emergency personnel. This system includes new tower locations and appropriate environmental buildings to house radio equipment. It is designed to meet the needs of the County and local volunteer emergency and fire responders for the next 20 years.

SC Climate Action Pledge provisions relating to emergency planning are found in Goal 7. This goal statement includes the following specific measures:

- Evaluate risks from potential climate change.
- Set adaptation goals and plan for adaptation.
- Identify potential climate change impacts (such as flooding, drought, and extreme temperatures) that could affect the community.
- Factor risks into long-term investments and decision-making.
- Execute climate change adaptation and preparedness measures through county government planning, development and operations, giving priority to the highest risk areas.

EMERGENCY PLANNING GOALS AND MEASURES

GOALS

Our overarching goal is to engage in emergency planning that builds resilient infrastructures and practices to safeguard the government operations and the general public.

Goal 1: Enable the SC Government Center to continue to operate at full functionality during a prolonged power outage.

Goal 2: Build the County’s resiliency through continual assessment of emergency response needs, identification of vulnerabilities, and upgrading of equipment and procedures.

Our investments in public safety pay off in reduced future costs and reduced suffering by our citizens. Decisions about these investments should take into account not only the cost of their implementation, but the future costs they help us avoid – including environmental costs, health costs, productivity costs, and potential loss of equipment and infrastructure.

RECOMMENDED MEASURES

Goal 1: Enable the SC Government Center to continue to operate at full functionality during a prolonged power outage.

Measure 1

Implement building retrofits and necessary improvements to energy systems, including installation of a power generator at Government Center with the capacity to ensure full functionality of government operations during a prolonged power outage.

Strategy:

- Identify the right system. Possibilities include:

Scenario 1: Purchase a right-sized generator for permanent installation at the Government Center. This is the preferred solution.²⁷ Provide any necessary electrical retrofit for the generator interconnect.

Scenario 2: Earmark a generator through the NYS Emergency Management program. The generator would be trucked to the Government Center in time of emergency and removed and warehoused once the emergency is over. This is the alternative solution. Provide any necessary electrical retrofit for the generator interconnect.

Goal 2: Build the County’s resiliency through continual assessment of emergency response needs, identification of vulnerabilities, and upgrading of equipment and procedures.

Measure 1

Integrate Emergency Management considerations and needs into all decisions about new County construction and upgrades to existing facilities.

Strategies:

- Ensure accessibility for emergency vehicles.
- Plan for potential multiple use/emergency event functions such as shelter, cooling centers, food and water distribution.
- Install back-up and alternative energy systems and mini-grids for resiliency.

Measure 2

Develop pilot projects to demonstrate energy management technologies that contribute to resiliency and continuity of operation during a power outage or other emergency.

Strategy:

- Identify key facilities and research potential for energy storage technology associated with renewable energy sources to reduce the GHG footprint of emergency generators. (See the Pilot Project for battery back-up at the Adult Care Center.)

²⁷ By installing a permanent back-up generator, the County will be able to participate in NYSERDA’s Demand Response Incentives Program.

Emergency Management Pilot Projects

Pilot Project: 250 kW battery energy storage system with built-in mini-grid component at the SC Adult Care Center (ACC).

Pilot a project that provides an energy storage system with a built in grid component at the ACC in Liberty, utilizing power generated at the existing 49kW solar installation at the Liberty Health Complex.

Benefits:

- Provide emergency back-up power at ACC.
- Provide energy storage to reduce peak demand loads at ACC.
- Capitalize on power production from existing PV installation.
- Reduce need to run existing mechanical back-up generator.
- Reduce GHG from back-up generator.
- Reduce kW demand costs.
- Model for other county facilities.

Steps:

- Issue RFP to design and install system.
- Write innovation grant to seek funding from NYSERDA as a demonstration project.
- Provide for contracted service to inspect and maintain the system.
- Move to action.

Emergency Management Policy Recommendations:

The County could achieve greater success in addressing emergency management issues related to climate change if New York State were to make certain policy changes.

Ask New York State to:

1. Encourage the creation of “power islands” to maintain power during widescale and sustained outages at critical infrastructure sites and where people can seek refuge. The State should identify opportunities to facilitate installation of distributed generation, energy storage and micro-grids at these locations – encouraging technologies that can provide peak load reduction in addition to back-up power, with a focus on clean and low carbon technologies.²⁸
1. Strengthen land use programs, standards, policies, guidelines, and procedures. To fully prepare for the effects of climate change, we must encourage sound uses of land to minimize vulnerabilities and preserve communities. The State should update the State Environmental Quality Review Act (SEQRA) to incorporate resilience.²⁹
2. Design rate structures and create incentives to encourage distributed generation and smart grid investments. The State should implement new technologies and system improvements to provide effective backup power, flexibility, distributed generation, and solutions for “islanding” vulnerable parts of the system. In addition to improving the resilience and stability of energy, electricity, and fuel supply systems, these solutions promote energy conservation, efficiency, and consumer demand response.³⁰

²⁸ NYS Ready Commission/NYS Respond Commissions “Summary of Recommendations and Progress Update: October 2013”

²⁹ NYS 2100 Commission report, “Recommendations to Improve the Strength and Resilience of the Empire State’s Infrastructure,”

³⁰ Ibid.

