CORTLANDT • CROTON–ON–HUDSON • NORTH SALEM • PEEKSKILL • POUND RIDGE • SOMERS

Climate Action Plan

2012

PREPARED FOR

NWEAC
Northern Westchester Energy Action Consortium

PREPARED BY

ecology and environment, inc.
Global Environmental Specialists

02-EE-0031113-WE03-01-B3360\Climate Action Plan Cover SOURCE: CENTER PHOTO Croton-on-Hudson Governmental Greenhouse Gas Emissions Inventory 2009 final draft-2007.1 www.crotononhudson-ny.gov RIGHT PHOTO http://energizebedford.org/

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List of Acronyms

AFV	Alternative Fuel Vehicle
BOMA	Building Owners and Managers Association International
BPI	Building Performance Institute
BRT	Bus Rapid Transit
C&D	Construction and Demolition
CAFE	Corporate Average Fuel Economy
CAP	Climate Action Plan
CEM	Certified Energy Manager
CFL	Compact Fluorescent Lamp
DR	Demand Response
E & E	Ecology and Environment, Inc.
EDA	Economic Development Association
EIA	Energy Information Agency
EPF	NYSDEC Environmental Protection Fund
ESCO	Energy Services Company
EUI	Energy Use Intensity
GHG	Greenhouse Gas
HERS	Home Energy Rating System
HUD	US Department of Housing and Urban Development
HVAC	Heating, Ventilating, and Air Conditioning
LEDs	Light Emitting Diodes
LGOP	Local Government Operations Protocol
LEED	Leadership in Energy and Environmental Design
MRF	Material Recovery Facility
MTCO2e	Metric Tons of Carbon Dioxide Equivalent
NECIA	Northeast Climate Impacts Assessment
NPS	National Parks Service
NWEAC	Northern Westchester Energy Action Consortium
NYS	New York State
NYSEG	NYS Electric & Gas
NYSDEC	NYS Department of Environmental Conservation
NYSDOS	NYS Department of State
NYSDOT	NYS Department of Transportation
NYSECC	New York State Energy Consumers Council
NYSERDA	NYS Energy Research & Development Authority
NYPA	New York Power Authority
O&M	Operations and Maintenance
RECs	Renewable Energy Credits
RFP	Request for Proposals
RLP	Revolving Loans Fund
SBA	Small Business Association
SBC	Systems Benefits Charge
TOD	Transit-Oriented Development
US	United States

USDA	US Department of Agriculture
USDOT	US Department of Transportation
USEPA	US Environmental Protection Agency
UCS	Union of Concerned Scientists
VMT	Vehicle Miles Travelled
WTE	Waste-to-Energy

Executive Summary

Seven communities (Bedford, Cortlandt, Croton-on-Hudson, Peekskill, Pound Ridge, North Salem and Somers) among the 14-member Northern Westchester Energy Action Consortium (NWEAC) collaborated and were awarded a grant from the New York State Energy Research and Development Authority (NYSERDA) to review and prepare municipal and community-wide greenhouse gas (GHG) inventories and a climate action plan (CAP). These NWEAC communities are referred to as Traction Leaders throughout this report. The NWEAC Traction Leaders worked with Ecology and Environment, Inc. (E & E) and Blue Spring Energy, LLC (Blue Springs) to complete the GHG inventories, energy audits, and public surveys that have culminated in the development of this CAP.

The CAP includes E & E's recommendations for the NWEAC Traction Leaders and sets the stage for immediate action and long term planning. Implementation of the CAP will require ongoing evaluation of the needs and priorities of NWEAC Traction Leaders, and subsequent updates will reflect this process. Charting the evolution of the CAP and demonstrating its transition from concept to action will instruct other communities and consortiums in their own climate action projects.

The first major milestone in the climate action project consisted of the municipal and community-wide GHG inventories. Inventories were completed for Cortlandt, Pound Ridge, North Salem, and Peekskill. Croton-on-Hudson, Somers, and Bedford had previously completed GHG inventories.

Key findings from the baseline inventories are as follows:

Municipal Findings

- Building energy use and government vehicle fleet represent the majority of GHG emissions and energy costs for most municipalities.
- Streetlights and signals represent a significant percentage of electricity use. However, electricity use per streetlight and signal is not clearly understood or tracked because of historic agreements whereby utilities charge municipalities a monthly lease fee per light.
- Electricity is the most used energy type, and also the source of the greatest utility expenditure.
- Liquid fossil fuel use (fuel oil) for buildings and transportation represents the largest source of GHG emissions.
- Municipalities that directly provide more services to residents have more GHG emissions, in total, per person, and per household, as outsourced services are not considered under the direct control of municipal operations and are therefore excluded from the municipal inventories.

Community Findings

- Residential and transportation energy use represent the two largest sources and the majority of GHG emissions in these communities.

- Four of the NWEAC members have lower average GHG emissions per household compared to Westchester County averages.

- North Salem's community GHG emissions are much higher than other communities due to transportation emissions—likely a result of vehicles that travel through the community on major auto routes or Metro North passengers who drive into the town to access the train at one of the town's stations.

- Fuel oil use for buildings and diesel and gas use for transportation represents the largest source of GHG emissions, and their rising and volatile costs will continue to affect municipal and household budgets.

- Recycling programs are available and popular. Increasing usage and availability of these programs will reduce GHG emissions.

- Use of the region's waste-to-energy (WTE) facility eliminates landfill emissions and replaces fossil fuel use to generate electricity, also reducing GHG emissions.

- The combination of recycling and WTE facilities results in the waste sector being a net sink (or reducer) of GHG emissions for some communities.

E & E combined these inventory results with an analysis of energy efficiency opportunities, discussions and research of climate action measures, and public surveys to develop a list of NWEAC-wide and community-specific priorities. The priority recommendations listed below for NWEAC can benefit all communities by collecting and consolidating resources or by impacting the entire region. Recommendations for each community can be found in Chapter 3 of this report.

1. **Organize a Transportation Task Force that includes NWEAC communities, Metro North, and the Bee-Line bus service to address and improve public transportation access and increase ridership.**

   a. Evaluate the option to offer preferred parking to carpool and hybrid vehicles at train stations.

   b. Review existing and develop plans for additional shuttle services as needed from alternative parking lots to congested Metro North stations.

2. **Encourage all NWEAC communities to adopt a comprehensive organic yard waste and leaf management plan.** The Bedford Leave Leaves Alone! campaign is run by Bedford residents and is an important step toward achieving the goals of the Bedford CAP. This program can be replicated elsewhere. Croton-on-Hudson and Cortlandt are taking a leadership role in working with the Westchester County Department of Environmental Facilities to operate an organic yard waste and leaf transfer station in the Town. NWEAC is further developing a strategy to provide a regional comprehensive approach to organic yard waste and as a potential source of revenue.

3. **Organize a Waste and Recycling Task Force to encourage discussions among NWEAC communities regarding issues and benefits of joining the Refuse Disposal District and taking advantage of the combined infrastructure and potential resources.** Capitalizing on existing infrastructure, resources, and events may help improve efficiency and costs at the municipal and county level.

4. **Continue providing resources and guidance to help residents of all NWEAC communities reduce their home energy use.**

    a. Use a central portal such as Renew NWEAC to track progress.

    Information on Renew NWEAC complements guidance provided through the Energize New York. The Renew NWEAC website refers back to Energize New York regarding residential energy efficiency.

    b. Expand the NWEAC home energy efficiency strategy to include and leverage resources offered by local businesses, including hardware stores and energy service providers.

    c. Adopt the Energize New York Program. All NWEAC members should adopt this program. This has been done or is currently underway among NWEAC members including Bedford, Somers, and Cortlandt.

5. **Organize an NWEAC municipal and commercial working group focused on existing building energy conservation to share experience and resources.** Share information and experience regarding energy performance contracting. Cortlandt, Croton-on-Hudson, and Somers have either implemented or considered energy performance contracting. Consider developing templates for contracts or RFPs.

6. **Organize a Streetlighting and Signals Task Force to collect and review billing and contract revisions and retrofit programs.** Streetlighting and traffic signals are major contributors to electricity use and cost in all NWEAC communities. There are likely opportunities to save energy and reduce carbon emissions by replacing existing streetlights with light emitting diode (LED) fixtures.

    In addition to retrofits, there may be other opportunities to reduce lighting energy use and costs. Adopting outdoor lighting standards can avoid overlighting. Furthermore, most streetlights are owned by the power supply company, and subject to complicated by contractual agreements with NYSEG, NYPA, or Con Edison. These agreements, as well as the lighting inventories, should be reviewed to ensure accuracy.

    The task force should work with communities to:

    a. Assess the streetlighting and signal inventory, accounts billing, and contracts to ensure they are being charged correctly for the inventory they operate.

b. Review options under existing contracts and consider the benefits of taking ownership of the streetlights and replacing them with LED lighting. An example of the potential for savings, North Salem could replace its 141 streetlights with LEDs. This retrofit would change the average energy use from 134 Watts each to 23-40 Watts each, thus reducing the annual the cost of lighting operation and leasing by $14,300 with a payback of about 4 years.

   Dobbs Ferry has initiated a project to replace 300 streetlights. Dobbs Ferry developed the RFP to provide the 300 lights they will use, as well as an additional 700 lights available for purchase by other communities in the region, if they are interested. The task force can initially work with Dobbs Ferry to obtain lighting fixtures through this agreement, if they are still available. If the Dobbs Ferry program is successful, it could be replicated by NWEAC at a scale that will allow more NWEAC communities to participate.

   c. Track and review all relevant outdoor lighting projects and policy changes within NWEAC and other communities, to provide one place to collect lessons learned and share experience.

   d. Consider outdoor lighting standards or policies to prevent over lighting and lighting pollution and establish standards for energy efficiency.

Collaboration of this kind in climate action planning is unique within New York State (NYS). The NWEAC Traction Leaders have set a precedent for successful regional collaboration. Through this project, they have shared process information and past experience and charted a course to individually implement climate action measures while collectively working to maintain and shape future action. This also represents a step toward tackling other regional challenges such as sustainability planning. As climate action and sustainability challenges become more complex and as federal and state funding continues to be allocated, similar communities around the state will increasingly be called upon to work together and leverage contract resources. It is hoped that lessons learned here will provide encouragement, as well as a way forward which is captured through this report.

1.0 Introduction

New York State (NYS) has made it a priority to address climate change and achieve sustainable development and is encouraging its communities to take the lead. Over 100 communities have already adopted the NYS Climate Smart Communities Pledge; twenty-five of them are in Westchester County[1]. NYS is also launching a Statewide Regional Sustainability Planning initiative, funding 10 regions in the state to develop a vision for sustainable development, supported by concrete project ideas and opportunities to generate commerce and employment.

The Northern Westchester Energy Action Consortium (NWEAC) is a voluntary collaboration of 14 member communities seeking to reduce reliance on fossil fuels, increase energy efficiency, promote renewable energy generation, stimulate economic activity, save money for their residents and businesses, contribute to local, county, state, and federal initiatives to combat climate change and jointly access federal and state funding.

Seven members of the consortium jointly applied for and received funding from the New York State Energy Research Development Authority (NYSERDA) to review and prepare greenhouse gas (GHG) inventories and a climate action plan (CAP). The CAP and its associated planning process are intended to create traction for the NWEAC communities' climate action initiatives. The seven consortium members are known as NWEAC's Traction Leaders, spearheading local and regional collaboration in sustainability and climate change planning.

1.1 Climate Change in the Region

The tri-state area (New York-Northern New Jersey-Long Island, NY-NJ-PA Metropolitan Statistical Area) is a major contributor to the release of GHGs, largely through the combustion of fossil fuels. Globally, rising GHG concentrations in the atmosphere due to human and natural releases of GHGs are leading to changes in climatic trends and patterns. The impacts of this climatic forcing are already being felt: downpours are increasing[2], and the rate of global sea level rise from 1993 to 2003 was 70% higher than the average rate for the twentieth century[3]. According to recent studies, climate change could lead to the tri-state region experiencing a climate similar to Maryland by 2040 and Virginia by 2070 under low emission scenarios.

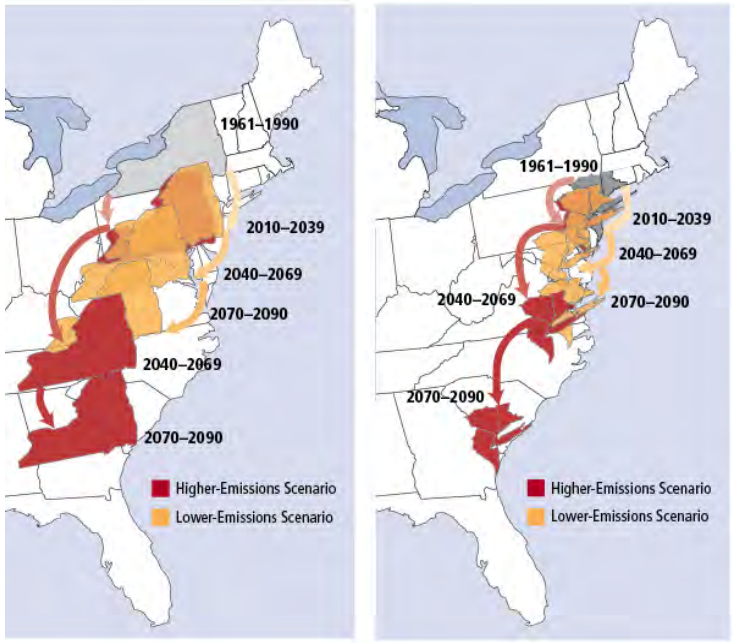
This may impact our communities in manifold ways. Climate change is anticipated to result in economic, environmental, and human health impacts, and will necessitate concerted action to mitigate them. Efforts to plan for and prepare for the impacts of climate change need to be balanced with actions to reduce GHG emissions.

[1] NYSDEC. 2012. *List of Climate Smart Communities.* http://www.dec.ny.gov/energy/56876.html.

[2] NYSERDA. 2011. *Responding to Climate Change in New York State.* http://www.nyserda.ny.gov/Publications/Research-and-Development/Environmental/EMEP-Publications/~/media/Files/Publications/Research/Environmental/EMEP/climaid/responding-to-climate-change-synthesis.ashx.

[3] Union of Concerned Scientists. 2011. *Climate Hot Map.* http://www.climatehotmap.org/.

By preparing baseline GHG inventories, committing to reduce GHG emissions, and developing an initial CAP, NWEAC is taking necessary steps to lower emissions produced by municipal activity, encourage community-led reductions, and establish a forum through which future climate action measures can be developed and implemented on a local and regional level.



Source: Northeast Climate Impacts Assessment (NECIA) / Union of Concerned Scientists (UCS)[4]

1.2 Technical Approach

NWEAC's first step in preparing the GHG inventories and CAP was to jointly submit application for funding through NYSERDA. NWEAC then contracted with Ecology and Environment, Inc. (E & E) and Blue Spring Energy, LLC (Blue Springs) to provide support to the seven communities engaged in the NYSERDA award.

E & E completed separate GHG emissions inventories for municipal operations and community-wide activities for four of the NWEAC communities: Cortlandt, Pound Ridge, North Salem, and Peekskill. A baseline year of 2010 was selected for both the municipal and community inventories. The inventories resulted in the development of municipal and community GHG reports and emissions calculation tools for future analysis and tracking (see Chapter 2). The NWEAC communities of Croton-on-Hudson, Somers, and Bedford had completed GHG inventories before the initiation of this study. E & E reviewed and incorporated these inventories into the standard GHG inventory tools developed for the four communities listed above.

The municipal inventories were compiled in accordance with the latest revision of the Local Government Operations Protocol (LGOP), the guidelines recommended by ICLEI – Cities for Sustainability. The inventory includes GHG emissions from electricity, heating oil, and natural gas usage in municipal buildings and facilities; electricity usage for street lighting and signals; electricity, diesel fuel, and natural gas usage for water supply and wastewater infrastructure; diesel and gasoline fuel usage for municipal vehicles and mobile equipment, and vehicle miles travelled (VMT) from municipal employee commute.

[4] UCS. 2006. *Climate Choices.* http://www.climatechoices.org/ne/.

The community inventories include emissions from electricity and fuel use in residential and non-residential (municipal, commercial, and industrial) buildings and facilities; street lighting and signals; transportation occurring within the community's geographic boundaries; and emissions from the generation of waste. Details on methods used to calculate baseline emissions are provided in each report, which can be accessed at http://www.renewnweac.org/index-1.html.

In parallel, E & E conducted energy audits of key municipal facilities in the communities of Cortlandt, Pound Ridge, North Salem, Somers, Croton-on-Hudson, and Peekskill, each of whom had targeted facilities for energy improvements. These energy audits were used to develop a first round of detailed, quantified opportunities to reduce municipal GHG emissions.

Based on the inventory analysis as well as the site audits, E & E developed both general and specific recommendations for each community to reduce energy, utility costs, and emissions. The CAP includes a summary of GHG baseline emissions and trends, presents and prioritizes climate action planning measures, provides a framework for implementation, and sets emissions reductions targets.

Preliminary CAP recommendations were provided to the municipalities for review and consideration. In addition, a public survey was conducted to solicit feedback from the community on the priority of particular recommendations. Both stakeholder outreach and community feedback have informed prioritization of measures for individual communities. Efforts to engage the public through public meetings and to gather additional feedback through the survey should continue as strategies for implementing this CAP are further defined.

1.3 CAP Structure and Content

The consolidated NWEAC Traction Leaders CAP meets the common goal of resource sharing and collaboration that forms the basis of NWEAC. Prioritizing climate action measures across NWEAC will enable the consortium to continue working collaboratively to obtain funding to support climate-related initiatives.

In an environment where action is being led from the ground up, ensuring collaboration and facilitating resource and knowledge sharing are important objectives. While NWEAC-level collaboration is important, each climate action measure presents unique opportunities and challenges for individual communities. The CAP notes these distinctions and, where appropriate, provides or prompts further analysis and discussion.

The CAP begins with a summary of GHG baseline emissions and trends, followed by a discussion of climate action measures and priorities, a framework for implementation, and emissions reductions targets. In addition to this Introduction (Chapter 1), CAP chapters are as follows:

- Chapter 2 – GHG Emissions and Trends provides a summary of the greenhouse gas profiles for six of the seven members. Bedford will maintain its own inventory and CAP.

- Chapter 3 – Climate Action Measures recommends priority actions to be taken by NWEAC and within each community to address climate. This chapter also provides a comprehensive list of climate action measures that

communities may also consider, as well as potentially implementation strategies for each.

- Chapter 4 – Implementation Framework provides specific guidance on actions and roles and responsibilities to effectively leverage NWEAC as an organization. A framework for community-specific actions are also addressed in this Chapter.

- Chapter 5 – Conclusions highlights the role NWEAC is playing as a leader in the region and the expectation that they will share information, provide guidance, and inspire similar collaboration across the Mid-Hudson region.

In addition to the body of the report, the CAP also includes important appendices that should be used as tools to maintain, track, and demonstrate progress with each of the community's climate action measures. Appendices include:

- Appendix A – Data Sources for Baseline GHG Inventories and Cost Projections provides a table of data sources, emissions factors, and energy cost and GHG emission factor projections for the municipal and community-wide GHG inventories.

- Appendix B – Priority Projects offers detailed discussions that support recommended priority projects as defined in Chapter 3 as well as the rationale behind their selection. This discussion covers more specific recommendations on how to leverage NWEAC through information, contract, and resource sharing and the rationale behind project selection. The NWEAC Climate Traction Leaders can use this synthesis to guide communications with other NWEAC members, community boards, elected officials, municipal employees, and the general public in order to build support and generate momentum.

- Appendix C – Public Survey Results provides bar charts summarizing responses to sustainability questions posed in the residential surveys. Raw data from the residential, non-residential, and municipal employee surveys are available as separate Excel spreadsheets.

- Appendix D – Implementation Status Tracking Tool describes the Excel tool that can be used to track the climate action initiatives taking place throughout the participating municipalities and coordinate a schedule for NWEAC events and deadlines. The Implementation Status Tracking Tool will be maintained on Renew NWEAC.

- Appendix E – Climate Action Ranking Tool describes the Excel tool that assists municipalities in prioritizing projects through a system of scoring and weighting. Ranking spreadsheets will be maintained at the level of each municipality.

- Appendix F – Resources offers useful resources, additional information on funding, and case studies to complement the information in this Chapter.

- Appendix G – CAP Updates and Progress Reports provides an area for updating the CAP with descriptions of ongoing initiatives, new milestones, timelines, etc.

2.0 GHG Emissions and Trends

As part of reducing GHG emissions, it is important that each NWEAC municipality and community has a clear, quantified understanding of their annual GHG emissions. It is against this baseline that efforts to reduce emissions will be measured.

In this this Chapter, E & E presents the baseline GHG inventories and analyses findings to highlight key implications for the CAP. Additionally, we discuss how these emissions may change over the coming years.

2.1 Methods and Data

To develop a baseline, E & E worked with a subset of the NWEAC members (Cortlandt, Pound Ridge, North Salem, and Peekskill) to develop municipal government and community-wide GHG inventories. The GHG inventories contain detail regarding the methods, data, and assumptions used to generate the GHG baseline estimates. The reports can be accessed at http://www.renewnweac.org/index-1.html.

In addition to the GHG inventory reports, E & E developed emissions calculation tools for each municipality to allow them to continue to measure municipal and community GHG emissions in the future. The baseline inventories serve as a starting point against which future inventories will be compared, allowing for subsequent analysis of GHG emission trends over time. The emissions calculation tools include an emissions projection tool for each municipality, allowing projections to be developed for the period from 2010 (the baseline year) onward, as relevant data becomes available.

To develop the inventory and projections tools, E & E gathered existing data (emission factors and forecasts) from reputable sources such as the Energy Information Agency (EIA). Where data gaps occurred, E & E provided space for municipalities to input projection factors that are either estimated or pulled from other data sources. The tools were developed in an Excel spreadsheet that allows communities to propose and input climate action measures and to modify the projection factors to evaluate different scenarios.

In this chapter we look at "no action" scenarios to assess the cost and GHG emission implications for municipalities that do not take any particular efforts to mitigate energy use and GHG emissions.

The data and assumptions used in the inventory analysis and projections tool are presented in Appendix A.

2.2 GHG Emissions

2.2.1 Municipal Baseline

GHG inventories for municipal operations in Cortlandt, Pound Ridge, North Salem, and Peekskill municipal operations GHG inventories were completed as part of this project. Croton-on-Hudson, Somers, and Bedford had previously completed municipal operations GHG inventories. A comparison of GHG emissions across municipalities, with the exception of Bedford, is presented in Figure 2-1.

Figure 2-1 GHG Emissions from Municipal Operations

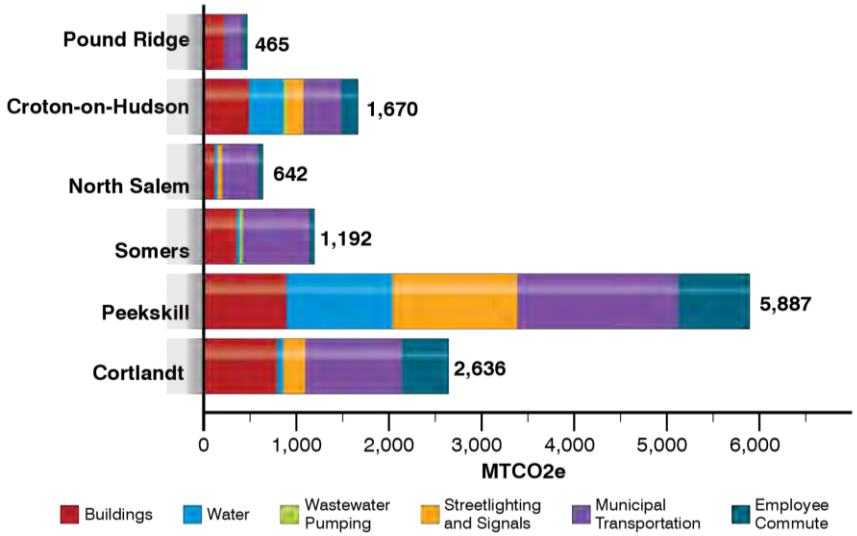
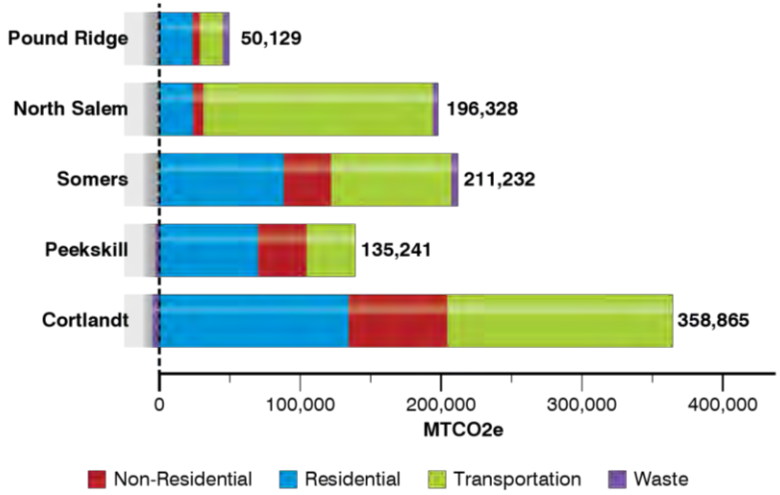


Figure 2-2 Total Community GHG Emissions



2.2.2 Community Baseline

Community GHG inventories were completed for Cortlandt (including the villages of Buchanan and Croton-on-Hudson), Pound Ridge, North Salem, and Peekskill under this initiative, while Somers and Bedford had completed theirs previously. The emission inventories for Pound Ridge, North Salem, Somers, Peekskill, and Cortlandt are summarized in Figure 2-2.

2.3 GHG Inventory Analysis

2.3.1 Municipal Baseline and Projections

Analysis and review of the municipal GHG inventories revealed the following key findings:

- Building energy use and government fleet represent the majority of GHG emissions and energy costs for most municipalities.

- Streetlights and signals represent a significant percentage of electricity use. However, electricity use per streetlight and signal is not clearly understood or tracked because of

historic agreements whereby utilities charge municipalities a monthly lease fee per light.

- Electricity is the most used energy type, and also the source of the greatest utility expenditure (costs). However, compared to other energy sources it is also has the lowest GHG emission rate per dollar spent.

- Liquid fossil fuel use (fuel oil) for buildings and transportation represents the largest source of GHG emissions. Costs for fuel oil are expected to rise.

- Municipalities that directly provide more services to residents have more GHG emissions, in total, per person, and per household, as outsourced services are not considered under the direct control of municipal operations and are therefore excluded from the municipal inventories. It should be noted that emissions from outsourced services are captured in the community GHG inventories.

2.3.2 Community Baseline and Projections

Additional analysis and review of the community GHG inventories revealed the following key findings:

- Residential and transportation energy use represent the two largest sources and the majority of GHG emissions in these communities.

- Four of the NWEAC members have lower average GHG emissions per household compared to Westchester County averages (see Figure 2-3).

- North Salem's community GHG emissions are much higher than other communities due to transportation emissions—likely a result of vehicles that travel through the community on major auto routes or Metro North passengers who drive into the town to access the train at one of the town's stations (see Figure 2-3).

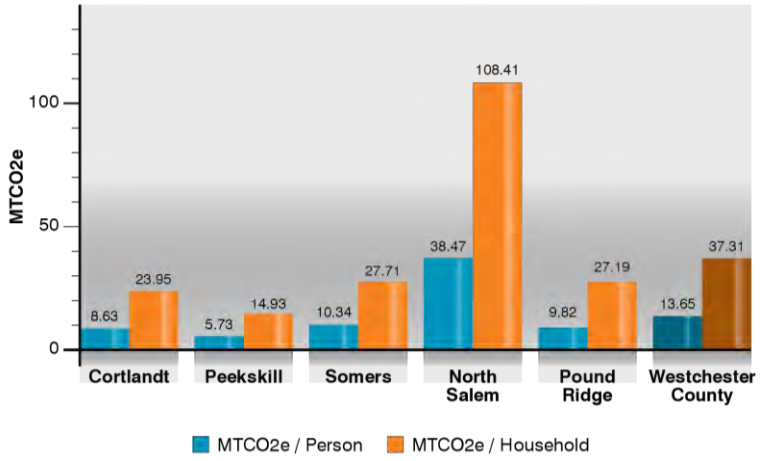
- Fuel oil use for buildings and transportation represents the largest source of GHG emissions, and rising and volatile costs will continue to affect municipal and household budgets.

- Recycling programs are available and popular. Increasing usage and availability of these programs will reduce GHG emissions.

- Use of the region's waste-to-energy (WTE) facility eliminates landfill emissions and replaces fossil fuel use to generate electricity, also reducing GHG emissions.

- The combination of recycling and WTE facilities results in the waste sector being a net sink (or reducer) of GHG emissions for some communities.

Figure 2-3 Average GHG Emissions per Person and Household



2.4 Future Trends in GHG Emissions and Energy Costs

For the NWEAC Climate Traction Leaders, GHG reductions will be measured against the 2010 baseline inventories presented in Section 2.2. However, GHG emissions are not static as many factors influence emissions which are outside the direct control of municipalities. Individual, household, local, regional, national, and international factors all contribute to GHG emissions.

To support analysis of GHG emission trends and ongoing climate action planning activities, E & E developed a projection tool, described in Section 2.1. Users can input information about primary drivers of GHG emissions, such as demographic, economic, and behavioral factors, and can also manipulate emission factors such as those discussed below.

In this section, we discuss three important external parameters that can influence GHG emissions and climate action.

2.4.1 Electrical Grid GHG Intensity

One of the major sources of GHG emissions for municipalities and communities is the use of grid-supplied electricity. At present, grid-supplied electricity for the NWEAC region has the following average characteristics[5]:

- 704.8 lbs CO2 / MWh
- 26.22 lbs N2O / GWh
- 3.35 lbs CH4 / GWh

These emission rates reflect the mix of sources of energy supplying the grid in the Westchester County area. These GHG emission rates are lower than most places in the United States, although California performs better due in part to strong renewable energy programs.

New York State (NYS) has made multiple commitments to reduce the GHG intensity of its electricity supply through the expansion of renewable and clean technologies for power generation. These include:

- *Renewable Portfolio Standard (2004)*[6]
  NYS will derive 29% of its energy from renewable sources by 2015.

[5] USEPA. 2010. *eGRID.* http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html.

[6] NYS Public Service Commission. *Renewable Portfolio Standard.* http://www3.dps.ny.gov/W/PSCWeb.nsf/All/1008ED2F934294AE85257687006F38BD?OpenDocument.

- *"45 by 15" Energy Efficiency Portfolio Standard (2009)* By 2015, 30% NYS electricity consumption will come from renewable resources, and overall projected electricity consumption will be reduced by 15%.

Any increase in the percentage of electricity coming from renewable and cleaner sources will help reduce the GHG emissions. The NWEAC Traction Leaders should thus establish a clear voice in support of NYS investment and support for renewable energy technologies.

2.4.2 Average Vehicle Fleet Energy Efficiency and GHG Intensity

Transportation emissions are driven by both the total vehicle miles traveled (VMT) and the GHG intensity of the mode of transportation.

In the US, VMT and VMT *per capita* rose steadily from the 1950s to the early 2000s as the population grew and demographic and driving patterns changed[7]. In the 2000s[8 & 9], both VMT and VMT *per capita* leveled off. Between 2004 and 2009, VMT *per capita* declined in NYS[10].

During the same time period up to 2006, the average vehicle fleet fuel efficiency hardly changed at all[11]. While improvements were made in certain vehicle categories, the net result was relatively little change. However, the GHG intensity of automobile and truck traffic decreased due to improvements in combustion technologies[12].

Recent federal policy has set higher average fuel efficiency standards, nearly doubling the Corporate Average Fuel Economy (CAFE) standards between 2012 and 2025[13]. This, coupled with technological improvements that reduce the GHG intensity of travel, could significantly reduce the emissions generated by the transportation sector, all else being equal. Furthermore,

[7] Brookings Metropolitan Policy Program. 2008. *The Road...Less Traveled: An Analysis of Vehicle Miles Traveled Trends in the U.S.* http://www.brookings.edu/~/media/Files/rc/reports/2008/1216_transportation_tomer_puentes/vehicle_miles_traveled_report.pdf.

[8] State Smart Transportation Initiative. 2011. *VMT per Capita Declines in 2000s.* http://www.ssti.us/2011/03/vmt-per-capita-declines-in-2000s/.

[9] University of South Florida Center for Urban Transportation Research. 2006. *The Case for Moderate Growth in Vehicle Miles Travel.* http://www.cutr.usf.edu/pdf/The%20Case%20for%20Moderate%20Growth%20in%20VMT-%202006%20Final.pdf.

[10] Research and Innovative Technology Administration. 2009. *Table 5-3: Highway VMT: 2004, 2009.* http://www.bts.gov/publications/state_transportation_statistics/state_transportation_statistics_2010/html/table_05_03.html.

[11] University of Michigan Transportation Research Institute. 2009. *Fuel Efficiency of Vehicles on US Roads: 1923-2006.* http://www.sciencedirect.com/science/article/pii/S0301421509002274.

[12] Stanford University. 2010. *Transport and Carbon Emissions in the United States: The Long View.* http://stanford.academia.edu/AnantSudarshan/Papers/336325/Transport_and_Carbon_Emissions_in_the_United_States_The_Long_View.

[13] National Highway Traffic Safety Administration. 2011. *Federal Register, Thursday, December 1, 2011.* http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/2017-25_CAFE_NPRM.pdf.

promoting lower-intensity modes of transportation (rail travel, biking, walking, etc.) can also help reduce GHG emissions without compromising overall mobility.

2.4.3 Energy Costs

GHG emissions are closely (but not perfectly) correlated with energy use. Energy prices are constantly evolving, impacting consumer behavior, national policy, and more. It is critical that individuals and communities recognize this connection as it can have strategic importance when prioritizing and analyzing climate action measures. Often, it is possible to save money, energy, and reduce GHG emissions with the same action. Furthermore, in the context of rising energy prices, climate action becomes even more critical.

In Tables 2-4 through 2-7, we provide some preliminary projections of energy cost by fuel type for the all sectors in the Middle Atlantic Region, courtesy of the EIA[14]. These projections paint a very interesting picture – GHG-intensive fuels (liquefied petroleum products, fuel oil distillates) will continue to rise steadily in price. In the short-term, natural gas will remain at current prices and will then begin to rise. Electricity prices are predicted to remain roughly the same. These trends underscore the importance of switching away from GHG-intensive energy sources and uses, such as using fuel oil for home heating, toward cleaner sources of energy.

While EIA attempts to monitor long range national and regional trends, perhaps a more telling lesson comes from the observation of past energy prices closer to home. NYSERDA data from 1995-2009 indicates a growth in the nominal price of all types of energy (Figure 2-8), which is disrupted by slight declines and volatility at the end of the decade resulting primarily from the economic recession. Figure 2-9 shows the volatility of national oil costs since 2007. Global, national, and local factors will continue to affect prices,

In addition to the general trends presented here, E & E completed fuel cost projections for each participating municipal government, to show the liabilities associated with non-action. These analyses can be found in the GHG inventory reports on the Renew NWEAC website at http://www.renewNWEAC.org.

[14] EIA. 2010. *Energy Prices by Sector and Source, United States.* http://www.eia.gov/oiaf/aeo/tablebrowser/#release=EARLY2012&subject=0-EARLY2012&table=3-EARLY2012&region=1-0&cases=full2011-d020911a,early2012-d121011b.

Figure 2-4 Middle Atlantic, Average Users Distillate Fuel Oil Prices

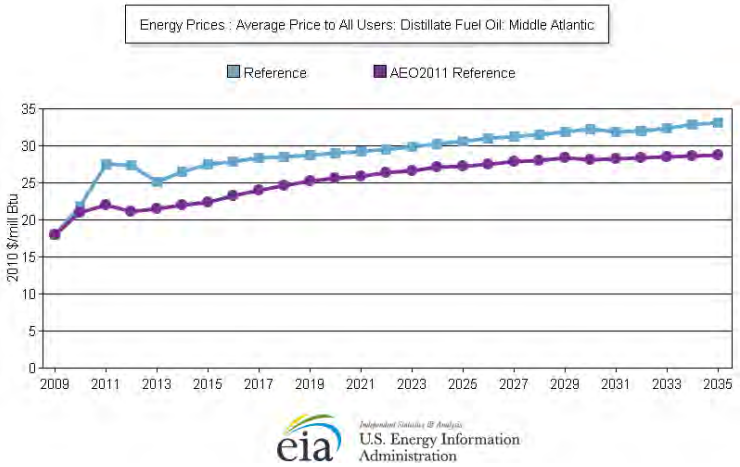


Figure 2-5 Middle Atlantic, Average Users Natural Gas Prices

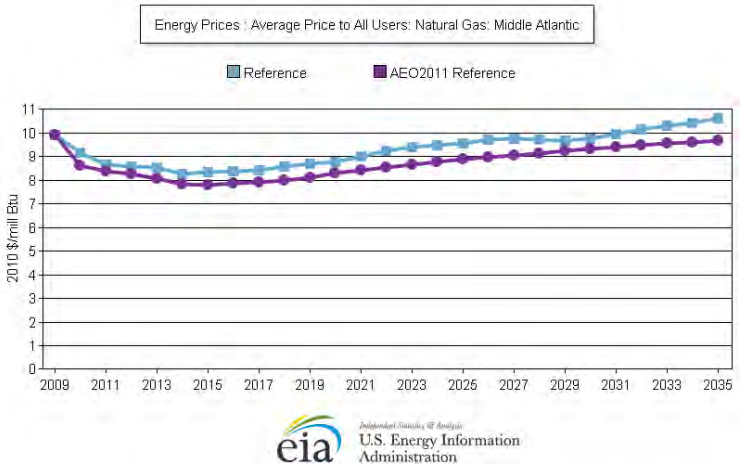


Figure 2-6 Middle Atlantic, Average Users Electricity Prices

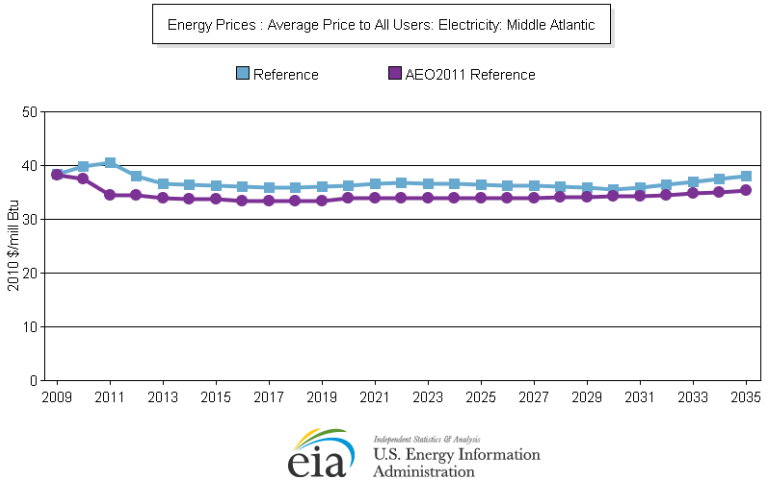


Figure 2-7 Middle Atlantic, Average User LPG Prices

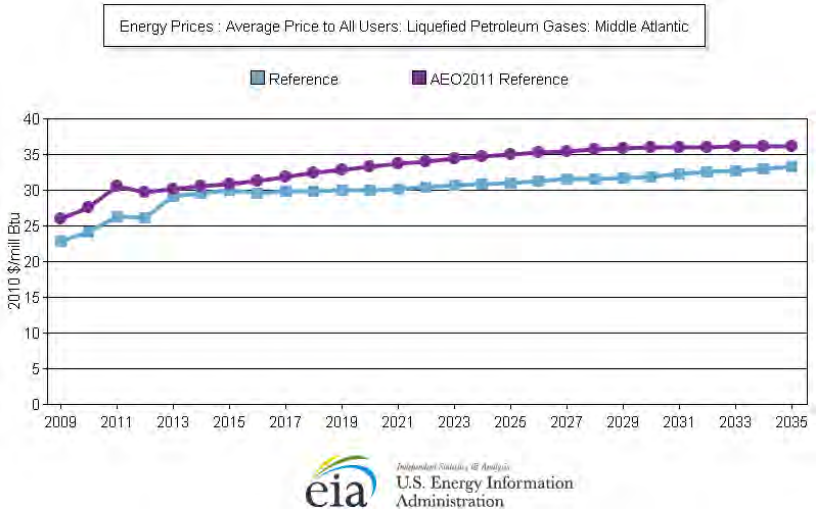


Figure 2-8 New York State Residential Energy Prices in Nominal Dollars, 1995-2009

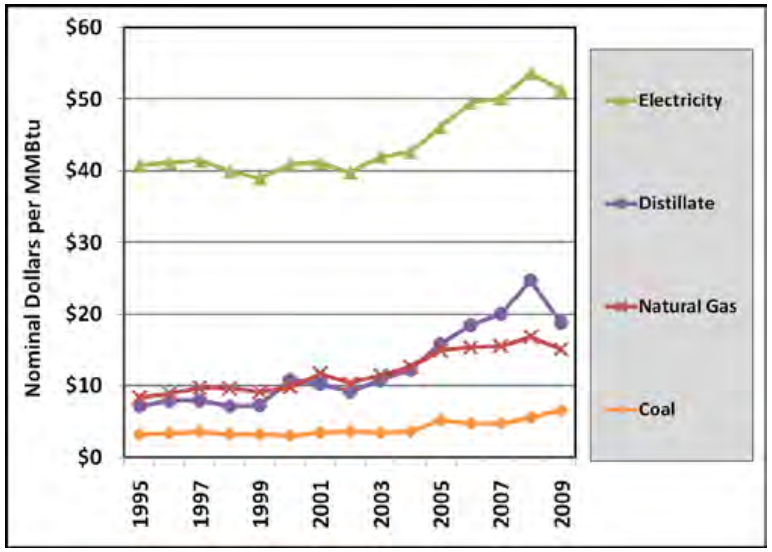


Figure 2-9 Actual and Forecast National Home Heating and Crude Oil Prices 2007-2013

3.0 Climate Action Measures

This Chapter contains a list of NWEAC-wide and community-specific priority projects as well as a comprehensive list of climate action measures and implementation strategies. The priority projects were identified and defined based on development of the municipal and community-wide GHG inventories, analysis of energy efficiency opportunities, discussions and research of climate action measures, and collection of public survey responses. The projects not only represent opportunities to reduce costs and GHG emissions but also have strong community support and synergy with initiatives that are currently underway. The communities of Cortlandt, Peekskill, North Salem, Pound Ridge, Croton-on-Hudson, and Somers were provided reports identifying specific energy conservation measures and the associated investment costs, savings, and payback period. The reports were delivered to NWEAC staff for analysis and implementation by municipal staff. These projects are defined in Sections 3.1 and 3.2. Detailed discussions that support these recommendations are provided in Appendix B.

Sections 3.3 and 3.4 provide strategies for implementation for these projects and other potential climate action measures. The measures are accompanied by a description of strategies for implementation, GHG reduction potential, co-benefits, and potential synergies with other members of NWEAC.

Please note that funding opportunities for climate action and energy reduction efforts are numerous and constantly changing. To support NWEAC and communities in navigating this complex world of incentives, Renew NWEAC provides up-to-date resources on the latest funding, research, and other support opportunities for climate action and energy efficiency.

3.1 Priority Recommendations for NWEAC

These recommendations can benefit all communities by collecting and consolidating resources or by impacting the entire region.

3.1.1 Transportation

1. Organize a Transportation Task Force that includes NWEAC communities, Metro North, and Bee-Line bus service to address and improve public transportation access and increase ridership.

    a. Evaluate the option to offer preferred parking to carpool and hybrid vehicles at train stations.

    b. Review existing and develop plans for additional shuttle services as needed from alternative parking lots to congested Metro North stations.

3.1.2 Waste

1. Encourage all NWEAC communities to adopt a comprehensive organic yard waste and leaf management plan.

2. Organize a Waste and Recycling Task Force to encourage discussions among NWEAC communities regarding issues and benefits of joining the Refuse Disposal District and

taking advantage of the combined infrastructure and resources.

3.1.3 Energy Use

1. Continue providing resources and guidance to help residents of all NWEAC communities reduce their home energy use.

    a. Use a central portal such as Renew NWEAC to consolidate efforts and track progress.

    Information on Renew NWEAC complements guidance provided through the Energize New York. The Renew NWEAC website refers back to Energize New York regarding residential energy efficiency.

    b. Expand the NWEAC home energy efficiency strategy to include and leverage resources offered by local businesses, including hardware stores and energy services providers.

    c. ,Adopt the Energize New York Program. All NWEAC members should adopt this program. This has been done or is currently underway among NWEAC members including Bedford, Somers, Cortlandt and North Salem.

2. Organize an NWEAC Municipal and Commercial Energy Task Force focused on existing building energy conservation to share experience and resources.

3. Organize a Streetlighting and Signals Task Force to review results of billing and contract reviews, inventories, and retrofit programs.

3.2 Community-Specific Recommendations

These recommendations are specific to the issues, impacts, and capabilities of the NWEAC Traction Leader communities.