Chart 8: Emergency Planning Priority Projects

	Project	Benefits/Cost Savings	Costs/Potential Funding or Financing	Multipliers	Estimated GHG Reduction
GC	Permanent back-up generator at CG to ensure full functionality of County government during a prolonged power outage	Resilient system Maintain essential government services throughout an emergency Enhance the building's utility as a shelter in time of emergency.	\$250,000	Reduce energy demand charge	
ACC	250 kW battery energy storage system with built-in mini-grid component at the SC Adult Care Center (ACC).	Emergency back-up power Energy storage/reduce peak demand Capitalize on power production from existing PV installation Reduce need to run existing mechanical back-up generator Reduce GHG from back-up generator reduce kW demand costs	NYSERDA Innovation grant	Model for other county facilities	

Chapter 7: Plan for Implementation

The Interdepartmental Sustainability Working Group will be a vital resource as the County continues to develop grant-ready projects and initiatives to support the County's goals for GHG reduction, energy efficiency and the implementation of renewable energy systems.

The main participants in the working group are The Division of Planning and Environmental Management, the Division of Public Works, the Department of Emergency Planning, the Department of Purchasing and Central Services, the Department of Public Health, the Department of Grants Administration, and the Sullivan County Office of Sustainable Energy.



Summary of County Climate Action Goals and Proposed Measures

Tables on the following pages summarize the Goals outlined in Part I of the Climate Action Plan and list the proposed measures with notations of key departments involved in implementing each measure, the projected time frame for end potential funding sources.

SUMMARY OF SULLIVAN COUNTY CLIMATE ACTION GOALS – County Operations		
ENERGY	1	Reduce building energy use and GHG emissions through energy efficiency measures by fifty percent (50%) by 2020.
	2	Shift to renewables at County facilities, including solar, wind, small hydroelectric and community/municipally-owned production.
TRANSPORTATION	1	Reduce fuel use by 50% through right-sized, energy efficient vehicles and the phase-in of hybrid, plug-in hybrid and electric vehicles.
	2	Encourage fuel conserving driving habits and carpooling to reduce the carbon footprint of County employees,
	3	Through the County’s Comprehensive Coordinated Transportation Plan, encourage the conversion to hybrid and all-electric vehicles by carriers and transportation providers operating under County contracts.
MATERIALS MANAGEMENT	1	Create a Legislative mandate for reduction of waste in County operations by 20% by 2020, and commit to the funding, staffing, training and technical support needed to realize the County’s waste reduction goals.
	2	Meet the County’s solid waste needs with a system that is environmentally responsible and sustainable in the long term.
	3	Develop an “Environmentally Preferable” purchasing policy for all County procurement, and commit to the staff training and technical support needed to implement the policy.
LAND AND WATER USE	1	Preserve and expand open space, parkland and forests in the County.
	2	Encourage low emissions development that is resilient to climate change and reduces GHG emissions.
PUBLIC HEALTH	1	Protect the health of County employees and visitors to County buildings and facilities.
	2	Identify best policies and required resources for an effective County Health response to climate related health issues.
EMERGENCY MANAGEMENT	1	Enable the SC Government Center to continue to operate at full functionality during a prolonged power outage.
	2	Build the County’s resiliency through continual assessment of emergency response needs, identification of vulnerabilities, and upgrading of equipment and procedures.

SUMMARY of Climate Action Items and Key Departments

DPW=SC Division of Public Works; DPEM=SC Division of Planning and Environmental Management; OSE=SC Office of Sustainable Energy; MIS=Management Information Services