3.2.1 Cortlandt

1. Implement energy efficiency measures at municipal buildings and provide the community with information on results.

2. Invest in additional renewable energy production.

3. Continue the municipal green fleet program and demonstrate progress to the community.

4. Offer preferred parking to carpool and hybrid vehicles at train stations.

5. Encourage use of mass transit, and plan new or expanded walking and cycling routes that connect residential areas with business districts, downtown, and commercial areas.

6. Work with other NWEAC communities to strengthen their recycling and composting efforts.

7. Advertise the community composting program as a step toward reducing fertilizer use.

3.2.2 Croton-on-Hudson

1. Implement energy efficiency measures at municipal buildings and provide the community with information on results.

2. Contact Con Edison and conduct further investigation of the Grand Street Firehouse electricity use and billing to correct unaccountable electricity usage and cost identified in the energy audit.

3. Continue the municipal green fleet program and demonstrate progress to the community.

4. Offer preferred parking to carpool and hybrid vehicles at train station parking lots.

5. Encourage use of mass transit, and plan new or expanded walking and cycling routes that connect residential areas with business districts, downtown, and commercial areas.

6. Work with other NWEAC communities to strengthen their composting efforts.

7. Expand the water savings educational program for residential and commercial users, and work with large users to reduce summer water use.

8. Continue to investigate and implement water and energy efficiency opportunities in the water distribution facilities, including review of energy demand, usage, and cost metrics identified in the energy assessment.

3.2.3 North Salem

1. Implement energy efficiency measures at municipal buildings and provide the community with information on reduced energy costs and emissions.

2. Replace existing streetlights with more efficient lamps.

3. Implement and promote residential and commercial education and energy auditing programs.

4. Promote energy efficiency, equipment replacement, and biodiesel options to reduce heating oil use in municipal, commercial, and residential buildings.

5. Offer preferred parking to carpool and hybrid vehicles at train stations.

6. Implement community-wide composting and advertise it as a step toward reducing fertilizer use.

3.2.4 Peekskill

1. Implement energy efficiency measures at municipal buildings and provide the community with information on reduced energy costs and emissions.

2. Replace existing streetlights with more efficient lamps.

3. Reduce municipal heating oil use.

4. Reduce employee and municipal VMT through a flexible work program and encouraging use of mass transit, walking, biking, and/or carpooling.

5. Implement a municipal green fleet program.

6. Offer preferred parking to carpool and hybrid vehicles at city parking lots and meters.

7. Provide guidance on improving pedestrian and cycling infrastructure to other NWEAC communities based on the *Complete Streets* program.

3.2.5 Pound Ridge

1. Implement energy efficiency measures at municipal buildings and provide the community with information on reduced energy costs and emissions.

2. Implement and promote residential and commercial education and energy auditing programs.

3. Promote energy efficiency, equipment replacement, and biodiesel options to reduce heating oil use in municipal, commercial, and residential buildings.

4. Continue to support and track waste and recycling programs, and evaluate options for sustainable waste management.

3.2.6 Somers

1. Continue to implement energy efficiency measures at municipal buildings and provide the community with information on reduced energy costs and emissions.

2. Continue to invest in renewable energy production such as the 50kW System at Somers High School.

3. Implement a municipal green fleet program.

4. Continue to implement and promote residential and commercial education and energy auditing programs.

5. Promote energy efficiency, equipment replacement, and biodiesel options to reduce heating oil use in municipal, commercial, and residential buildings.

6. Continue to support education about household composting programs.

7. Continue to support and track waste and recycling programs, and evaluate options for sustainable waste management.

8. Link climate action and sustainability initiatives.

Building Efficiencies to Consider for Municipal, Residential, and Commercial Facilities

Controls
Occupancy sensors and thermostats, daylight sensors, timers and set points, building management systems, universal kill switches

Lighting
CFLs or LEDs to replace incandescent and old fluorescent bulbs, LEDs to replace outdoor metal halide and sodium lighting

HVAC
Programmable thermostats, hot water piping insulation, hot water heater wrapping, replacement of older oil-fired boilers and water heaters, replacement of heating fuel use with biodiesel, cooling equipment upgrades, VFDs and pump and fan upgrades, refrigerant recharge and management program, insulation of piping and ductwork, heat recovery, CHP

Building Envelope
Caulk and insulation, storm windows over existing single pane glass windows

Fuel Switching
B20, natural gas, LPG, other biofuels to replace boiler equipment

Cool Roofs
High SRI, white roofs, green roofs

3.3 Municipal Climate Action Measures

The follow section provides a comprehensive list of municipal climate action measures for further consideration among NWEAC Traction Leader communities. Blue, bold, and italicized formatting is used in this section to indicate the GHG reduction potential and co-benefits associated with each measure.

3.3.1 Buildings and Facilities

Operation of existing municipal buildings result in 15 to 46% of the GHG emissions generated by the seven participating municipalities and nearly 39% of annual GHG emissions in the United States (US)[15]. Building GHG emissions are closely linked to fossil fuel consumption for offsite electricity generation used for heating, cooling, lighting, plug loads and more. Reducing building energy use in direct and indirect GHG emissions.

Implement energy efficiency upgrades to existing buildings.
Conduct an engineering evaluation of existing facilities to identify equipment upgrades, architectural renovations, and other measures to increase the efficiency of building energy use. Some common energy efficiency upgrades are noted in the blue box. Energy efficiency upgrades present a tremendous opportunity to reduce or stabilize long-term operating costs, which is important in an increasingly budget-constrained environment.

[15] US Green Building Council. *Why Build Green?* https://www.usgbc.org/ShowFile.aspx?DocumentID=4317.

Implementation Strategies

- Complete additional energy audits using in-house staff or expert consultants and contractors.
  - Energy audits range in depth and complexity from preliminary utility bill review to detailed engineering analysis.
  - ASHRAE provides guidelines[16] for energy audits, classifying them as Level 1, 2, and 3 depending on the depth of study.
- Partner with utilities such as NYPA or with an energy services company (ESCO) to help identify and finance energy efficiency upgrades.
  - Energy performance contracts can be used to eliminate the need for up-front capital investment, allowing municipalities to pay for the investment and debt servicing directly from energy cost savings.
  - As of early 2012, NYSERDA has made on-bill financing available to residential property owners and will soon do so for commercial operations. Municipalities that pay a Systems Benefits Charge (SBC) will be eligible to take advantage of this long-term loan program. Note that some NWEAC municipalities, including Cortland, Peekskill, and Croton-on-Hudson are not directly eligible for NYSERDA funding as they are NYPA customers and therefore do not pay the SBC.
- Develop a municipal ordinance or policy requiring facilities to undergo benchmarking and energy audits on a pre-determined basis (e.g., every 10 years). Many cities throughout the US have done this for municipal operations. In New York City, this program was recently extended to the commercial sector.

GHG Reduction Potential

Low, *Medium, High*

- Buildings are a major contributor to municipal GHG emissions.
- Efficiency measures can typically reduce energy use by 10-30%[17 & 18], with considerable variation building-to-building.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- *Health Benefits*
- Community Connectivity

[16] ASHRAE. *Procedures for Commercial Building Energy Audits.* http://www.ashrae.org/resources--publications/bookstore/procedures-for-commercial-building-energy-audits.

[17] Brown et al. 2008. U.S. Building-Sector Energy Efficiency Potential. http://enduse.lbl.gov/info/LBNL-1096E.pdf.

[18] Belzer, 2009. Energy Efficiency Potential in Existing Commercial Buildings:Review of Selected Recent Studies. http://www.pnl.gov/main/publications/external/technical_reports/PNNL-18337.pdf.

Energy Audit Recommendations

E & E, in tandem with Blue Springs Energy, completed energy audits of multiple municipal government facilities to identify opportunities for GHG reductions and cost savings. The communities of Cortlandt, Croton-on-Hudson, North Salem, Peekskill, Pound Ridge, and Somers were provided reports identifying numerous energy conservation measures and the associated investment costs, savings, and payback period. These reports also summarized findings from site visits, data analysis, and research into success stories and funding opportunities. The reports were delivered to NWEAC staff for analysis and implementation by municipal staff. A summary of the recommendations is below.

Recommendation	Payback	MTCO2e Savings
Replace incandescents with CFLs or LEDs.	<1 year	0.005-0.2
Replace incandescent exit signs with LED exit signs.	<1 year	0.03-0.6
Replace old fluorescents (T12s) with more efficient fixtures, CFLs or LED.	2-8 years	0.03-0.2
Replace outdoor Metal Halide and Sodium lighting with LEDs.	1-17 years	0.01-0.4
Install occupancy sensors.	3-8 years	0.005-0.08
Install programmable thermostats.	1-2 years	0.34-0.68
Install hot water piping insulation and wrap hot water heaters.	1-2 years	0.5-0.7
Improve building envelope with caulk and insulation.	3-10 years	1.26-1.7
Install storm windows over existing single pane glass windows.	4-12 years	1.26-1.7
Replace older oil-fired boilers with more efficient oil boilers.	18-26 years	2-4
Replace older oil-fired boilers with more efficient natural gas boilers.	10 years	9.88
Replace heating fuel use with biodiesel.	NA	15% to 75% reduction (5-80 MT)
Consider performance contracting to fund capital intensive measures.	NA	NA
Consider demand response opportunities to provide funding for measures.	NA	NA

Potential for Synergy

- Use NWEAC as a platform to share lessons learned to help reduce barriers for implementation. Many financing opportunities are available for energy efficiency upgrades; however, the programs can be complicated to navigate. Additionally, facility managers trying to implement an energy performance contract can meet resistance if their community has little experience in the area.

Establish building design guidelines and requirements.

Implement performance requirements when designing new buildings or undertaking major retrofits, Requirements such as strict performance for energy efficiency and indoor environmental quality can help reduce operating costs and cut GHG emissions. Sustainable design practices and technologies can help reduce energy use and GHG emissions in many new facilities by more than 50% when compared to a "typical" building that only aims to meet basic building health and safety codes.

Implementation Strategies

- Develop a municipal ordinance or policy requiring all new municipal buildings and major retrofits to meet strict sustainability standards.
  - Third-party rating systems such as Leadership in Energy and Environmental Design (LEED), Green Globes, or Energy Star provide easy benchmarks to measure performance.
  - To maximize GHG emissions avoidance, set standards that combine strict energy performance goals (e.g., a 40% improvement over ASHRAE 90.1-2010 as demonstrated by modeling) with broader sustainability criteria such as indoor air quality and storm water treatment. Recognize that LEED certification on its own does not guarantee major energy efficiency improvements.

GHG Reduction Potential

Low, Medium, *High*

- New buildings can easily achieve major reductions in energy use – for example, the Advanced Buildings Core Performance Program[19] aims to achieve reductions in energy use of up to 30% against codes similar to the New York State Energy Consumers Council (NYSECC).

Co-Benefits

Environmental

- *Pollution Prevention*
- *Habitat Preservation or Creation*
- *Stormwater Management*

Economic

- *Job Creation*

Social

- *Health Benefits*
- *Community Connectivity*

Potential for Synergy

- Develop an NWEAC model ordinance and standard.
- Conduct benchmarking and share results with the NWEAC community.

[19] Advanced Buildings. 2010. *Core Performance.* http://www.advancedbuildings.net/tools-guidance/core-performance.

Implement facility Operations and Maintenance (O&M) best practices.

Implement best management practices for facility O&M. This can result in major reductions in energy use and improved occupant comfort and satisfaction in both new and old buildings. Facility energy use is a function of the inherent attributes of a given building (architecture, mechanical systems, etc.) as well as the way in which it is occupied and managed.

Implementation Strategies

- Develop municipal facility O&M guidelines.
  - Evaluate seasonal adaptive practices, such as the use of blinds and draperies for managing heat gain and loss and the use of temporary vestibules during the heating season.
- Participate in voluntary programs such as LEED EB:O&M and the Energy Star Energy Management Program[20].
- Mandate that all eligible facilities conduct annual energy and water use benchmarking using the US Environmental Protection Agency (USEPA) Portfolio Manager Program.
  - This can also facilitate data collection for periodic GHG inventory updates.
- Enroll in demand response (DR) programs that provide incentives for reducing energy use at peak periods of the year. Many DR vendors[21] are available to answer questions, provide a quote, and even conduct a demand audit plus install an interval meter at no cost.
  - Demand response participation may be difficult for many municipal facilities due to the absence of backup generators in many facilities.
- Develop a municipal space churn plan that optimizes the use of available space and capitalizes on opportunities for multiple programming of facilities (e.g., conference room by day, community space by night).
  - This can free up space for alternative programming or lease or sale.
- Centralize or outsource energy-intensive services such as data centers via virtual servers or cloud computing.
  - This may not be relevant for smaller municipal governments in NWEAC but can be considered by commercial and institutional clients.
- Require facilities management personnel to undergo training in energy efficiency best practices, including the use of building control systems to manage energy.
  - Encourage staff to obtain professional accreditations such as Certified Energy Manager (CEM) or Building Performance Institute (BPI) Building Analyst.
  - Building Owners and Managers Association International (BOMA) offers training and other programs.
- Conduct regular operational reviews to ensure that meters and other controls are calibrated, set points and operating schedules are defined and implemented, and operating trends are tracked and analyzed.

[20] Energy Star. *Guidelines for Energy Management Overview.* http://www.energystar.gov/index.cfm?c=guidelines.guidelines_index.

[21] New York Independent System Operator. 2012. *Demand Response Service Providers.* http://www.nyiso.com/public/webdocs/products/demand_response/general_info/dr_providers.pdf.

GHG Reduction Potential

Low, *Medium*, High

- Efficient O&M in buildings can yield significant savings, ranging from 5-20% for typical buildings[22].

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- *Health Benefits*
- Community Connectivity

Potential for Synergy

The cost of conducting training can be reduced if multiple communities get together to sponsor a program.

Establish procurement requirements for energy and water efficient equipment.

Replace old equipment or purchase new equipment with select energy- and water-efficient devices. While buildings may last for decades, equipment is often replaced much more frequently. Computers, printers, refrigerators, and other equipment consume vast amounts of energy, roughly 10-15% of a commercial office's total electricity use.

[22] Portland Energy Conservation, Inc. 1999. *Fifteen O&M Best Practices.* http://www.energystar.gov/ia/business/15best.pdf.

Implementation Strategies

- Mandate that all new appliances and equipment be Energy Star labeled and all new water-using fixtures and appliances be Water Sense-labeled.
  - When installing and configuring new equipment, evaluate opportunities to build in controls that conserve energy such as power management settings and devices and vending misers.
  - Waste heat from equipment and lighting provides some space heating benefit in the winter and contributes to overheating in summer. Depending on the balance of a space's heating and cooling needs, the savings from efficient appliances may be partially offset by increased heating needs.

GHG Reduction Potential

Low, *Medium*, High

- Efficient equipment can help reduce energy use significantly for several building energy end-uses.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- Health Benefits
- Community Connectivity

Potential for Synergy

- Develop an NWEAC model ordinance and standard.

Establish an occupant education and outreach program.

Educate and train occupants to turn off lights and computers, unplug electronic devices when not in use, and minimize water use. Methods can include signage and "NegaWatt". No matter how efficient the building, occupant behavior can have a profound effect on overall energy consumption and GHG emissions.

Implementation Strategies

- Develop a formal occupant education and outreach program.
  - Name Energy Action Leaders in each major building or department to be the focal point for rolling out different programs and reporting back occupant feedback and ideas.
    - Many NWEAC communities have already convened Energy Committees.
  - Consider hosting programs or competitions between different entities to spur greater employee engagement with energy use and GHG reduction efforts.

GHG Reduction Potential

Low, Medium, High

- Education and outreach can encourage better occupant behavior, which can often yield energy savings of up to 6%[23].

[23] Davis. 2011. *Behavior and Energy Savings*. http://blogs.edf.org/energyexchange/files/2011/05/BehaviorAndEnergySavings.pdf.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- *Health Benefits*
- *Community Connectivity*

Potential for Synergy

- Conduct programs and events that span multiple NWEAC municipalities.
- Consider hosting competitions among different NWEAC municipalities.

3.3.2 Streetlighting and Signals

Inventory and consider retrofitting existing streetlights and signals to increase energy efficiency.

Communities should develop complete up-to-date inventories of all streetlights and signals and assess accounts billing, and contracts to ensure they are being charged correctly for the inventory they operate. Municipalities can perform inventories independently or engage an outside party to complete the inventory for a percentage of the savings.

.Upgrade existing streetlights and signals with efficient technologies such as light emitting diodes (LEDs). This can yield quick utility savings and can also reduce maintenance costs, as LEDs have a very long lifespan. Many existing streetlights and signals use inefficient metal halide, high pressure sodium, or incandescent bulbs. In some cases, this can result in increased utility bills and can comprise a major source of GHG emissions. E & E and Blue Springs reviewed lighting inventories and NYSEG agreements in the NWEAC communities, and estimated opportunities with 3- to 5-year paybacks. Dobbs Ferry has estimated a 2.2-year payback for their recent lighting retrofit.

Implementation Strategies

- Conduct an independent study or in partnership with an ESCO to evaluate and price opportunities for upgrading streetlights and signals. Implement the study's recommendations.
  - When reviewing and upgrading streetlights and signals, look at opportunities to implement controls such as timers and photometers.
  - NYSERDA Flex Tech and Existing Facilities Programs have been employed by municipalities in the past to conduct street lighting upgrades.

GHG Reduction Potential

Low, *Medium*, High

- Energy-efficient LEDs can reduce energy use by 40% or more and have a longer service life[24].

[24] NYC Global Partners. 2011. *Best Practice: LED Street Lighting System.* http://www.nyc.gov/html/unccp/gprb/downloads/pdf/LA_LEDstreetlights.pdf

Co-Benefits

Environmental

- *Pollution Prevention*
- *Habitat Preservation or Creation*
- Stormwater Management

Economic

- *Job Creation*

Social

- Health Benefits
- Community Connectivity

Potential for Synergy

- Partner with other NWEAC or neighboring communities to help reduce the costs for lighting studies and purchase of energy-efficient equipment. For communities with relatively little streetlighting and signals, sharing resources may have significant benefits due to economies of scale in purchasing and installing more efficient lighting technologies.
  - Dobbs Ferry has an open Request for Proposals (RFP) to provide lighting to other communities at an estimated payback of 2.2-5 years.
- Collaborate with other NWEAC members on strategies for reducing streetlighting electricity use and costs.
  - Croton-on-Hudson is evaluating opportunities to rebid streetlighting power in order to purchase electricity at off-peak rates.

Develop streetlight and signal design guidelines.

In addition to retrofits, there may be other opportunities to reduce lighting energy use and costs. Consider outdoor lighting standards or policies to prevent over lighting and lighting pollution and establish standards for energy efficiency.

Replace or add streetlighting and signals according to strict guidelines for energy performance will help ensure that investments made today do not compromise a municipality's long-term GHG reduction goals.

Implementation Strategies

- Develop streetlight and signal guidelines.
  - Provide performance criteria such as lumen per Watt ratios and shielding requirements rather than specifying a given equipment type. This will provide flexibility as technologies evolve.
  - Verify lighting schedules and confirm they respond to residents' needs.
  - Evaluate the use of shielding and other strategies to ensure dark-sky compliance, especially in rural areas.
  -

GHG Reduction Potential

Low, Medium, High

- Energy-efficient LEDs can reduce energy use by 40% or more and have a longer service life[25].

Potential for Synergy

- Develop a model ordinance that can be used by all NWEAC communities.
- Track and review all relevant outdoor lighting projects and policy changes within NWEAC and other communities, to provide one place to collect lessons learned and share experience.

3.3.3 Water and Wastewater

Conduct regular engineering review of water supply systems and future needs.

Perform regular engineering review and maintenance of water supply systems to ensure optimal operation and identify opportunities for efficiencies and GHG reductions.

Implementation Strategies

- Mandate regular review of equipment performance and use and estimations of future water supply, treatment, and wastewater management needs.
  - Inventory equipment to assess its condition, hours of operation, and pumping efficiency.
  - Evaluate the opportunity to use variable frequency drive equipment, which can reduce energy use in systems where flow or pressure needs vary.
  - Create and implement a plan for regular maintenance and leak detection assessments.

GHG Reduction Potential

Low, *Medium*, High

- Regular reviews of equipment performance and efficiency can identify opportunities for energy and emissions savings.

[25] Ibid.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- *Health Benefits*
- Community Connectivity

Potential for Synergy

- Coordinate water facility management and staff to share recommendation and methods. Share engineering reports and assessments to help educate and inform staff.

Conduct water system energy use and cost reviews on a regular basis.

Collect and review energy billing data regularly to track trends in energy use and cost against engineering performance parameters. Regular collection and tracking of performance metrics will aid the early identification of problems and can be used to target efficiency investments.

Implementation Strategies

- Mandate the regular collection and reporting of historical energy use and cost data and historical flow and volume data to establish dollars per gallon and energy per gallon metrics for major system components.
    - Collect and track monthly billing data and calculate metrics on a regular basis.
- Monitor and track engineering parameters such as pressure and flow at major system components. This may require the installation and regular calibration of a metering system.

GHG Reduction Potential

Low, *Medium*, High

- Regular reviews of system energy and cost efficiency can identify and quantify opportunities for energy and emissions savings.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- *Health Benefits*
- Community Connectivity

Potential for Synergy

- Coordinate water facility management and staff to share recommendation and methods. Share energy reports and assessments to help educate and inform staff.

3.3.4 Transportation

Establish a green fleet program.

Implement a fleet greening program that promotes new fleet procurement and efficiency standards, retrofits, and a system for monitoring fuel use.

Implementation Strategies

- Set procurement requirements mandating the purchase of fuel-efficient, hybrid, alternative fuel, or flex-fuel fleet vehicles, and setting minimum efficiency requirements.
- Conduct a review of existing fleet vehicles to identify opportunities for fuel switching (e.g., use of B20 biodiesel) and other upgrades and to identify priority vehicles for replacement.
  - Consider naming Green Fleet Leaders in each municipal department with a vehicle fleet. These individuals lead implementation of the green fleet program and ensure sharing of ideas and feedback.
  - Retrofit the municipal fleet with particulate traps, oxidation catalysts, tailpipe filters, and crankcase filters, as appropriate.
- Implement a standard fuel use recordkeeping protocol across departments, tracking fuel use at the level of each vehicle and by user. This will help target fleet greening efforts.

GHG Reduction Potential

Low, *Medium*, *High*

- The municipal fleet constitutes a significant portion of municipal GHG emissions, and energy efficient vehicles can use half as much (or less) fuel as standard vehicles.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- *Health Benefits*
- Community Connectivity

Potential for Synergy

- Consider aligning purchase of alternatively fueled vehicles (AVFs) with other municipalities to capitalize on opportunities to jointly plan support infrastructure such as electric vehicle charging stations.

Develop a municipal government transportation demand management program.

Offer infrastructure and incentives that facilitate carpooling and use of mass transit options.

Implementation Strategies

- Provide and promote infrastructure and opportunities for employee carpooling.
  - Create links between ride-sharing resources and municipal employee intranet sites.
  - Circulate information on ridesharing resources such as NuRide.

  - Purchase or lease dedicated vanpooling vehicles.
  - Offer flex hours to facilitate coordination of employee schedules for ridesharing.
- Provide incentives for employee carpooling.
  - Offer employee parking space buyback.
  - Award priority parking spaces to carpool vehicles.
  - Introduce methods for identifying carpool vehicles such as window stickers or priority parking permits.
- Offer pre-tax benefits for use of mass transit. Examine use of incentive programs such as TransitChek.
- Introduce flexible telecommuting policies.

GHG Reduction Potential

Low, *Medium*, High

- Employee VMT generally represents a low portion of overall municipal GHG emissions.
- However, GHG emissions from employee VMT in Peekskill are high relative to other NWEAC municipalities. Implementing this measure would have a higher impact on GHG emissions in Peekskill.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- Health Benefits
- *Community Connectivity*

Potential for Synergy

- Pool resources to partner with ridesharing services.

3.3.5 Waste

Promote recycling, composting, and proper waste disposal among municipal employees.

Develop a larger and more comprehensive waste reduction and diversion program to help reduce GHG emissions and put waste material to productive uses. This program should look at opportunities for material reuse, composting, and appropriate disposal of hazardous materials.

Implementation Strategies

- Assign a Recycling Coordinator to maintain the municipal waste infrastructure and programs. Specific tasks can include public education and outreach, interdepartmental coordination, tracking and reporting, developing enforcement strategies, managing program finances, and helping to build a stronger market for recyclables such as through green procurement standards.
  - NYSDEC funding is available to offset a Recycling Coordinator salary, fringe benefits, and public outreach and education expenses. Funding for eligible recycling coordination and education projects covers 50% of costs and cannot exceed $2 million per project.
- Set targets for residual waste reduction and assign the Recycling Coordinator with tracking progress and adjusting the program to help meet designated targets.

- Evaluate waste collection infrastructure. Ensure employees are provided with well-labeled collection equipment that provides images depicting items that should and should not be placed in each receptacle.
  - Place recycling bins in kitchens, along frequently used corridors, and at points of assembly.
  - Place composting bins in kitchens and lunchrooms.
    - Provide indoor vermicomposting or bokashi composting units.
    - Offer pamphlets with clear guidance on how to properly add organics to the unit.
  - Begin an outdoor composting demonstration program on municipal building grounds and apply compost to landscaping or garden plot.
    - Offer public outreach and education at the demonstration site.
- Ask departments for volunteers to support the Recycling Coordinator with interdepartmental participation and coordination.

GHG Reduction Potential

Low, Medium, High

- GHG emissions from waste represent a small percentage of overall emissions.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- Health Benefits
- *Community Connectivity*

Potential for Synergy

- Design and produce signage in collaboration with municipalities with similar at-source waste stream separation procedures.
- Organize composting workshops and trainings that include employees of other municipalities that have or are considering municipal composting programs.

Implement product procurement guidelines such as the USEPA Comprehensive Procurement Guidelines.

Purchase products with recycled content for municipal projects and operations. Also opt for products that produce less toxic substances or solid waste.

Implementation Strategies

- Establish policies that encourage departments to reexamine purchasing habits.
- Form a municipal Green Purchasing Committee that reviews and provides recommendations for purchasing decisions across departments.

GHG Reduction Potential

Low, Medium, High

- Increased purchasing of recycled products will have minimal demonstrable impact on municipal GHG emissions as they were not incorporated into the

municipal GHG inventories. However, it can have beneficial sustainability impacts.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- *Health Benefits*
- Community Connectivity

Potential for Synergy

- Share successful and innovative strategies for procurement with departments in other municipalities, particularly those that help build an end-use market for local recycling and other green retail businesses.

3.3.6 Renewable Energy

Invest in renewable energy production.

Invest in renewable energy generation to help reduce or offset GHG emissions, reduce peak summer demand costs and help generate revenue when enrolled in a DR program while also providing a hedge against long-term energy price fluctuations. Renewable technologies such as solar photovoltaic panels can be expensive when installing; however, there are many financial incentives available to defray much of the up-front capital costs.

Implementation Strategies

- Work with NYSERDA and local vendors to identify opportunities for the installation of renewable energy technologies. Schools, warehouses, and other large buildings with secure, south-facing exposure can be good candidates for rooftop solar installations.
  - Mapping Westchester County (http://giswww.westchestergov.com/gismap/default.aspx?OVMAP=solar) provides a tool for searching properties in Westchester that are suitable for solar power.

GHG Reduction Potential

Low, *Medium*, *High*

- Production of renewable energy directly and indirectly replaces fossil fuel-supplied power. The impact will depend on the scale of the project.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- Health Benefits
- Community Connectivity

Potential for Synergy

- Design and install larger, multi-municipality systems or set of systems to engage larger project developers to bring economies of scale into play with material and labor costs.

Purchase renewable-generated electricity.

Enter into contracts with local utility or an ESCO to purchase "green" power, renewable energy credits (RECs), or carbon offsets to offset the GHG emissions associated with electricity consumption. While purchasing green power allows municipalities to easily make major reductions in their GHG emissions, it should not be used in the place of more concrete actions to increase building energy efficiency, reduce transportation emissions, or other measures.

Implementation Strategies

- Develop a green power purchasing agreement with a local utility, ESCO, REC, or Carbon Offset service provider.
- Consider a phased approach to green power purchasing.

GHG Reduction Potential

Low, Medium, High

- Purchase of renewable energy indirectly replaces fossil fuel-supplied power. The impact will depend on the scale of the project.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- *Health Benefits*
- *Community Connectivity*

Potential for Synergy

- No synergies have been identified.

3.4 Community Climate Action Measures

The follow section provides a comprehensive list of community climate action measures for further consideration among NWEAC Traction Leader communities. Blue, bold, and italicized formatting is used in this section to indicate the GHG reduction potential and co-benefits associated with each measure.

3.4.1 Residential

Residential buildings comprise the vast majority of the total buildings in the NWEAC communities and present a tremendous opportunity for GHG reduction and energy savings. Energy use intensity (EUI) can vary significantly between buildings serving the same function. Residents may not be as motivated or trained as facility managers in commercial and municipal buildings.

Facilitate access to information and services to promote the implementation of residential energy audits, weatherization programs, and efficiency upgrades.

Provide information about the ways in which a home owner or occupant can save energy and reduce their carbon footprint. Facilitating access to information and expertise, as is being done

through Renew NWEAC and Energize NY[26], can help spur residents to take action. There are many existing programs and funding sources available; providing the information and support needed to guide residents through the complexities of these programs can be imperative to their success.

Implementation Strategies

- Provide residents with access to information on climate action and energy conservation via Renew NWEAC, municipality websites, green fairs, community organizations, block association events, and more.
  - Renew NWEAC already has a vast compendium of information on residential efficiency programs.
    - NYSERDA's energy efficiency retrofit on-bill cost recovery program removes barriers for residents considering substantial upgrades to home heating, ventilating, and air conditioning (HVAC) equipment.
- Promote voluntary certifications such as PassivHaus, LEED for Homes, Home Energy Rating Systems (HERS), and Energy Star.
  - Programs such as Enterprise Green Community can offer incentives for developers renovating multifamily residential and affordable housing
- Use social networking sites such as Facebook and Twitter to share new information on upcoming events and opportunities.
  - Seasonal campaigns can focus on encouraging the use of LED holiday lighting and other topics.
- Organize green house tours and competitions.
  - Provide residents with opportunities to visit green homes.
- Organize panel discussions and other events targeted at the building industry to promote knowledge exchange on green residential construction.

GHG Reduction Potential

Low, Medium, *High*

- Residential GHG emissions constitute a major percentage of community GHG emissions, and potential for efficiencies exceed 20%.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- *Health Benefits*
- Community Connectivity

Potential for Synergy

- Engage and educate residents on a multi-municipal basis.

[26] http://energizeny.org/.

Develop programs to fund, conduct or incentivize residential energy audits, weatherization, efficiency upgrades, and sustainable home rating programs.

In addition to facilitating access to existing energy efficiency programs, municipalities should evaluate the feasibility of creating financial programs such as a revolving loan fund (RLF) or other mechanism to stimulate investment in residential energy efficiency and GHG reductions. Sustaining a program over time will require accountability and a reporting and tracking structure to assess performance and steer future program modifications as determined by concrete residential building energy efficiency results. Initial funding will need to be acquired through a budget allocation, bond issuance, or other mechanism.

Implementation Strategies

- Establish a fund to help pay for energy efficiency investments by residents. The fund should be self-sustaining and sufficiently capitalized to operate. Existing NYSERDA, Westchester County, and utility programs may provide sufficient coverage, eliminating the value of a separate local revolving fund. Care needs to be taken to coordinate this program with other ongoing activities.

GHG Reduction Potential

Low, Medium, *High*

- Residential GHG emissions constitute a major percentage of community GHG emissions, and potential for efficiencies exceed 20%.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- *Health Benefits*
- Community Connectivity

Potential for Synergy

- Develop programs such as Energize Bedford and Energize Somers to be accessible to multiple communities.

Incentivize developers to implement high-performance design.

Provide an incentive structure that will encourage developers to exceed the minimum performance requirements of the Code. The release of the 2010 NYS Energy Conservation Construction Code significantly raised the bar for commercial and residential construction. However, there are many ways in which developers can go above-and-beyond the minimum requirements of the Code.

Implementation Strategies

- Implement a FeeBate system, whereby a transaction fee is paid to the municipality for sale of new properties that are not certified under a pre-approved third-party performance rating system (e.g., LEED for Homes, Energy Star, HERS, PassiveHaus, Enterprise Green Community). This fee is then provided as a rebate to developers who sell new units meeting the required criteria.
- Evaluate provision of expedited permitting services for projects meeting pre-determined sustainability criteria.

GHG Reduction Potential

Low, *Medium, High*

- New residential housing units can be designed to achieve energy savings ranging from slight improvements over code to PassiveHaus-labeled buildings that use 60-80% less energy than code.

Co-Benefits

Environmental

- *Pollution Prevention*
- *Habitat Preservation or Creation*
- *Stormwater Management*

Economic

- *Job Creation*

Social

- *Health Benefits*
- Community Connectivity

Potential for Synergy

- Develop a model program for application in multiple NWEAC communities.

3.4.2 Non-Residential

As with municipal facilities, commercial buildings present numerous opportunities to reduce GHG emissions that are often strongly correlated with operational cost savings.

Encourage participation in the Westchester Green Business Challenge.

Advertise and encourage private businesses and organizations to participate in the Westchester Green Business Challenge as a way to build and improve sustainability programs and reduce costs. Through this competition, businesses and non-profits will be evaluated for up to 82 green strategies that cover energy use, transportation, land use, water resources, waste, recycling and green procurement, and outreach.

Implementation Strategies

- Launch outreach efforts that focus on building participation in the program. Target large business with operations that contribute significantly to community GHG emissions.
- Provide a link to http://climatechange.westchestergov.com/index.php?option=com_content&task=view&id=2571&Itemid=4597 on the municipal website and provide a point of contact to answer questions regarding the program.

GHG Reduction Potential

Low, *Medium, High*

- Strong participation among private businesses and organizations could contribute substantially to community-wide GHG emissions reductions.

Co-Benefits

Environmental

- *Pollution Prevention*
- *Habitat Preservation or Creation*
- *Stormwater Management*

Economic
- *Job Creation*

Social
- *Health Benefits*
- *Community Connectivity*

Potential for Synergy
- Collaborate with NWEAC communities to share strategies that are successful in securing participation in the challenge.

Mandate USEPA Portfolio Manager Benchmark reporting for facilities meeting size and other requirements.

Compile and use existing building energy and water utility information in UESEPA Portfolio Manager benchmarking tool to compare buildings of a similar space and function. This effort provides feedback on which buildings use more or less energy per square foot of floor space and can help in prioritizing outreach and implementation efforts.

Many of the opportunities identified as part of this study's energy audits of municipal facilities are likely to exist in the wide variety of commercial buildings located within the Traction Leader communities. Benchmarking will provide very useful information that a commercial owner can use to improve energy efficiency. Care needs to be taken to facilitate benchmarking of small commercial facilities.

Implementation Strategies
- Develop an ordinance or policy requiring all commercial facilities above a predetermined size and occupancy to undergo benchmarking on an annual basis.
    - Provide limited technical assistance when rolling out the program, and help connect participants with technical assistance providers linked to existing funding programs, for example via NYSERDA.
    - In exchange for reporting data, provide commercial facility managers with information and guidance on incentive programs.
- Consider convening a working group or roundtable to discuss opportunities for energy efficiency in the commercial sector.
- Encourage full participation with a communication and education campaign.

GHG Reduction Potential

Low, Medium, High
- Benchmarking will provide needed information to enable targeted outreach, but will not directly reduce energy use and GHG emissions.

Co-Benefits

Environmental
- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic
- *Job Creation*

Social
- *Health Benefits*
- Community Connectivity

Potential for Synergy

- Develop a model program for application in multiple NWEAC communities.

Target major employers and facilities for energy outreach, incentives, and technical support.

Use energy efficiency as an opportunity to reduce or stabilize long-term operating costs, improve occupancy. It provides one of the best returns on investments to help increase net operating income and can increase asset values. Larger buildings and facilities present great opportunities to achieve major reductions in energy use at a single location.

Implementation Strategies

- Implement competitive programs such as Flex your Power.
  - Many examples exist from larger corporate programs that can be used as a template.
- Share O&M best practices with large facility owners. This can be done via a working group or other platform.
- Evaluate the feasibility of mandating energy audits for commercial facilities over a certain size.
  - Energy audits should be performed at least once every 10 years.
  - There may be very few large commercial facilities in some communities. In this case, target the few large facilities via an outreach program. Schools may be a key target.
- Develop expedited permitting for developers of new commercial and institutional facilities that achieve pre-approved third-party performance certification (e.g., LEED CI, LEED CS, LEED NC, LEED for Schools).

GHG Reduction Potential

Low, *Medium*, High

Efficiency measures can typically reduce energy use by 10-30%[27] & [28], with considerable variation building-to-building.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- *Health Benefits*
- Community Connectivity

Potential for Synergy

- Develop a model program for application in multiple NWEAC communities.

[27] Brown et al. 2008. *U.S. Building-Sector Energy Efficiency Potential.* http://enduse.lbl.gov/info/LBNL-1096E.pdf.

[28] Belzer. 2009. *Energy Efficiency Potential in Existing Commercial Buildings: Review of Selected Recent Studies.* http://www.pnl.gov/main/publications/external/technical_reports/PNNL-18337.pdf.

3.4.3 Transportation

Encourage carpool programs.

Use ride-sharing resources to help reduce the GHG impact of people's daily commute. These programs can be particularly effective to enhance connections to public transit for NY Metropolitan commuters and train passengers and to create linkages between suburban and urban areas that lack direct transit options.

Implementation Strategies

- Circulate information on ridesharing resources such as NuRide. Consider providing links to these resources on municipal websites, in addition to sites such as Renew NWEAC.
- Award priority parking spaces to carpool vehicles at mass transit stations.
- Introduce methods for identifying carpool vehicles such as window stickers or priority parking permits.
- Charge lower parking fees for carpool vehicles.
- Coordinate with the Westchester County transportation demand management program.

GHG Reduction Potential

Low, *Medium*, High

- Transportation occurring within NWEAC communities contributes substantially to overall community GHG emissions, particularly in North Salem.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- Health Benefits
- *Community Connectivity*

Potential for Synergy

- Pool resources to partner with ridesharing services.
- Coordinate with neighboring communities to design and run ads and announcements in for new services being offered across communities.

Encourage use of fuel-efficient, hybrid, alternative fuel, or flex-fuel fleet vehicles.

Implement incentives for and promote use of vehicles with lower GHG emissions.

Implementation Strategies

- Designate parking spaces for alternatively fueled or hybrid vehicles at mass transit facilities and other popular parking areas.
- Coordinate car shows with local dealerships that showcase the greenest vehicles available on the market.
  - Consider featuring green vehicles at sustainability fairs and events organized in the region.
- Circulate information on federal tax credits available for purchasing hybrids, plug-in hybrids, alternative fuel, and electric vehicles. Post this information on Renew NWEAC and other websites.

GHG Reduction Potential

Low, *Medium*, High

- Transportation occurring within NWEAC communities contributes substantially to overall community GHG emissions, particularly in North Salem.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- Health Benefits
- *Community Connectivity*

Potential for Synergy

- Coordinate community outreach and education with other municipalities.

Promote school bus ridership.

Provide and advertise safe and reliable school bus transportation systems. This will reduce GHG emissions and pollutants around schools during prime dropoff and pickup times.

Implementation Strategies

- Reevaluate bus stop locations.
- Distribute existing materials from the National Highway Traffic Safety Administration that promote school buses as a safe mode of transport.

GHG Reduction Potential

Low, Medium, High

- Transportation occurring within NWEAC communities contributes substantially to overall community GHG emissions, particularly in North Salem. Transportation to and from school, however, represents a small portion of the emissions from this sector.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- *Health Benefits*
- *Community Connectivity*

Potential for Synergy

- Coordinate community outreach and education with other municipalities.

Strengthen public transportation programs.

Expand public transit, improve access, and eliminate barriers to use.

Implementation Strategies

- Arrange for shuttle or bus service between mass transit stations and downtown areas and employment centers.
- Advertise the availability of the Metro North Guaranteed Ride Home Program.
- Work with Metro North and Westchester County to improve or expand train, bus rapid transit (BRT), and bus service.
- Gather community feedback on mass transit schedules and options.

GHG Reduction Potential

Low, *Medium*, *High*

- Transportation occurring within NWEAC communities contributes substantially to overall community GHG emissions, particularly in North Salem.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- Health Benefits
- *Community Connectivity*

Potential for Synergy

- Compare community feedback on mass transit schedules and options with those of other communities to determine the feasibility of forming joint campaigns for new or expanded services.

Improve bike and pedestrian infrastructure.

Provide bike and pedestrian paths that aim to reduce vehicle trips rather than focus solely on recreation.

Implementation Strategies

- Provide locking facilities, shelters, and lighting around bike storage areas.
- Offer storage areas at transit hubs.
- Explore options for bike sharing programs such as Alta Bicycle Share.
- Prioritize safe routes to schools and business areas.
- Designate a Pedestrian and Bicycle Coordinator to conduct community outreach. Engagement activities can include gathering feedback on preferred pathways, promoting use of existing of planned pathways, and promoting user safety.

GHG Reduction Potential

Low, Medium, High

- Transportation occurring within NWEAC communities contributes substantially to overall community GHG emissions.
- The success of improving bike and pedestrian infrastructure as a means of commuting will depend on successful planning of routes and encouraging participation. It is also likely that GHG reductions from such infrastructure improvements would be higher in warmer months.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- *Health Benefits*
- *Community Connectivity*

Potential for Synergy

- Coordinate with neighboring municipalities to plan cross-boundary corridors.

Reduce vehicle idling.

Increase awareness and enforcement of anti-idling laws.

Implementation Strategies

- Increase signage indicating idling limits and fines for non-compliance.
- Issue reminders to traffic enforcement agents to issue tickets and summonses for idling.
- Identify priority enforcement areas such as near schools and parks.
- Establish a call service to handle idling complaints and inform the public that mechanisms to report violations are available.

GHG Reduction Potential

Low, Medium, High

- Targeted anti-idling efforts around schools and congested parking areas will help this measure contribute more substantially to GHG reductions.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- *Health Benefits*
- Community Connectivity

Potential for Synergy

- Design and produce signage in collaboration with other municipalities.

3.4.4 Waste

Evaluate ways to improve and expand resources and efficiencies offered through Refuse Disposal District membership.

Evaluate the need and opportunity for additional regional infrastructure such as composting facilities, WTE plants, and recycling facilities. Also explore opportunities to reduce emissions associated with waste collection.

Implementation Strategies

- Convene the NWEAC Waste and Recycling Task Force.

GHG Reduction Potential

Low, Medium, High

- GHG emissions from waste represent a small percentage of overall emissions.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- Health Benefits
- *Community Connectivity*

Potential for Synergy

- Utilize the NWEAC Waste and Recycling Task Force as a means to engage both current and prospective members of the Refuse Disposal District.

Evaluate issues and benefits of joining the Refuse Disposal District and taking advantage of the combined infrastructure and potential resources.

Set up discussions between Refuse Disposal District members and non-members so that regional waste management solutions are designed to incentivize membership.

Implementation Strategies

- Convene the NWEAC Waste and Recycling Task Force to evaluate opportunities and interface with non-member communities to discuss how improvements and expansions can attract participation.

GHG Reduction Potential

Low, Medium, High

- GHG emissions from waste represent a small percentage of overall emissions.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- Health Benefits
- *Community Connectivity*

Potential for Synergy

- Utilize the NWEAC Waste and Recycling Task Force as a means to engage both current and prospective members of the Refuse Disposal District.

Reevaluate standards and requirements for contracted waste management services that are not part of the Residential Disposal District.

Use competitive performance-based procurement processes to integrate emissions reduction measures into waste management practices and increase recycling rates.

Implementation Strategies

- Establish reporting and performance requirements for contracted services.
  - Include performance incentives in contracts.
  - Set targets for diversion to WTE and recycling facilities.
  - Establish mechanisms to track collection efficiency.
- Give preference to companies with green fleet standards.
- Allow private haulers to compete with public crews for provision of collection services.
- Require vendors to periodically evaluate whether collection equipment is near capacity on the majority of collection routes. Revise collection frequencies as needed.
- Verify that collection points at the end of the route are located near transportation routes to the processing or disposal facility.

GHG Reduction Potential

Low, Medium, High

- GHG emissions from waste represent a small percentage of overall emissions.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- Health Benefits
- *Community Connectivity*

Potential for Synergy

- Exchange information on collection vendors with strong performance.

Promote community waste prevention.

Develop and implement a strategy to prevent waste generation.

Implementation Strategies

- Establish a waste prevention information and outreach campaign.
- Organize campaigns for consumers to bring their own bags when shopping. Enlist participation from local businesses.
- Consider a Bring Your Own Bag ordinance.
- Establish prevention programs in public schools.
- Provide waste prevention assistance to local businesses in collaboration with local non-profit organizations.
- Advertise http://www.41pounds.org/ which stops delivery of junk mail at a low cost.

- Implement inspections and fines and evaluate Pay as You Throw policies.

GHG Reduction Potential

Low, Medium, High

- GHG emissions from waste represent a small percentage of overall emissions.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- Health Benefits
- *Community Connectivity*

Potential for Synergy

- Pool resources with other municipalities to launch outreach campaigns.

Promote community recycling and composting initiatives.