Sector/Goal	Measure	Action Item	Time frame	Key Departments	Funding
Energy 1	1	Develop a long-term plan for building retrofits and scheduled equipment replacement to upgrade systems with optimally energy efficient renovations and technology.		DPW, OSE Grants	NYSERDA NYPA
	2	Use life cycle cost accounting to capture GHG reduction and energy cost savings.		DPW, OSE Purchasing	
	3	Strengthen the County's commitment to LEED or higher standards.		DPEM, DPW, OSE	
Energy 2	1	Using the mapping and analysis of potential solar resources at County-owned facilities completed by SASD in 2013, explore the possibility of power purchase agreements (PPAs) for selected County facilities, including Mobility Management, SC Airport, Government Center, Liberty Health Complex, and the proposed SC Public Safety Campus.		DPW, DPEM, OSE County Attorney	Power Purchase Agreements(P PA)
Transportation 1	1	Develop a long term plan for replacement of County vehicles with right-sized electric or hybrid electric vehicles.		DPW, OSE	
	2	Support the use of electric vehicles by investing in solar powered EV charging stations at key County facilities and in the community.		DPW, OSE	
Transportation 2	1	Reduce fuel use for County vehicles.		DPW, OSE	
Transportation 3	1	Incorporate a requirement for energy efficient vehicles and electric or hybrid vehicles as feasible in the County's Coordinated Transportation Plan.		DPEM, Transp. Subcommittee, OSE	
Materials Management 1	1	Establish a Zero Waste Policy at all County events and facilities. Zero waste means that disposable materials are minimized or eliminated and that nothing is sent to the landfill.		Purchasing, DPW	
	2	Educate all County employees about the importance of materials management goals and the specific actions and measures that will ensure success.		Purchasing, DPW, OSE	
	3	Reduce paper use and proliferation of document storage space by moving to electronic storage and retrieval of all documents not required by law to be archived on paper.		MIS, OSE	
Materials Management 2	1	Perform a comprehensive analysis of the costs and carbon footprint of the County's current waste policy. Ensure staffing and resources to implement the analysis.		DPW, OSE	
	2	Identify and analyze possible alternatives to the County's current practices for disposal of MSW.		DPW, OSE	
Materials Management 3	1	Apply life cycle cost analysis to identify best practices.		Purchasing, DPW OSE	

Sector/Goal	Measure	Action Item	Time frame	Key Departments	Funding
Land and Water Use 1	1	Establish policies and implement measures to protect, maintain or establish County and community forests, promote best forest management practices and encourage tree planting, especially along waterways to increase shading and absorb CO ₂ .		DPEM DPW	
	2	Develop policy and protocol to identify properties strategically located to enhance flood control, contiguous forested lands and recreational opportunities for inclusion in the County's open space plan.		DPEM County Treasurer Real Property	
Land and Water Use 2	1	Implement low emission development standards in all new construction and renovation of County facilities.		DPEM IDA SC Partnership	
	2	Promote sustainable agriculture.		DPEM IDA SC Partnership	
	3	Encourage smart growth and low emissions development.		DPEM	
Public Health 1	1	Implement green building and building operations policies.		Public Health DPW	
Public Health 2	1	Prepare for climate related public health impacts.		Public Health	
Public Health 3	1	Implement policies to protect water and air quality.		Public Health DPEM DPW	
Emergency Management 1	1	Implement building retrofits and necessary improvements to energy systems, including installation of a power generator at Government Center with the capacity to ensure full functionality of government operations during a prolonged power outage.		Emergency Management DPW OSE	
Emergency Management 2	1	Integrate Emergency Management considerations and needs into all decisions about new County construction and upgrades to existing facilities.		Emergency Management, DPW	
	2	Develop pilot projects to demonstrate energy management technologies that contribute to resiliency and continuity of operation during a power outage or other emergency.		Emergency Management, DPW, OSE	

APPENDICES

Resolutions

Source Documents: GHG Inventory

Resolution 429-07:	SC Green Vision Statement
Resolution 343-08:	Establishing the SC Office of Sustainable Energy
Resolution 430-09:	Establishing Legislative Committee on Sustainability Policy
Resolution 225-09:	Contracting with SASD to provide consultation
Resolution 53-10:	SC Climate Smart Communities Pledge
Resolution 25-12:	Agreement to Form the Mid-Hudson Sustainability Planning Consortium
Resolution 140-12:	Creating the Climate Action Planning Advisory Board

“A Roadmap for Climate Action Planning for Sullivan County,” presented by SASD in January 2012

Concept Paper: Liberty Community Energy District at the Sullivan County-owned Human Services Complex on Community Lane in Liberty, NY

Mid-Hudson Regional Sustainability Plan Project Idea Form: Region 3 Materials Management Administration

Mid-Hudson Regional Sustainability Plan Project Idea Form: Regional Composting Opportunities at NYS Correctional Facilities

Mid-Hudson Regional Sustainability Plan Project Idea Form: Survey of Funding Options for Regional Materials Management Facilities

Mid-Hudson Regional Sustainability Plan Project Idea Form: Transitioning from NIMBY to YIMBY

Sample Green Procurement Policy: Town of Cortlandt, NY

Sample Freecycling Program: Town of New Paltz ReUse Center Description and Donation Guidelines