Develop and implement a strategy to increase recycling rates, and encourage composting.

Implementation Strategies

- Establish Master Recycler and Composter programs to train citizens and provide limited technical assistance.
    - Encourage Master Recyclers and Composters to improve efforts in multi-family housing complexes.
- Evaluate organic waste management solutions and infrastructure.
    - Offer organic waste drop-off locations at community centers and farmers markets.
    - Provide home composting bins to residents or organize build-your-own bin workshops using Cortlandt and Croton-on-Hudson bin distribution programs as models.
    - Set up one or more small-scale composting sites or a centralized facility scaled appropriately for the anticipated volume of organic waste.
    - Evaluate the costs and benefits of mandatory composting through ordinance.
    - Offer composting pickup if mandatory composting policies are established.
    - Encourage school involvement in composting programs and community outreach.
    - Run a campaign to reduce leaf pick up using Bedford Leave Leaves Alone![29] as a model.
- Publicize and hold e-waste and household hazardous waste drop-off events.
- Review infrastructure and signage in public areas.
    - Locate outdoor recycling bins and dumpsters in areas with high foot traffic and near community events.
    - Provide signage with images depicting recyclable and compostable items and sorting guidelines. Provide printable electronic versions on the municipal website and distribute to households.

[29] Town of Bedford. *Leave Leaves Alone!* http://www.leaveleavesalone.org/.

- Implement inspections and fines and evaluate Pay as You Throw policies.

GHG Reduction Potential

Low, Medium, High

- GHG emissions from waste represent a small percentage of overall emissions.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- Health Benefits
- *Community Connectivity*

Potential for Synergy

- Pool resources with other municipalities to launch outreach campaigns.
- Design and produce signage in collaboration with other municipalities that follow similar at-source waste stream separation procedures.
  - Launch regional design competitions.
- Run Master Recycler and Composter Programs across municipalities.
- Purchase the same recycling bins as nearby municipalities to enable automated curbside collection by the same vendor across municipalities.
- Set up a centralized composting facility in collaboration with neighboring municipalities. Use the Cortlandt and Croton-on-Hudson composting center as an example.
- Consider joining the Refuse Disposal District to access infrastructure and resources offered.

Mandate recycling of construction and demolition (C&D) debris.

Mandate recycling of C&D debris.

Implementation Strategies

- Adopt an ordinance that mandates the implementation of C&D waste diversion for all new construction, major renovations, and demolitions.
  - Set a minimum diversion rate for C&D debris.
  - Provide guidance to local contractors on construction waste management best practices.

GHG Reduction Potential

Low, Medium, High

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- Job Creation

Social

- Health Benefits
- *Community Connectivity*

Potential for Synergy

- Provide information on regional waste haulers with strong C&D diversion records on Renew NWEAC.

Promote recycling of oil.

Encourage businesses to recycle oil and provide re-refined oil (including biodiesel) on the market.

Implementation Strategies

- Guarantee purchase of re-refined oil for the municipal fleet or to heat municipal buildings.

GHG Reduction Potential

Low, Medium, High

- GHG emissions from waste represent a small percentage of overall emissions.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- Health Benefits
- *Community Connectivity*

Potential for Synergy

- Work with other municipalities to build the end-use market for biodiesel and create biodiesel production infrastructure.

3.4.5 Renewable Energy

Invest in renewable energy production.

Invest in renewable energy generation to help reduce or offset GHG emissions, reduce peak summer demand costs and help generate revenue if enrolled in a DR program. Renewable generation also provides a hedge against long-term energy price fluctuations. Renewable technologies such as solar photovoltaic panels can be expensive when installing, although there are many financial incentives available to offset some of the up-front capital costs.

Implementation Strategies

- Work with NYSERDA and local vendors to identify opportunities to install renewable energy technologies.
  - Schools, warehouses, and other large buildings with secure, south facing exposure can be good candidates for rooftop solar installations.
  - Mapping Westchester County (http://giswww.westchestergov.com/gismap/default.aspx?OVMAP=solar) provides a tool for searching properties in Westchester that are suitable for solar power.
- Promote renewable energy subsidies and incentives on websites such as Renew NWEAC.
- Consider Community Choice Aggregation.

- Evaluate microgrid opportunities such as the People Power Microgrid Project proposed for Peekskill.

GHG Reduction Potential

Low, *Medium*, *High*

- Production of renewable energy directly or indirectly replaces fossil fuel-supplied power. The impact will depend on the scale of the project.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- Health Benefits
- Community Connectivity

Potential for Synergy

- Share experience implementing and financing renewable energy production between the NWEAC communities to lower the barriers to entering this market.

Purchase renewable-generated electricity.

Residential and commercial clients can enter into contracts with their local utility or an ESCO to purchase green power, RECs, or carbon offsets to offset the GHG emissions associated with electricity consumption. Purchasing green power allows residents and businesses to easily make major reductions in their GHG emissions, but should not be considered a substitute for more concrete actions that increase building energy efficiency, reduce transportation emissions, and help lower costs.

Implementation Strategies:

- Develop a green power purchasing agreement with a local utility, ESCO, REC or Carbon Offset service provider.

GHG Reduction Potential

Low, *Medium*, *High*

- Purchase of renewable energy indirectly replaces fossil fuel-supplied power. The impact will depend on the scale of the project.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- *Health Benefits*
- Community Connectivity

Potential for Synergy

- No synergies have been identified.

3.4.6 Land Use and Open Space

Land use and open space climate action measures will contribute to both carbon sequestration and reducing GHG emissions in multiple sectors (transportation, residential, non-residential) through promoting walkable neighborhoods, compact development, and reducing sprawl. While we have treated land use and open space as a separate category in the CAP, the impact of implementing these measures will be felt in multiple sectors.

Promote low-maintenance landscaping practices.

Establish programs to promote resource-efficient landscapes through practices that require less maintenance and use of gas – and electricity-powered lawn equipment.

Implementation Strategies

- Develop guidance materials for residents and businesses that encourage them to implement the measures below.
  - Use low-maintenance plants such as native plants that are adapted to the local climate and plants that have a moderate growth rate, few pest problems, and produce no messy fruits, pods or shedding branches.
  - Reduce the amount of turf grass by planting ground covers, shrubs and trees, perennials and other flowers.
  - Use low GHG equipment.
  - Use reclaimed water for irrigation.
  - Use compost instead of synthetic fertilizer.
  - Implement programs such as Leave Leaves Alone!
- Provide technical support and education in partnership with local non-profits and community organizations.
- Adopt a landscape ordinance that mandates low-impact practices.

GHG Reduction Potential

Low, Medium, High

- Landscaping emissions are low and not fully accounted for in the inventories.
- Waste collection can be reduced through better landscaping practices.

Co-Benefits

Environmental

- *Pollution Prevention*
- *Habitat Preservation or Creation*
- *Stormwater Management*

Economic

- Job Creation

Social

- Health Benefits
- Community Connectivity

Potential for Synergy

- Design and produce outreach material in collaboration with municipalities to educate residents and business owners on ways to minimize landscape maintenance.
- Organize education programs and trainings that include employees of other municipalities that have or are considering low-maintenance landscaping.

Cleanup and redevelop or restore brownfield sites.

Redevelop brownfields to preserve open space and reduce urban and suburban sprawl.

Implementation Strategies

- Establish a community-based revitalization plan and implementation strategy to achieve brownfield redevelopment in residential, commercial, industrial and manufacturing areas or corridors, waterfronts, and downtowns.
- Implement green remediation techniques such as solar energy to operate groundwater pump and treat systems, reduced construction engine idling time, and alternative fuels for equipment.

GHG Reduction Potential

Low, *Medium*, High

- Redeveloping in-fill sites can preserve open space and contribute to transit-oriented development (TOD).

Co-Benefits

Environmental

- *Pollution Prevention*
- *Habitat Preservation or Creation*
- *Stormwater Management*

Economic

- *Job Creation*

Social

- *Health Benefits*
- *Community Connectivity*

Potential for Synergy

- Establish a comprehensive municipality- or community-led revitalization plan that addresses multiple brownfield sites across all NWEAC municipalities.

Promote TOD.

Use TOD as a strategy to reduce traffic-related GHG emissions and urban and suburban sprawl.

Implementation Strategies

- Establish urban growth boundaries and other land use and zoning reforms to encourage compact, mixed-use, walkable development.
- Promote the implementation of urban design best practices.
  - Reduce traffic by designing neighborhoods to make walking, biking, and public transit safe and convenient.
  - Establish development that is within a five-minute walk of a transit stop, or about a quarter-mile from the stop to the edge of the development.
- Develop maximum parking requirements—for instance, provide no more than 500 spaces for every 1,000 workers,.
- Implement full market rates for all parking spaces with the exception of validated parking for shoppers.
- Offer repairs, rentals, and secure and fully enclosed bike parking at major transit stops.
- Develop greenways for walkers and cyclists. Include traffic signals timed primarily for greenway convenience.

GHG Reduction Potential

Low, *Medium*, *High*

- Promoting growth in TOD zones can help avoid transportation emissions, a major contributor to community GHG emissions.

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- Stormwater Management

Economic

- *Job Creation*

Social

- *Health Benefits*
- *Community Connectivity*

Potential for Synergy

- Develop and adopt a comprehensive TOD plan for NWEAC municipalities that also includes provisions for zoning, infrastructure, lands of special concern, etc.
- Develop strategies to obtain federal and state funding for planning and implementation of TOD.

Promote open space preservation programs.

Preserve open space to increase carbon sequestration.

Implementation Strategies

- Establish an action plan to preserve existing forestlands, trails, and critical land in and around municipalities.
  - Maintain, develop, and restore open spaces for public use (i.e. areas that are designated for leisure, play, sport, community gardens, or land set aside for the protection and enhancement of the natural environment).
- Plant trees in areas devoid or in need of vegetation (e.g., parking lots, sidewalks, playgrounds, riparian corridors).
  - Design and implement urban forestry projects.

GHG Reduction Potential

Low, Medium, High

- Carbon sequestration benefits to preserving existing open space are small and have not been quantified.

Co-Benefits

Environmental

- *Pollution Prevention*
- *Habitat Preservation or Creation*
- *Stormwater Management*

Economic

- Job Creation

Social

- *Health Benefits*
- *Community Connectivity*

Potential for Synergy

- Conduct meetings with local government, non-profits, and landowners to develop preservation initiatives and programs across NWEAC municipalities.

3.4.7 Water Use

Establish policies and programs to encourage and enforce responsible water use.

Use water department policies and municipal codes and regulations, municipalities to proactively address community water use. Efficient water use can reduce GHG emissions associated with treating, distributing, and collecting water and wastewater.

Implementation Strategies

- Establish strict water conservation requirements in existing codes—for example the use of low-flow fixtures and appliances in buildings and rain sensors on permanently-installed irrigation systems.
- Adjust water fees to charge higher fees for greater use, or based on seasonal use (higher fees in the summer months).
- Implement preventative water budgeting rather than only emergency budgeting during drought conditions.
- Promote capital improvements to reduce water use, such as rainwater collection or gray water recycling.
- Identify and eliminate any regulatory barriers to water reuse.

GHG Reduction Potential

Low, *Medium*, High

Co-Benefits

Environmental

- *Pollution Prevention*
- Habitat Preservation or Creation
- *Stormwater Management*

Economic

- Job Creation

Social

- Health Benefits
- Community Connectivity

Potential for Synergy

Coordinate water facility management staff to share best practices, recommendations and methods.

Provide public education and outreach regarding water conservation.

Establish and encourage educational programs and forums for promoting and sharing water saving techniques, through partnerships with government, businesses, and civil society organizations.

Implementation Strategies

- Coordinate a rain barrel purchase program (such as in Cortlandt) to educate and encourage the purchase and use of rain barrels for summer outdoor irrigation.

- Provide educational programs for gardening clubs or local nurseries to share best practices regarding xeriscaping, drip irrigation, and other water saving strategies.
- Share information and best practices on websites such as Renew NWEAC.
- Expand water quality reporting to include water and energy saving metrics and highlight innovative solutions and success stories

GHG Reduction Potential

Low, Medium, High

Co-Benefits

Environmental

- *Pollution Prevention*
- *Habitat Preservation or Creation*
- *Stormwater Management*

Economic

- *Job Creation*

Social

- Health Benefits
- *Community Connectivity*

Potential for Synergy

- Coordinate communities to share resources, best practices, recommendations, and methods.

4.0 Implementation Framework

This section provides a framework for implementing the CAP through a combination of NWEAC-led initiatives as well as focused efforts by individual municipalities, civil society, and individual climate leaders.

While municipalities may set their own priorities for action, emphasis should also be placed on maintaining and strengthening the cross-community collaboration facilitated through NWEAC. Some communities in NWEAC, especially the Climate Traction Leaders, are already quite advanced in implementing climate action and sustainability measures. These communities have formed task forces and other groups to address climate action issues, and hence already have much of the needed institutional capacity for implementing the CAP. Others are just beginning to mobilize, and can benefit from the lessons learned by other communities, as well as existing resources that can be shared.

4.1 NWEAC Targets

4.1.1 GHG Emissions

Through its efforts to reduce GHG emissions, NWEAC has the opportunity to help Westchester County and NYS achieve their sustainability goals and GHG emissions reductions targets. The main NYS goal for GHG emission reductions is to achieve an 80% reduction by 2050, compared to a 1990 baseline.

Some NWEAC communities have already set targets for reducing energy use and GHG emissions. Cortlandt aims to reduce energy use by 25% by 2012. Bedford aims to cut town-wide emissions by 20% by 2020.

NWEAC communities that have not yet established specific GHG targets but can use Westchester County goals as a guide. Westchester aims to reduce countywide emissions by 20% between 2005 and 2015 and by 80% between 2005 and 2050. Using 2010 as the baseline year, NWEAC communities can adjust this timeframe. This means NWEAC communities should seek to reduce GHG emissions by 20% between 2010 and 2020 and by 80% between 2010 and 2050.

4.1.2 NWEAC Leadership

NWEAC targets can also extend beyond GHG emissions reductions. While emissions reductions are the impetus behind the inventory and climate action planning process, NWEAC is in a unique position to demonstrate its status as a leader in the broader area of sustainability planning.

Preparation of this CAP coincides with the launch of regional sustainability planning initiatives across NYS, thus providing the opportunity for NWEAC to share lessons learned, tools, plans, resources, and methodologies with communities outside NWEAC. NWEAC can prepare a Sustainability Package that bundles this information so it is readily available to other communities and available to inform the Mid-Hudson Regional Sustainability Plan. The Sustainability Package can include this CAP, GHG inventory tools, climate action measure ranking tool, and other items developed as part of the GHG inventory, CAP, and other NWEAC initiatives.

The Sustainability Package could also help other groups, such as the Southern Westchester Energy Action Consortium (SWEAC), as they seek to implement climate action. This would provide a replicable model for ground-up action.

4.2 Critical Program Elements

NWEAC provides a resource and information sharing platform that is critical for meeting larger regional and state goals more quickly and efficiently. To capitalize on the opportunities presented through NWEAC, each community has the opportunity to take steps toward setting up internal infrastructure that feeds into the larger organization. The following steps should be taken at the local level to spur action toward meeting emissions reductions targets:

- Assign roles and responsibilities to a Climate Action / Sustainability Team.
- Rank and prioritize climate action measures.
- Secure sources of funding.
- Establish timelines and tracking mechanisms.

While these program elements should be established in each community, strong cross-community linkages must be created and maintained to sustain information and resource sharing over the long term. Establishing these mechanisms early on will facilitate climate action.

4.2.1 Establish Roles and Responsibilities

Each community should assign team members to cover the responsibilities for each broad role described below. Team members may be elected officials, municipal employees, consultants, or volunteers from the community.

Leadership and Direction

Leadership and Direction has two key objectives. This role provides overall strategic guidance on municipal and community-wide initiatives and maintains the critical linkage to the larger NWEAC team. This role has already been designated to the Citizen Volunteers and Elected Officials who represent the community on NWEAC.

Specific Leadership and Direction responsibilities are to:

- Frame and lead the climate action efforts.
- Coordinate with other members of NWEAC to facilitate information sharing.
- Invite Climate Action / Sustainability Team members and department representatives to NWEAC meetings that involve relevant subject matter.
- Communicate with individuals involved with Coordination and Oversight to relay potential synergies with other NWEAC member communities.
- Review climate action projects and provide guidance on how they should be prioritized and implemented.

It is important for the Leadership and Direction role to contribute to climate action efforts through visible participation.

Furthermore, it is important that Leadership and Direction come from people who represent both municipal government and civil society within each NWEAC community. In the event that participation is missing from one of these two major groups, the existing leadership should actively seek to fill this gap in the leadership team.

Coordination and Oversight

Coordination and Oversight ensures strategic guidance is passed from Leadership and Direction to other members of the Climate Action Team, to interested stakeholders, and to individuals responsible for implementation at municipal departments and in civil society organizations. This role is also critical for tracking progress and identifying obstacles to implementation early on and taking corrective action.

Specific Coordination and Oversight responsibilities are to:

- Establish the work plan and timeline.
- Ensure accountability, stakeholder coordination, and phasing of initiatives.
- Develop and implement mechanisms for tracking progress.
- Ensure projects have adequate resources.
- Communicate the need for policy decisions to Leadership and Direction.
- Coordinate with the finance department to discuss project budgets and secure outside sources of funding.
- Update GHG projections or designate responsibility for this task.

Awareness and Outreach

Awareness and Outreach involves educating and communicating with civil society organizations, the business community, the general public, and municipal employees. It also includes building relationships with private organizations that possess skills and resources to bolster project implementation, link communities, and spur new ideas.

Specific Awareness and Outreach responsibilities are to:

- Create a more knowledgeable and engaged municipal staff and community.
- Organize, sponsor, and / or advertise community events, volunteer opportunities, competitions, and new programs.
- Develop and distribute outreach material through various media to maximize accessibility.

Project Implementation

The Implementation role is essentially a project management function for implementing climate action projects. This role may be assigned to a variety of individuals and groups, depending on the target of the particular project. In the immediate future, priority individuals include facilities and operations staff in

municipal departments and citizen volunteers with the particular expertise or enthusiasm for a given project.

To achieve broader community GHG emission reductions, it is critical that the Coordination and Oversight team engage civil society organizations, the business community, and other partners who can spearhead project implementation. This will catalyze broader community participation and action.

The Implementation role may be more fluid than that of the other roles on the Climate Action / Sustainability Team as participation may be limited to the duration of a specific project.

Specific Implementation responsibilities are to:

- Oversee and manage project implementation.
- Relay resource and budgetary needs.
- Recognize barriers to implementation and propose actions that will enable progress to continue.
- Report progress to Coordination and Oversight.
- Identify new project opportunities and ideas, and communicate these to the Climate Action / Sustainability Team.

4.2.2 Rank and Prioritize Measures

As momentum for climate action builds so will the list of potential climate action measures. The GHG inventories and community outreach surveys completed through the climate action planning process informed community-specific lists of recommended projects outlined in Appendix B. These lists provide guidance for short-term project activities, but do not necessarily reflect the full input of the stakeholder community. An important next step is for each NWEAC community to apply a ranking system to the broader set of recommended projects in Chapter 3 to help inform medium- and long-term priorities for implementation. This process will help the Leadership and Coordination team better understand the level of community support for individual measures.

A ranking tool has been provided as a separate Excel tool. This tool allocates a score for each measure in three main categories: benefits, finances, and implementation and feasibility. Each of the three categories is scored based on the following criteria:

- *Benefits Scoring Criteria*
  Benefits include GHG reduction, co-benefits including environmental, economic, and social, as well as resource savings such as fuel.
- *Finance Scoring Criteria*
  Finances include capital and operational costs, payback period, and availability of outside funding.
- *Implementation and Feasibility Scoring Criteria*
  This includes implementation time, the need for new codes and ordinances, synergies with existing state, regional, NWEAC, and local initiatives, and community support.

Weightings can also be assigned to each criterion depending on which criteria a community prefers to emphasize.

This ranking enables specific projects to be evaluated beyond their impact on GHG emissions and finances. For instance, in cases where there is strong public support and interest for projects with relatively little GHG impact, NWEAC should consider adopting a sustainable development perspective to broaden the discussion beyond GHGs. Furthermore, strong public support can also be used as an argument for implementation of projects with longer payback periods or higher capital costs.

This approach is reflected in the list of priority projects in Appendix B. A screenshot of the ranking tool is in Appendix E.

4.2.3 Establish Timelines and Tracking Mechanisms

Two timelines should be prepared at the local level.

First, after prioritizing projects, NWEAC communities should create a Long Term Community CAP Timeline that indicates when selected projects are slated to begin between now and 2020. The benefit of a long-term plan is it can be incorporated into capital budgets as well as a community's Comprehensive Plan. The Long Term Timeline should also include dates for updating the GHG inventory. This GHG inventory update schedule should be coordinated with NWEAC.

Second, communities should create a work plan and progress report template that brands climate action and sustainability projects. Sharing these templates with the NWEAC community will be valuable for creating a reporting standard across NWEAC. Progress report templates should include an area where resource needs are clearly identified so that Leadership and Direction can report back to the NWEAC community. This will facilitate identification of overlapping needs and thus provide a greater opportunity to coordinate requests for regional, state, or federal support.

Appendix D describes the matrix for tracking activities across NWEAC. It is provided as a separate Excel spreadsheet which will serve as live tool for establishing a timeline and tracking progress. It has already been populated with available information on ongoing or planned initiatives as of the preparation of this CAP, as well as proposed activities (see Section 4.3). Community Coordination and Oversight should take this tool and use it for tracking purpose so it can be easily integrated into a larger, NWEAC-wide progress report. The NWEAC-wide tool should be adapted to reflect milestones such as conferences, fairs, progress report and inventory update deadlines, among other activities.

4.2.4 Secure Financing

Financing climate action initiatives will depend on the specifics of the project and the community. Potential external sources of funding have been identified on the Renew NWEAC site as well as in the Resource Appendix.

While grant opportunities may be available to fund selected projects, municipalities can also choose to finance projects individually, for example through the establishment of an RLF(revolving loan fund[30]) and or using existing capital project financing mechanisms if the potential for payback exists.

It is also important to remember that NWEAC as an entity can help better position the municipalities for federal and state funding as they can demonstrate collaboration at a larger scale.

4.3 Proposed Program Actions

To facilitate the development of a lasting NWEAC climate action program, the NWEAC Climate Traction Leaders, in collaboration with the other members of NWEAC, should complete the following actions in the coming two years.

1. Convene the Climate Traction Meeting to review the CAP and begin assigning roles and responsibilities, prioritizing projects, and more.

2. Release a formal Responsibilities Matrix outlining the different parties identified as key members of the Climate Action / Sustainability Team. If gaps are identified, advertise this fact in the document and on Renew NWEAC.

3. Release an NWEAC Operating Plan, as part of the Sustainability Package. The NWEAC Operating Plan should help NWEAC formalize its operations and provide clear guidance to others who may want to replicate the NWEAC model such as is being done by SWEAC.

4. Prepare and release GHG Inventory Updates and CAP Progress Reports. Periodically update the CAP as needed. NWEAC members should reevaluate energy consumption and costs on an annual basis and perform full inventory updates on 3-year cycles.

5. Develop and launch an NWEAC Event Program, including public events (lectures, panel discussions, etc.) and thematic working group sessions. Working groups could be convened to share experiences achieving climate action by key constituencies such as facility managers, public works department staff, and other municipal operations staff; civil society organizations; and private sector business leaders and operations staff.

6. Organize and host an Annual NWEAC Conference, where participants can present updates, discuss actions taken, share lessons learned and the results of working group activities, and plan future action.

Table 4-1 indicates the status of local and NWEAC program actions and a recommended timeline for implementation in Year 1 is provided in Table 4-1. Documenting milestones and setting a timeline for subsequent years can be completed in the separate Implementation Status Tracking Tool described in Appendix D.

The status of each action as of February 2012 is indicated according to the following symbols:

- Indicates completed actions.
- Indicates actions that are in progress.
- Indicates actions that have not yet been initiated.
- Indicates when an action should occur.

Table 4-1 NWEAC Action Table

Action	Status*	Year 1			
**Status as of February 2012*		Q1	Q2	Q3	Q4
NWEAC Program Actions					
Finalize Climate Action Plan.	●	●			
Hold Climate Traction Meeting.	●		●		
Issue Responsibilities Matrix.	●			●	
Convene Transportation Task Force.	●			●	
Convene Waste and Recycling Task Force.	●			●	
Convene Streetlighting and Signals Task Force.	●			●	
Convene Municipal and Commercial Energy Task Force.	●				
Issue NWEAC Operating Plan.	●		●		
Launch NWEAC Event Program.	●		●		
Hold Annual NWEAC Conference.	●				●
Local Critical Program Elements					
Cortlandt					
Assign Climate Action / Sustainability Team.	●				
Leadership and Direction	●				
Coordination and Oversight	●				

Table 4-1 NWEAC Action Table

Action	Status*	Year 1			
**Status as of February 2012*		Q1	Q2	Q3	Q4
Awareness and Outreach	●				
Project Implementation	●			●	●
Rank and prioritize climate action measures.	●		●		
Establish timelines and tracking mechanisms.	●		●		
Secure sources of funding for priority projects.	●			●	●
Implement priority projects.	●			●	●
Perform annual reevaluation of energy use and costs.					●
Croton-on-Hudson					
Assign Climate Action / Sustainability Team.	●				
Leadership and Direction	●				
Coordination and Oversight	●				
Awareness and Outreach	●				
Project Implementation	●			●	●
Rank and prioritize climate action measures.	●		●		
Establish timelines and tracking mechanisms.	●		●		

Table 4-1 NWEAC Action Table

Action	Status*	Year 1			
**Status as of February 2012*		Q1	Q2	Q3	Q4
Secure sources of funding for priority projects.	○			●	●
Implement priority projects.	●			●	●
Perform annual reevaluation of energy use and costs.					●
North Salem					
Assign Climate Action / Sustainability Team.	●				
Leadership and Direction	●				
Coordination and Oversight	●				
Awareness and Outreach	●				
Project Implementation	○			●	●
Rank and prioritize climate action measures.	●		●		
Establish timelines and tracking mechanisms.	●		●		
Secure sources of funding for priority projects.	●			●	●
Implement priority projects.	●			●	●
Perform annual reevaluation of energy use and costs.					●

Table 4-1 NWEAC Action Table

Action	Status*	Year 1			
**Status as of February 2012*		Q1	Q2	Q3	Q4
Peekskill					
Assign Climate Action / Sustainability Team.	●				
Leadership and Direction	●				
Coordination and Oversight	●				
Awareness and Outreach	●				
Project Implementation	●			●	●
Rank and prioritize climate action measures.	●		●		
Establish timelines and tracking mechanisms.	●		●		
Secure sources of funding for priority projects.	●			●	●
Implement priority projects.	●			●	●
Perform annual reevaluation of energy use and costs.					●
Pound Ridge					
Assign Climate Action / Sustainability Team.	●				
Leadership and Direction	●				
Coordination and Oversight	●				

Table 4-1 NWEAC Action Table

Action	Status*	Year 1			
**Status as of February 2012*		Q1	Q2	Q3	Q4
Awareness and Outreach	●				
Project Implementation	●			●	●
Rank and prioritize climate action measures.	●		●		
Establish timelines and tracking mechanisms.	●		●		
Secure sources of funding for priority projects.	●			●	●
Implement priority projects.	●			●	●
Perform annual reevaluation of energy use and costs.					●
Somers					
Assign Climate Action / Sustainability Team.	●				
Leadership and Direction	●				
Coordination and Oversight	●				
Awareness and Outreach	●				
Project Implementation	●			●	●
Rank and prioritize climate action measures.	●		●		
Establish timelines and tracking mechanisms.	●		●		

Table 4-1 NWEAC Action Table

Action	Status*	Year 1			
**Status as of February 2012*		Q1	Q2	Q3	Q4
Secure sources of funding for priority projects.	●			●	●
Implement priority projects.	●			●	●
Perform annual reevaluation of energy use and costs.					●

5.0 Conclusions

The NWEAC Traction Leaders are spearheading efforts within the county and region to reduce GHG emissions and support NYS GHG emissions reductions and sustainability goals. The founders of NWEAC had the foresight to recognize the importance of regional collaboration and benefits of shared learning. Development of this CAP is a significant milestone in this process.

The NWEAC model has already inspired a second group of community collaborators in Southern Westchester to form the Southern Westchester Energy Action Consortium or SWEAC, and will continue to serve as a model as NYS launches its regional sustainability planning programs.

Like the NWEAC organization, this CAP was developed to be a model for future action. It not only captures the specific knowledge and needs of the NWEAC Traction Leaders but also offers technical information and resources, organizational structures, and dynamic tools that are transferrable to other communities. It is intended to be a living document rather than simply a snapshot in time. As NWEAC Traction Leaders implement the CAP, tracking progress and lessons learned through attached updates and progress reports will enable other communities and consortiums watch the process unfold and benefit from its wake.

The opportunity to guide other communities extends beyond the active and transparent maintenance of this document. It will also be reflected through development of supplemental tools such as the Climate Action / Sustainability Team Responsibilities Matrix and NWEAC Operating Plan, and through the NWEAC Event Program and Annual NWEAC Conference.

Another key result from this project is that it is beginning to unearth and map information and knowledge in Northern Westchester, which can be fed into the larger knowledge network across in NYS. The resources and knowledge needed to execute climate action and sustainability plans are rarely housed within one community, and this project is creating linkages through cross-community task forces and information sharing portals.

If structured with the larger region in mind, implementation of the NWEAC CAP can bring this project beyond climate action planning in Northern Westchester. It has the potential to define a clear role for the Consortium in the Mid-Hudson region and NYS as it plans for a more prosperous and sustainable future.

APPENDICES

Appendix A Data Sources for Baseline GHG Inventories and Cost Projections

Data Sources for Municipal Inventory Baseline and Cost Projections

Sectors	Data Provided	Emission Factors	Energy Cost and GHG Emission Factor Projections
Municipal Building and Facility Energy Use			
Electricity	2010 NYPA, Con Edison, or NYSEG billing data.	U.S. EPA eGRID2010 Version 1.1 (2007 data: eGRID NYCW subregion).	EIA Annual Energy Outlook 2011, 2009-2035 reference case NYC/Westchester growth rate of electricity costs
Fuel Oil	2010 Fuel Oil billing data or as summarized by fuel supplier or municipal staff.	Local Government Operations Protocol, May 2010, Tables G1 and G4	EIA Annual Energy Outlook 2011, 2009-2035 reference case national commercial distillate fuel oil costs
Natural Gas	2010 Con Edison billing data	Local Government Operations Protocol, May 2010, Tables G1 and G3	EIA Annual Energy Outlook 2011, 2009-2035 reference case Middle Atlantic growth rate of natural gas costs
Transportation			
Government Fleet			
Diesel and Gasoline Fuel Usage	Fuel data from gasoline purchase records, fuel pump operations records, or summarized by municipal staff	Local Government Operations Protocol, May 2010, Tables G11 and G14	EIA Annual Energy Outlook 2011, 2009-2035 national growth rate of diesel and gasoline costs
Employee Commute			
Vehicle miles travelled (VMT)	Number of employees and residential zip code or commute distances	CO2 emission factors from MOBILE 6.2 emission factor model run using inputs provided by USEPA for the national vehicle fleet	

Data Sources for Community Inventory Baseline and "No Action" Projections

Sector	Data Provided	Emission Factors	Energy and GHG Emission Factor Projections
Residential Energy Use			
Electricity	Total annual electricity use data provided by Con Edison or estimated using US Census or Town of Somers average use per household	U.S. EPA eGRID2010 Version 1.1 (2007 data: eGRID NYCW subregion).	EIA Annual Energy Outlook 2011, 2009-2035 reference case NYC / Westchester growth rate of electricity costs
Fuel Oil	Fuel oil use estimated using household and population data from U.S. Census, 2000 or 2010 and EIA 2005 Residential Energy Consumption Survey (RECS).	Local Government Operations Protocol, May 2010, Tables G1 and G4	EIA Annual Energy Outlook 2011, 2009-2035 reference case national commercial distillate fuel oil costs
Natural Gas	Natural gas use estimated using household and population data from U.S. Census, 2000 or 2010 and EIA 2005 RECS	Local Government Operations Protocol, May 2010, Tables G1 and G3	EIA Annual Energy Outlook 2011, 2009-2035 reference case Middle Atlantic growth rate of natural gas costs
Non-Residential Energy Use			
Electricity	Total annual electricity use data provided by Con Edison, NYPA, or estimated using EIA 2003 Commercial Building Energy Consumption Survey (CBECS), 2010 tax assessment data, and US Census 2000, 2010	U.S. EPA eGRID2010 Version 1.1 (2007 data: eGRID NYCW subregion).	EIA Annual Energy Outlook 2011, 2009-2035 reference case NYC / Westchester growth rate of electricity costs

Data Sources for Community Inventory Baseline and "No Action" Projections

Sector	Data Provided	Emission Factors	Energy and GHG Emission Factor Projections
Fuel Oil	Fuel oil use estimated using EIA 2003 CBECS, 2010 tax assessment data, and US Census 2000, 2010.	Local Government Operations Protocol, May 2010, Tables G1 and G4	EIA Annual Energy Outlook 2011, 2009-2035 reference case national commercial distillate fuel oil costs
Natural Gas	Natural gas use estimated using EIA 2003 CBECS, 2010 tax assessment data, and US Census 2000, 2010	Local Government Operations Protocol, May 2010, Tables G1 and G3	EIA Annual Energy Outlook 2011, 2009-2035 reference case Middle Atlantic growth rate of natural gas costs
Transportation			
Vehicle types	NYSDOT vehicle type distribution provided by New York State Department of Transportation for Westchester County	CO2 emission factors from MOBILE 6.2 emission factor model run using inputs provided by USEPA for the national vehicle fleet	
Annual vehicle mileage travelled (VMT)	2010 annual total provided by New York Metropolitan Transportation Council for each municipality	CH4 and N2O emission factors were derived from LGOP Table G.12 and vehicle fleet age distribution data from the U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007 (2009), Annex 3, Table 86 and Table A-88	

Data Sources for Community Inventory Baseline and "No Action" Projections

Sector	Data Provided	Emission Factors	Energy and GHG Emission Factor Projections
Waste and Recycling			
Monthly volume of municipal waste and recyclables (paper, electronics, other)	The Westchester County 2010 report and monthly sanitation spreadsheet (September 2010 – April 2011) provides information on waste and recycling	Recycling: NERC (Northeast Recycling Council) Environmental Benefits Calculator, May 2009, from www.nerc.org. Waste-to-energy and Landfill: EPA Climate Change Waste Page, http://epa.gov/climatechange/wycd/waste/measureghg.html	

Appendix B Priority Projects

Priority projects that have been identified and defined based on the municipal and community-wide GHG inventories, analysis of energy efficiency opportunities, discussions and research of climate action measures, and review of public survey responses. The priority projects present opportunities to reduce costs and GHG emissions, have strong community support, and build on or synergize with initiatives that are currently underway.

Priorities are defined for NWEAC as well as for specific Traction Leader communities. There are many opportunities for synergy among community-scale efforts. The broader partnership established through NWEAC should be used to share information, best practices, and project ideas to enable participating communities to learn from the NWEAC leaders.

Energy efficiency is the single biggest priority for municipal and residential buildings and to reduce fuel use in transportation. Efficiency yields immediate reductions in energy use, costs, and GHG emissions and can provide impressive payback for capital investments. Reducing reliance on fossil fuels also hedges against future increases in the cost of energy.

Public survey results were considered in prioritization process. Although the survey responses reflect a small subset of the population, respondents likely include residents who are more inclined to actively engage in climate action and sustainability initiatives. In some cases, feedback pointed to opportunities to showcase ongoing initiatives for which there is strong support, also indicating an effective approach to implementation. For instance, survey results demonstrate that residents support outreach and education to reduce pesticide and fertilizer use but are less interested in composting. This suggests that composting programs should be presented in terms of their impact on fertilizer use, rather than GHG emissions or waste reduction.

For each priority project, we have presented key information used to inform its selection. The NWEAC Climate Traction Leaders can use this synthesis to guide communications with other NWEAC members, community boards, elected officials, municipal employees, and the general public in order to build support and generate momentum.

Each priority action should be reviewed in light of the implementation strategies presented in Chapter 3, as well as the detailed funding information available on RenewNWEAC.org.

Priority Recommendations for NWEAC

These recommendations can benefit all communities by collecting and consolidating resources or by impacting the entire region.

Transportation

1. **Organize a Transportation Task Force that includes NWEAC communities, Metro North, and the Bee-Line bus service to address and improve public transportation access and increase ridership.**

    a. Evaluate the option to offer preferred parking to carpool and hybrid vehicles at train stations.

    b. Review existing and develop plans for additional shuttle services as needed from alternative parking lots to congested Metro North stations.

Waste

1. **Encourage all NWEAC communities to adopt a comprehensive organic yard waste and leaf management plan.** The Bedford Leave Leaves Alone! Campaign is run by Bedford residents and is an important step toward achieving the goals of the Bedford CAP. This program can be replicated elsewhere. Croton-on-Hudson, Cortlandt and North Salem are taking a leadership role in working with the Westchester County Department of Environmental Facilities to operate an organic yard waste and leaf transfer station in the Town. NWEAC is further developing a strategy to provide a regional comprehensive approach to organic yard waste and as a potential source of revenue.

2. **Organize a Waste and Recycling Task Force** to encourage discussions among NWEAC communities regarding issues and benefits of joining the Refuse Disposal District and taking advantage of the combined infrastructure and potential resources. Capitalizing on existing infrastructure, resources, and events may help improve efficiency and costs at the municipal and county level.

Energy Use

1. **Continue providing resources and guidance to help residents of all NWEAC communities reduce their home energy use.**

    a. Use a central portal such as Renew NWEAC to track progress.

    Information on Renew NWEAC complements guidance provided through the Energize New York. The Renew NWEAC website refers back to Energize New York regarding residential energy efficiency.

    b. Expand the NWEAC home energy efficiency strategy to include and leverage resources offered by local businesses, including hardware stores and energy service providers.

    c. Adopt the Energize New York Program. All NWEAC members should adopt this program. This has been done or is currently underway among NWEAC members including Bedford, Somers, North Salem and Cortlandt.

2. **Organize an NWEAC municipal and commercial working group focused on existing building energy conservation to share experience and resources.** Share information and experience regarding energy performance contracting. Cortlandt, Croton-on-Hudson, and Somers have either implemented or considered energy performance contracting. Consider developing templates for contracts or RFPs.

3. **Organize a Streetlighting and Signals Task Force to collect and review billing and contract revisions, inventories, and retrofit programs.** Streetlighting and traffic signals are major contributors to electricity use and cost in all NWEAC communities. There are likely opportunities to save energy and reduce carbon emissions by replacing existing streetlights with LED fixtures.

Furthermore, most streetlights are owned by the power supply company, and therefore retrofits may be complicated by contractual agreements with NYSEG, NYPA, or Con Edison.

In addition to retrofits, there may be other opportunities to reduce lighting energy use and costs. Adopting outdoor lighting standards can avoid overlighting. Furthermore, most streetlights are owned by the power supply company, and subject to complicated by contractual agreements with NYSEG, NYPA, or Con Edison. These agreements, as well as the lighting inventories, should be reviewed to ensure accuracy.

The task force should work with communities to:

a. Assess the streetlighting and signal inventory, accounts billing, and contracts to ensure they are being charged correctly for the inventory they operate.

b. Review options under existing contracts and consider the benefits of taking ownership of the streetlights and replacing them with LED lighting. An example of the potential for savings, North Salem could replace its 141 streetlights with LEDs. This retrofit would change the average energy use from 134 Watts each to 23-40 Watts each, thus reducing the annual the cost of lighting operation and leasing by $14,300 with a payback of about 4 years.

Dobbs Ferry has initiated a project to replace 300 streetlights, and after a year of testing and a planned capital investment of $104,000, they estimate a 2.2 year payback for incandescent lighting, and a 5 year payback for high pressure sodium lighting. Dobbs Ferry developed the RFP to provide the 300 lights they will use, as well as an additional 700 lights available for purchase by other communities in the region, if they are interested. The task force can initially work with Dobbs Ferry to obtain lighting fixtures through this agreement, if they are still available. If the Dobbs Ferry program is successful, it could be replicated by NWEAC at a scale that will allow more NWEAC communities to participate.

c. Track and review all relevant outdoor lighting projects and policy changes within NWEAC and other communities, to provide one place to collect lessons learned and share experience.

d. Consider outdoor lighting standards or policies to prevent over lighting and lighting pollution and establish standards for energy efficiency.

Community-Specific Recommendations

These recommendations are specific to the issues, impacts, and capabilities of the NWEAC Traction Leader communities.

Cortlandt

1. **Implement recommended energy efficiency measures at municipal buildings and provide the community with information on results.** Cortlandt has strong support from its leadership, staff, and community to continue to pursue energy efficiency projects. Specific energy efficiency projects have been listed by building in the Municipal GHG Inventory Report and in the Town of Cortlandt Energy and GHG Recommendations Report.

   Projects that already reduce energy costs and GHG emissions need to be publicized. More than half of the community survey responses identified reducing energy costs and municipal GHG building emissions as a high priority.

   Cortlandt should also continue to pursue energy performance contract options, working with elected officials, staff, and contractors to devise a contract that is agreeable to all parties. The experience will inform future actions within Cortlandt and other NWEAC communities.

2. **Invest in additional renewable energy production.** The 6kW Youth Center PV saved approximately $1,452 in electricity costs and 2.76 metric tons of carbon dioxide equivalent (MTCO2e) in 2010. Financial incentives are available to defray some of the up-front capital costs.

   More than half of public survey respondents consider increasing use of renewable energy sources to be a high priority. Solar energy received more community support than wind or biomass.

3. **Continue the municipal green fleet program and demonstrate progress to the community.** Energy use by Cortlandt's government fleet is a major contributor to Cortlandt's GHG emissions and costs. Continuing to support and expand efforts to reduce transportation fuel use while also converting to renewable or more sustainable energy sources will reduce costs and GHG emissions.

   Support is generally strong for this measure as about half of community survey respondents indicated that replacing the municipal fleet with hybrid, electric, or alternatively fueled vehicles was a high priority.

4. **Offer preferred parking to carpool and hybrid vehicles at train stations**. Although support for preferred parking at train stations is evenly split between high and low priority, the community may respond well to this measure if Cortlandt provides priority and / or reduced price parking spaces as an incentive to carpoolers, and those investing in hybrid vehicles.

5. **Encourage use of mass transit, and plan new or expanded walking and cycling routes that connect residential areas with business districts, downtown, and commercial areas.** The Cortlandt community shows strong support for this measure. Two-thirds of survey respondents marked it as a high priority. One respondent emphasized that bicycle lanes need to be installed to improve safety for current cyclists.

Cortlandt can refer to Peekskill's Complete Streets initiatives for experience and ideas to improve pedestrian and bicycle programs.

6. **Work with other NWEAC communities to strengthen their recycling and composting efforts.** The Green Team and Sustainable Cortlandt Citizen's Committee, working in conjunction with Westchester recycling programs, can help expand its effective and popular recycling and reuse programs to other NWEAC communities.

   Cortlandt can also encourage other NWEAC communities to get involved in the regional comprehensive approach to organic yard waste being developed in collaboration with Croton-on-Hudson and the Westchester County Department of Environmental Facilities. Recognizing this solution as a potential source of revenue may spur further interest in the exploring other regional waste management solutions.

7. **Advertise the community composting program as a step toward reducing fertilizer use.** Over half of Cortlandt survey responses indicated reducing pesticide and fertilizer use through volunteer and education programs as a high priority. Support for the organic yard waste and leaf transfer station may build if the community recognizes it as a step toward achieving this goal.

Croton-on-Hudson

1. **Implement recommended energy efficiency measures at municipal buildings and provide the community with information on results.** Croton-on-Hudson has strong support from its leadership, staff, and community to continue to pursue energy efficiency projects. Support and knowledge from an experienced volunteer Sustainability Committee is a key asset of the village.

   Specific energy efficiency projects have been listed by building in the Village of Croton-on-Hudson Energy and GHG Recommendations Report, Croton-on-Hudson Firehouse Energy Audit, and Croton-on-Hudson Water and Wastewater Energy Assessment.

   Projects that already reduce energy costs and GHG emissions need to be publicized. More than half of the community survey responses identified reducing energy costs and municipal GHG building emissions as a high priority.

   Croton-on-Hudson should also continue to pursue energy performance contract options, working with elected officials, staff, and contractors to devise a contract that is agreeable to all parties. The experience will inform future actions within Cortlandt and other NWEAC communities.

2. **Contact Con Edison and conduct further investigation of the Grand Street Firehouse electricity use and billing to correct unaccountable electricity usage and cost identified in the energy audit.**

3. **Continue the municipal green fleet program and demonstrate progress to the community.** Support is generally strong for this measure as about half of community survey respondents indicated that replacing

the municipal fleet with hybrid, electric, or alternatively fueled vehicles was a high priority.

4. **Offer preferred parking to carpool and hybrid vehicles at train station parking lots.** Although support for preferred parking at train stations is evenly split between high and low priority, the community may respond well to this measure if Croton-on-Hudson provides priority and / or reduced price parking spaces as an incentive to carpoolers, and those investing in hybrid vehicles.

5. **Encourage use of mass transit, and plan new or expanded walking and cycling routes that connect residential areas with business districts, downtown, and commercial areas.** The Croton-on-Hudson community shows support for this measure. Over half of survey respondents marked it as a high priority. Croton-on-Hudson can refer to Peekskill's Complete Streets initiatives for experience and ideas to improve pedestrian and bicycle programs.

6. **Work with other NWEAC communities to strengthen their composting efforts.** Croton-on-Hudson can encourage other NWEAC communities to get involved in the regional comprehensive approach to organic yard waste being developed in collaboration with Croton-on-Hudson and the Westchester County Department of Environmental Facilities. Recognizing this solution as a potential source of revenue may spur further interest in the exploring other regional waste management solutions.

7. **Expand the water savings educational program for residential and commercial users, and work with large users to reduce summer water use.** Investigations of Croton-on-Hudson's water facilities identified the need to reduce water use during the summer, which will consequently reduce energy use, costs, and GHG emissions.

   Expanding and promoting existing programs, such as the rain barrel program could increase participation and water savings. Efforts should focus on the golf course as a major water user.

8. **Continue to investigate and implement water and energy efficiency opportunities in the water distribution facilities, including review of energy demand usage and cost metrics identified in the energy assessment.**

North Salem

1. **Implement recommended energy efficiency measures at municipal buildings and provide the community with information on reduced energy costs and emissions.** North Salem has strong support from its leadership, the community, its Energy Committee to pursue energy efficiency projects. Specific energy efficiency projects have been listed by building in the Municipal GHG Inventory Report and in the Town of North Salem Energy and GHG Recommendations Report.

   Projects that reduce energy costs and GHG emissions need to be publicized. More than half of the community survey responses identified reducing energy costs as a high priority.

North Salem can use its Energy Committee and the support and experience of other NWEAC communities such as Cortlandt, Somers, and Croton-on-Hudson to coordinate NYPA and NYSEG funding and energy efficiency contracts.

2. **Replace existing streetlights with more efficient lamps.** Streetlighting and signals in North Salem used 149,113 kWh of energy in 2010 (more electricity than all other building operations) resulting in 48 MTCO2e. There are likely opportunities to save energy and reduce carbon emissions through the replacement of existing streetlights with LED fixtures. Most mercury vapor or high pressure sodium lights average 50-250 Watts per lamp. At a cost of less than $400 each, 40-Watt LED streetlights would significantly reduce the amount of energy required and used. A review of NYSEG bills for the Croton Falls and Purdys Light Districts provides data to estimate the potential savings. By taking ownership of the streetlights and replacing them with LED lighting, North Salem could reduce operating costs by a factor of ten in these lighting districts. Replacing the North Salem's 141 streetlights (average wattage of 134 Watts) with comparable LED lights at 23-40 Watts each would reduce annual the cost of lighting operation and leasing by $14,300, with a payback of about 4 years.

3. **Implement and promote residential and commercial education and energy auditing programs.** Over half of survey responses indicated residential and commercial energy costs as high priorities. Sources of funding should also be included in education program, as slightly less than half of responses indicated strong support for education on the availability of federal and state funding for private energy efficiency projects.

   North Salem can use its Energy Committee and the support and experience of other NWEAC communities such as Bedford and Somers to establish and promote educational programs for residents.

4. **Promote energy efficiency, equipment replacement, and biodiesel options to reduce heating oil use in municipal, commercial, and residential buildings.** The average energy use and emissions per household in North Salem are higher than the rest of Westchester County. This is a result of the prevalence of fuel oil as a heating source in the older and larger housing units in town. Programs to reduce heating oil use or encourage biodiesel use will reduce these impacts. This will also help defray increased residential heating costs resulting from rises in the price of fuel oil.

5. **Offer preferred parking to carpool and hybrid vehicles at train stations.** Transportation is the largest source of GHG emissions in North Salem, and it is likely that the majority of these emissions result from non-residents travelling through North Salem or to North Salem train stations to use Metro North services.

   Although support for preferred parking at train stations is evenly split between high and low priority, the community may respond well to this measure if North Salem provides priority and / or reduced price parking spaces as an incentive to carpoolers, and those investing in hybrid vehicles.

One survey respondent commented on the number of vehicles from Connecticut that park at the Goldens Bridge lot. North Salem can encourage carpooling by hanging signs along transportation routes from Connecticut to the Purdys, Croton Falls, and Goldens Bridge Metro North stop.

North Salem can also improve parking and reduce VMT in town by identifying suitable park-and-ride lots and working with Bee-Line to offer shuttle services between alternative lots in the county and the Golden Bridges station.

6. **Implement community-wide composting and advertise it as a step toward reducing fertilizer use.** Composting in North Salem can reduce emissions from waste collection and decrease fertilizer use. Community support for on-site composting was evenly split between low and high priority. However over half of survey responses indicated reducing pesticide and fertilizer use through volunteer and education programs as a high priority. Thus composting initiatives may receive more community support if advertised a step toward reducing use of fertilizers.

   North Salem can refer to Croton-on-Hudson's compost bin program and Peekskill's composting messaging for recommendations in implementing programs.

Peekskill

1. **Implement recommended energy efficiency measures at municipal buildings and provide the community with information on reduced energy costs and emissions.** The community shows strong support for pursue energy efficiency projects which should be publicized when implemented. Specific energy efficiency projects have been listed by building in the Municipal GHG Inventory Report and the City of Peekskill Energy and GHG Recommendations Report. Energy efficiency measures will reduce energy use and cost and associated GHG emissions.

   Peekskill can refer to other NWEAC communities such as Cortlandt and Croton-on-Hudson to coordinate NYPA funding and energy efficiency contracts.

2. **Replace existing streetlights with more efficient lamps.** Street lighting and traffic signals are major users of electricity in the city. Street and traffic lights used 4 million kWh of energy in 2010, resulting in 1,345 MTCO2e.The city has replaced most of the 780 traffic signals with LEDs, which have a total power rating of 8.4 kW. The city operates 1,352 streetlights, with average Wattage ratings of 212 Watts each, or 286 kW total. Replacing the most inefficient lighting with LED lamps would provide energy and cost savings with a 3- to 5-year payback and reduce carbon emissions.

3. **Reduce municipal heating oil use.** The city should concentrate on efficiency with proper insulation of buildings and heating systems and programmable

thermostats, and consider converting fuel oil systems to natural gas where available.

Replacing heating oil with B20 biodiesel (20% biodiesel) would result in a 15%reduction in GHG emissions with minimal changes to cost or function.

In 2010, over 40,000 gallons of fuel oil were used to heat Peekskill's buildings, resulting in 426 MTCO2e, or about half of CO2e emissions from municipal building use. The City paid favorable rates that are lower than the average rates of the other NWEAC municipalities, however, oil costs continue to climb, and fuel oil produces more GHG emissions and other pollutants than other energy sources.

4. **Reduce employee and municipal VMT through a flexible work program and encouraging use mass transit, walking, biking, and / or carpooling.** With an average employee commute of 27 miles, competition and costs for parking, and increasing gasoline prices, Peekskill's employees would likely welcome solutions to improve their commute to and from work.

   The employee survey asks respondents to indicate their preferred methods for reducing employee VMT. Responses provided indicate that strongest support for telecommuting and encouraging use of mass transit, walking, or biking.

5. **Implement a municipal green fleet program.** Peekskill's government fleet energy use is a major contributor to total municipal GHG emissions and costs. The city purchased over 178,000 gallons of gasoline and diesel fuel for City pumps, resulting in 1,736 MTCO2e. Increasing fuel efficiency of the government fleet to reduce transportation fuel use or converting to renewable or more sustainable energy sources will reduce costs and or GHG emissions. Replacing diesel fuel with B20 biodiesel (20% biodiesel) would result in a 15% reduction in GHG emissions with minimal changes to cost or function.

   Half of the community survey respondents indicated replacing municipal vehicles with hybrid, electric, or alternatively fueled vehicle as a high priority. Only one response marked this measures as a low priority.

   Peekskill can refer to other NWEAC communities such as Cortlandt and Croton-on-Hudson to establish a green fleet program.

6. **Offer preferred parking to carpool and hybrid vehicles at city parking lots and meters.** Peekskill's 2008 Parking Survey noted that while Peekskill is equipped with adequate parking spaces, three-fourths of respondents believe there is not enough parking available downtown, and that half of employer subsidize employee parking costs. This cost of parking and competition for prime parking spaces could be leverages to provide incentives for sustainable practices. Peekskill's Parking Commission should review and consider options to implement ideas.

7. **Provide guidance on improving pedestrian and cycling infrastructure to other NWEAC communities based in the *Complete Streets program*.** *Complete Streets* provides an excellent model and ideas for other NWEAC municipal in the development of pedestrian and bicycle friendly

communities. Peekskill should continue this program, and provide guidance to other NWEAC communities.

Pound Ridge

1. **Implement recommended energy efficiency measures at municipal buildings and provide the community with information on reduced energy costs and emissions.** The community shows strong support for pursue energy efficiency projects which should be publicized when implemented. Specific energy efficiency projects have been listed by building in the Municipal GHG Inventory Report and in the Town of Pound Ridge Energy and GHG Recommendations Report. Energy efficiency measures will reduce energy use and cost and associated GHG emissions.

   Pound Ridge can refer to other NWEAC communities such as Cortlandt, Somers, and Croton-on-Hudson to coordinate NYPA funding and energy efficiency contracts.

2. **Implement and promote residential and commercial education and energy auditing programs.** Residential energy use is Pound Ridge's biggest source of community GHG emissions. Additionally about two-thirds of survey responses indicate residential and commercial energy costs as a high priority.

   Sources of funding should also be included in education programs, as slightly over half of responses indicated strong support for education on the availability of federal and state funding for private energy efficiency projects. Pound Ridge can refer to other NWEAC communities such as Bedford and Somers to establish and promote educational programs for residents.

3. **Promote energy efficiency, equipment replacement, and biodiesel options to reduce heating oil use in municipal, commercial, and residential buildings.** The average energy use per household and residential GHG emissions in Pound Ridge are higher than the rest of Westchester County. This is a result of the prevalence of fuel oil as a heating source in the older and larger housing units in town. Programs to reduce heating oil use or encourage biodiesel use will reduce these impacts. This will also help defray increased residential heating costs resulting from rises in the price of fuel oil.

4. **Continue to support and track waste and recycling programs, and evaluate options for sustainable waste management.** Pound Ridge operates a recycling facility where all residents can bring most recyclable materials. The operation of this facility, in addition to curbside collection and the removal of yard waste from the landfill waste stream, results in an estimated 44% recycling rate in Pound Ridge. Since curbside waste and recycling pick- up is contracted by residents and businesses individually, it is likely that the practice is inefficient, and data collection on recycling rates is difficult to verify. Pound Ridge can consider waste / recycling hauler permitting requirements to track data on volumes and responsible handling. Future consideration of providing waste and recycling services to residents or participation in Westchester County's Refuse Disposal District should include consideration of the most sustainable options.

Somers

1. **Continue to implement energy efficiency measures at municipal buildings and provide the community with information on reduced energy costs and emissions.** Somers has strong support from its leadership, staff, and community to continue to pursue energy efficiency projects.

   Specific upgrades to lighting, HVAC systems, and building envelop in Somers municipal buildings are listed by building in the Town of Somers Energy and GHG Recommendations Report. The NYSEG Lighting Upgrade Program implemented in 2011 will save the Town over 5,000 per year in electricity costs and about 24 MT CO2e. Additional energy efficiency measures will further reduce energy use and cost and associated GHG emissions.

   The Town of Somers also received a report from Schneider Electric for Energy Performance Contracting. Such an arrangement would provide guaranteed savings from large and small building upgrades, without large capital costs. While it is a significant commitment that should be developed with facility, accounting, and the Town board review, it is a promising opportunity to complete small and large projects with a guaranteed return on investment. Somers should work with Cortlandt staff to access their experiences with energy performance contracting.

2. **Continue to invest in renewable energy production such as the 50kW System at Somers High School.** The 50kW Somers High School PV system installed in October 2011 saves approximately $10,000 per year in electricity costs and 45 MTCO2e in GHG emissions. The system was installed with a $275K grant from NYSERDA. Somers has provided an excellent learning opportunity for its students and for other NWEAC communities and can provide experience and lessons learned to install additional systems in Somers or other Westchester communities.

   The Somers Energy Advisory Panel is a valuable resource and should continue to design, promote, and implement energy efficiency projects in Somers, as well as provide support and experience to other NWEAC communities.

3. **Implement a municipal green fleet program.** Government fleet energy use accounts for 60% of municipal GHG emissions, and the majority of these emissions come from the use of diesel vehicles. Continuing to support and expand efforts to reduce transportation fuel use, or converting to renewable or more sustainable energy sources (such as biodiesel) will reduce costs and or GHG emissions.

4. **Continue to implement and promote residential and commercial education and energy auditing programs.** Residential and commercial building energy use represent the majority of GHG emissions in Somers. Continue to educate and inform the residents and businesses of Somers through the activities of the Somers Energy Advisory Panel and through websites such as www.greensomers.org. Some of the activities include:

   - Somers Sustainability Library Series

- Somers Energy Expo
- September 2011 Sustainability Fair
- Compact Fluorescent Bulb Giveaways

Through coordination with other communities in NWEAC, Somers can expand the impacts of these and other programs. Though difficult to quantify, such programs can have a large effect on energy use, total GHG emissions, and quality of life.

5. **Promote energy efficiency, equipment replacement, and biodiesel options to reduce heating oil use in municipal, commercial, and residential buildings.** The Town of Somers uses #2 fuel oil for building heating systems. In 2009 the Town used 2,639 mmBtu, or 20,617 gallons of fuel oil. Replacing this fuel oil with B20 Biodiesel (20% Biodiesel) would result in an annual reduction of 30 MTCO2e with minimal changes to cost or function. Consideration should also be given to the use of natural gas, if it is available, because it is lower in cost and GHG emissions per Btu.

   The average energy use per household and residential GHG emissions in Somers are higher than the rest of Westchester County. This is a result of the prevalence of fuel oil as a heating source in the older and larger housing units in town. Programs to reduce heating oil use or encourage biodiesel use will reduce these impacts. This will also help defray increased residential heating costs resulting from rises in the price of fuel oil.

6. **Continue to support education about household composting programs.** Through www.GreenSomers.org, Somers provides information to residents on the value of household composting and a source for subsidized compost bins from Hilltop Hanover Farm and Environmental Center. Since waste is collected by individual contractors in Somers, households can save money if they are charged by weight or volume.

7. **Continue to support and track waste and recycling programs, and evaluate options for sustainable waste management.** Since curbside waste and recycling pick-up is contracted by residents and businesses individually, it is likely that the practice is inefficient, and data collection on recycling rates is difficult to verify.

   Somers can consider waste and recycling hauler permitting requirements to track data on volumes and responsible handling. Future consideration of providing waste and recycling services to residents or participation in Westchester County's Refuse Disposal District should include consideration of the most sustainable options.

8. **Link climate action and sustainability initiatives.** Merge these two initiatives to form a Climate Action / Sustainability Team.

Appendix C Public Survey Results

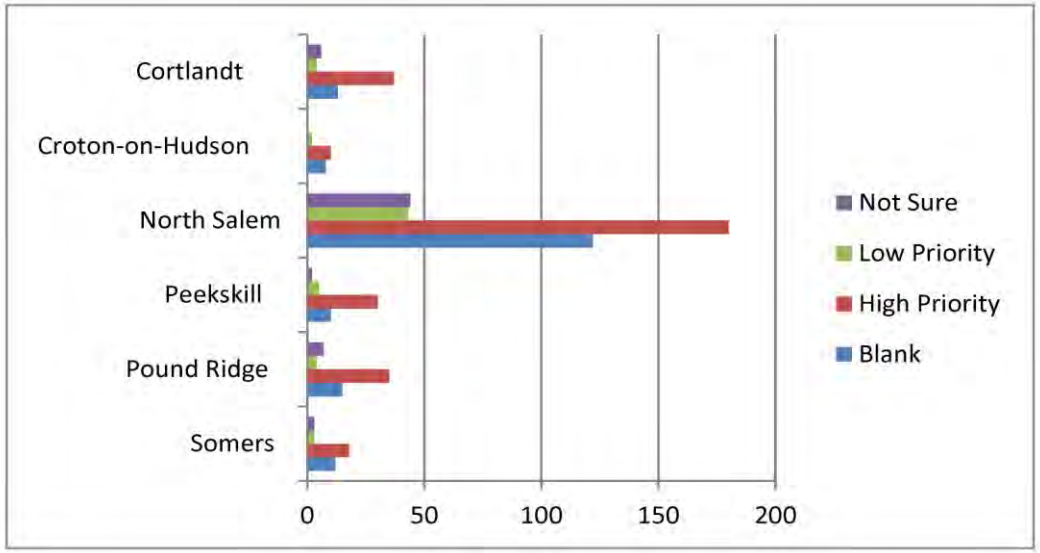
Public surveys were made available through Survey Monkey as part of the development of the NWEAC Traction Leaders GHG inventories and CAP. The surveys included:

1. The Municipal Employee Survey to identify strategies to improve sustainability of municipal operations.

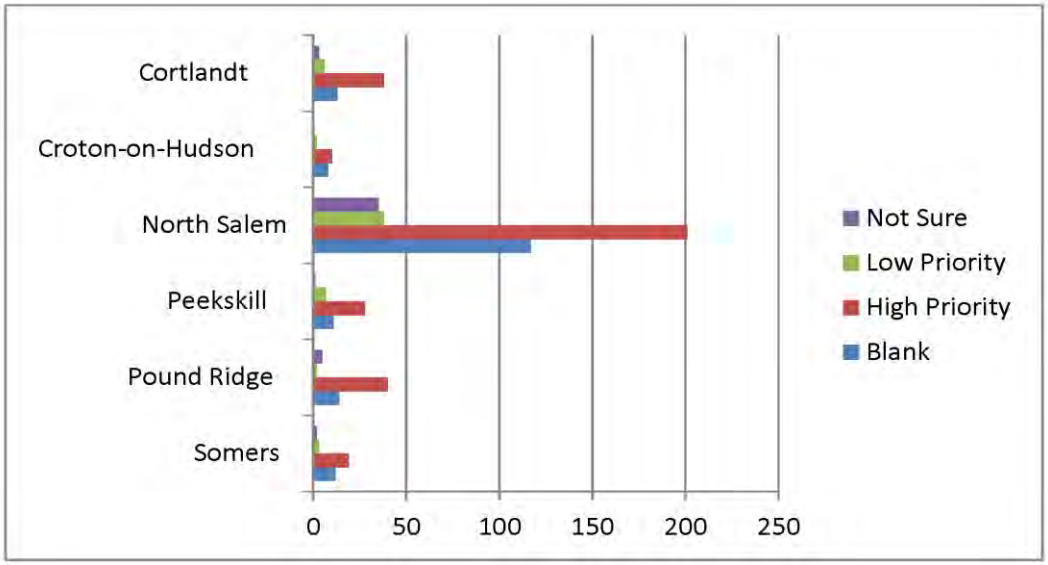
2. The Community Surveys to indicate priorities for community-wide sustainability and climate action planning, including some improvements to municipal operations. The community surveys included a version for business owners and a version for general residents.

The results of the residential community surveys are provided below. Raw data of results from each survey are provided in separate Excel spreadsheets.

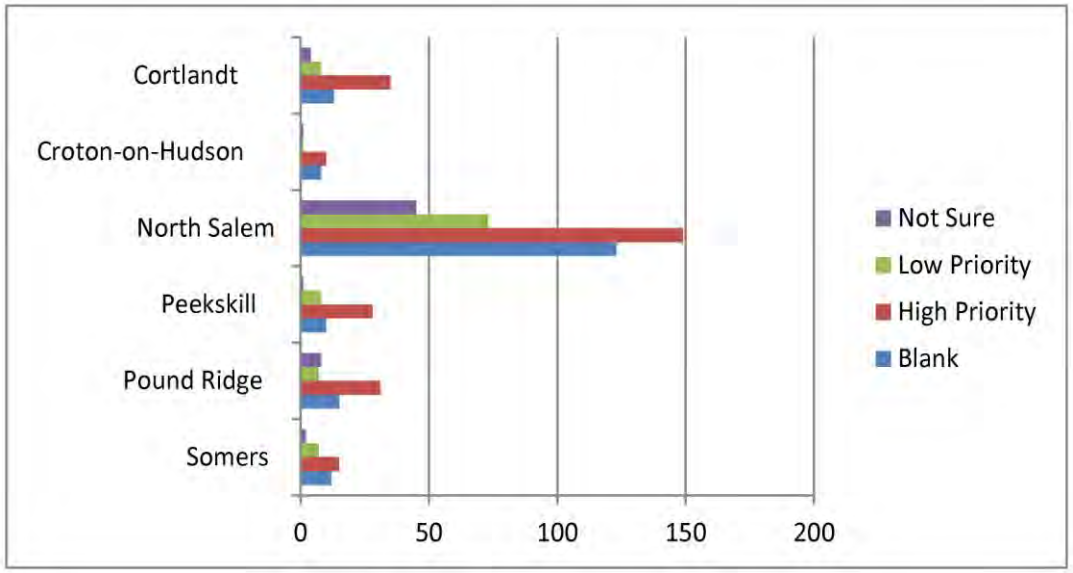
Reduce energy costs in municipal buildings.



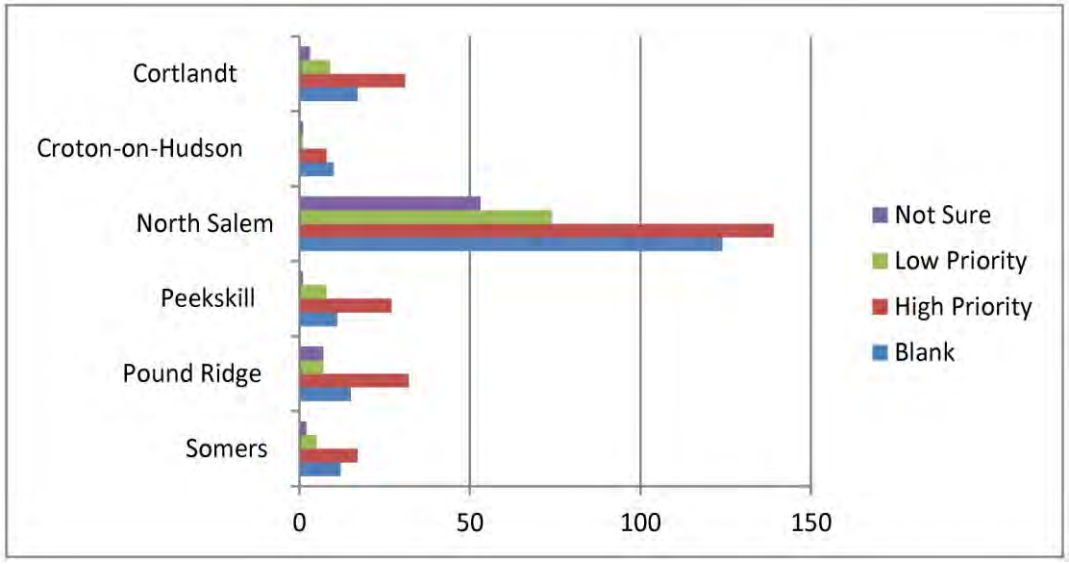
Reduce energy costs in residential and commercial buildings.



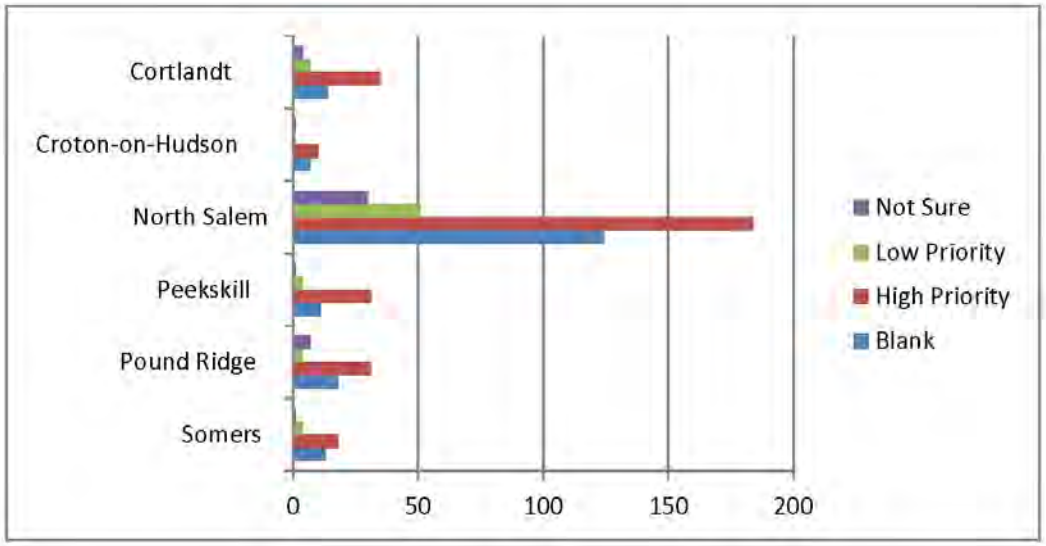
Reduce emissions from municipal buildings.



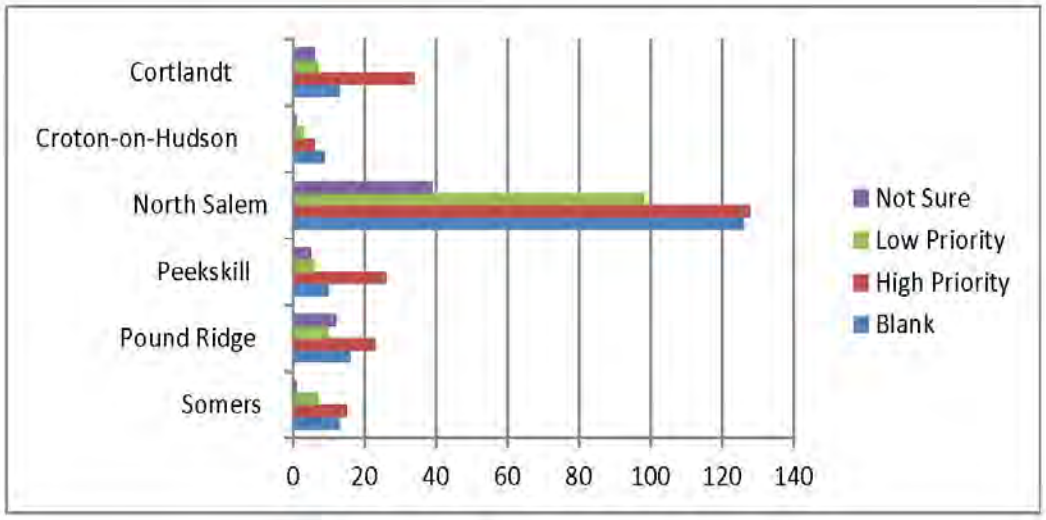
Reduce emissions from residential and commercial buildings.



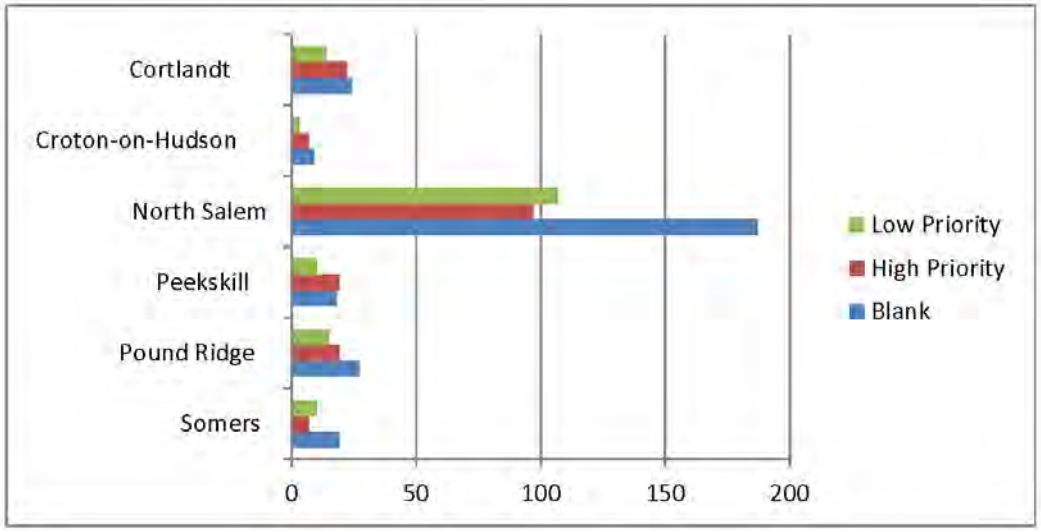
Increase local renewable energy sources.



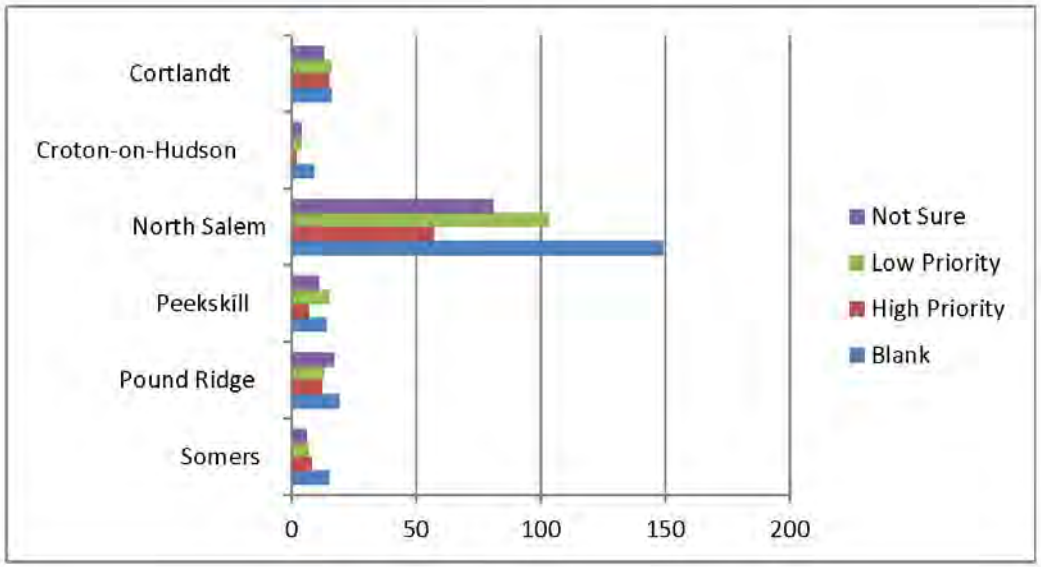
Subsidize / install solar energy.



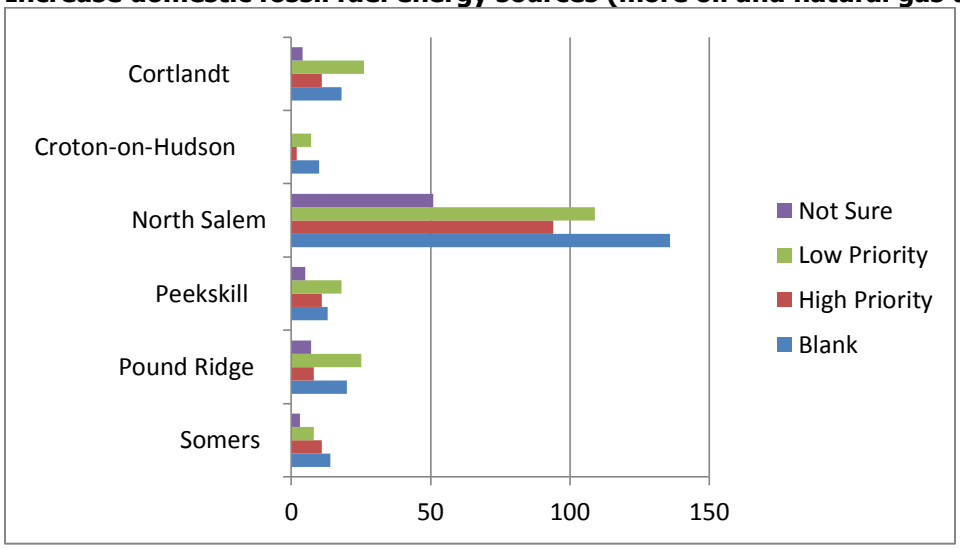
Subsidize / install wind energy.



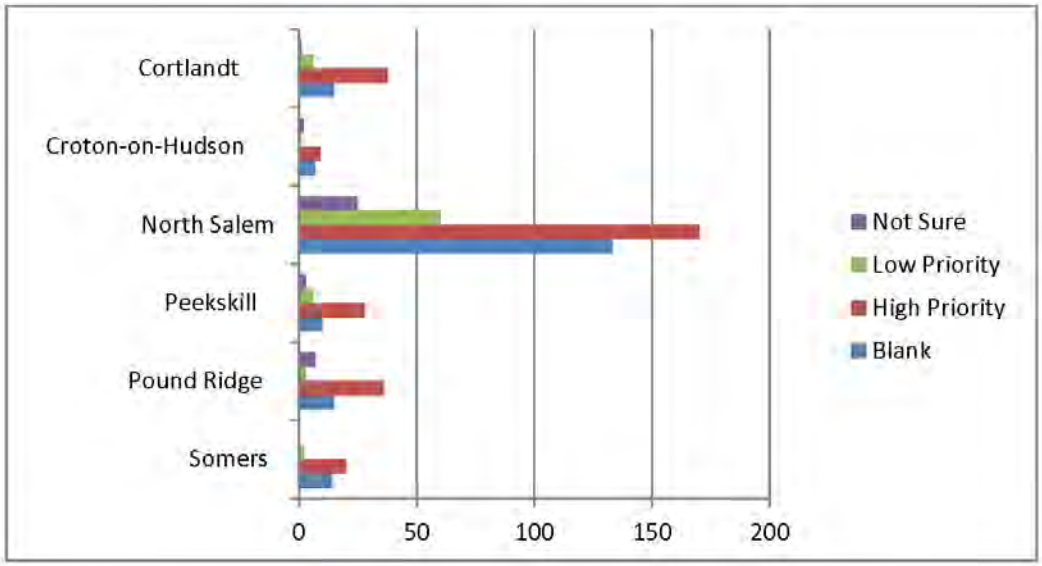
Subsidize / install biomass fuels.



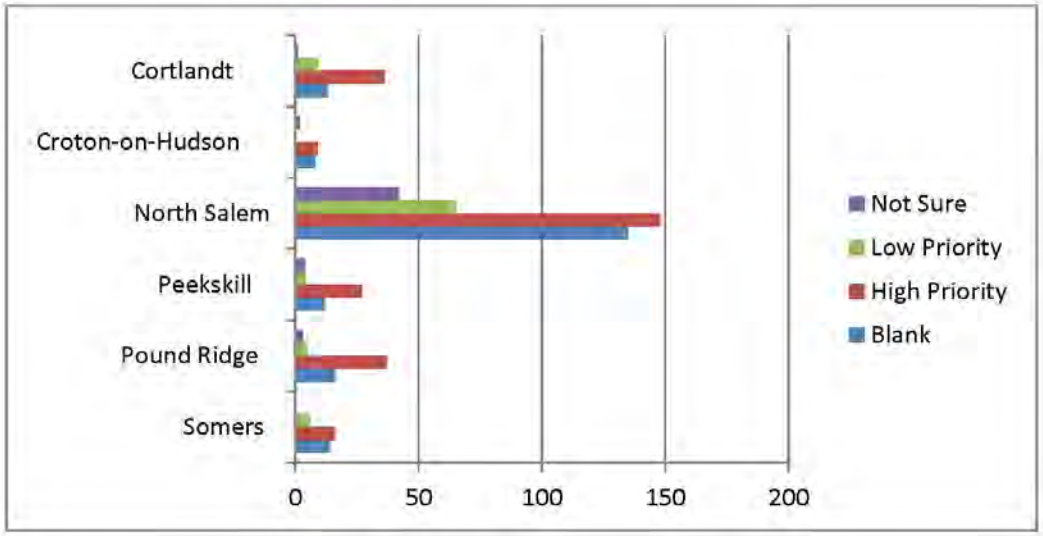
Increase domestic fossil fuel energy sources (more oil and natural gas drilling).



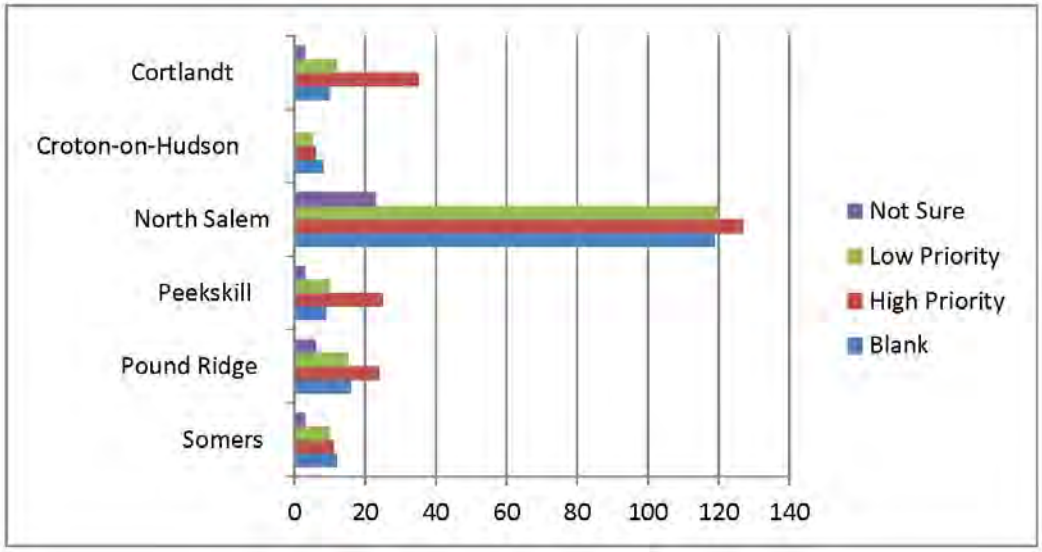
Educate the community on state and federal funding for private energy efficiency projects.



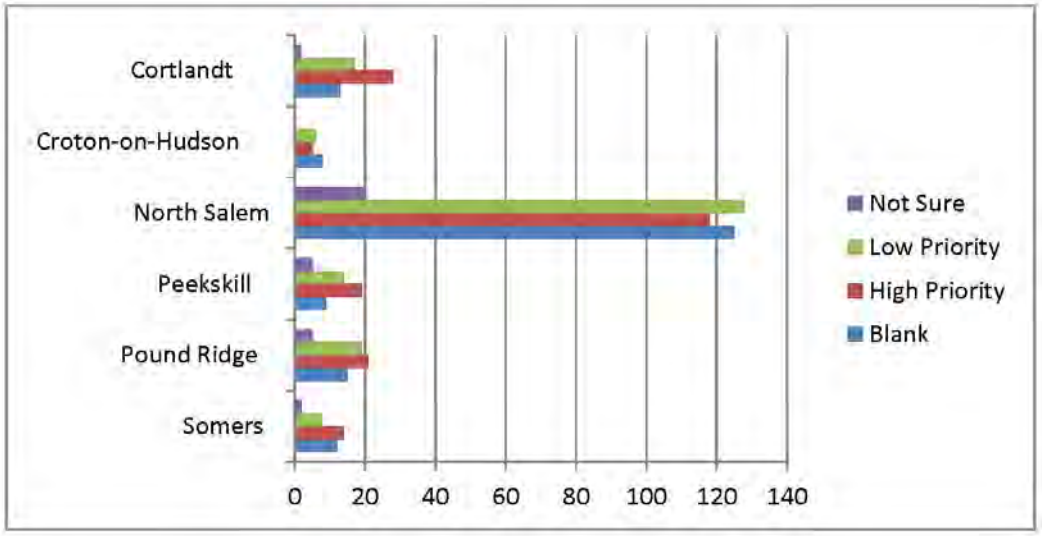
Establish new building energy efficiency requirements (building or zoning codes).



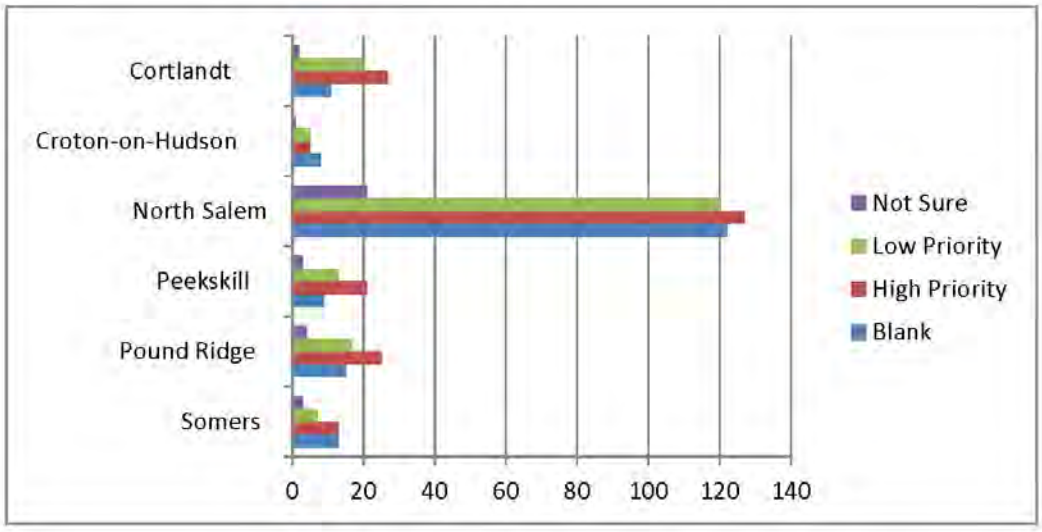
Increase public transportation (bus and train frequency and routes).



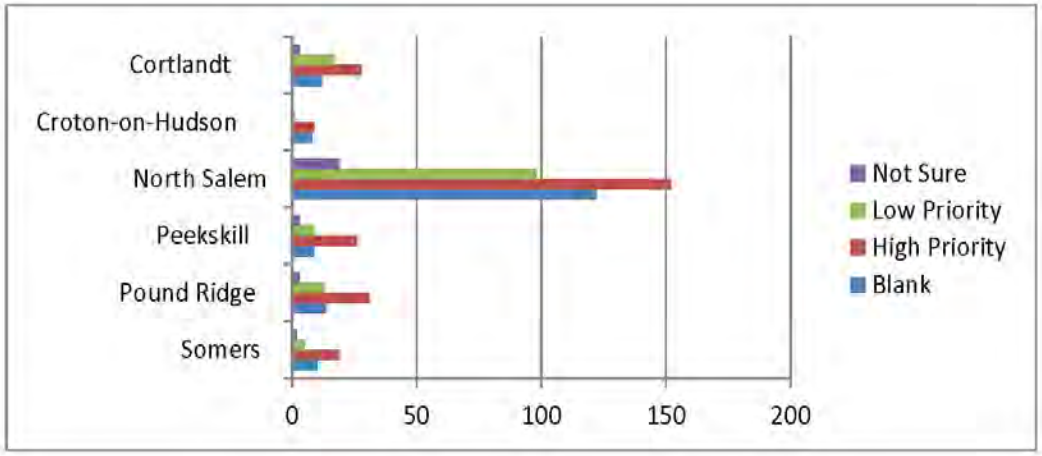
Promote carpool and van pool programs.



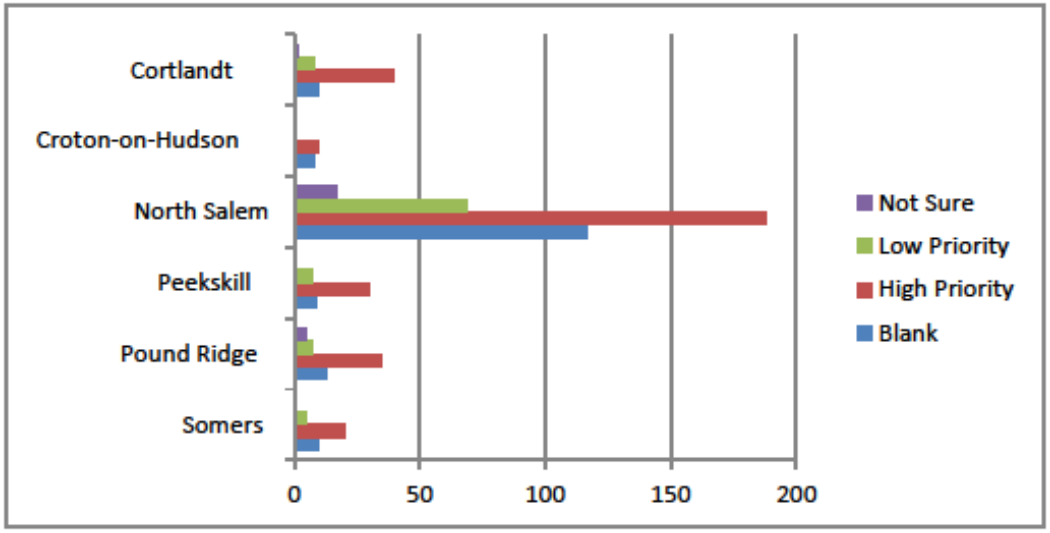
Provide preferred parking spaces for carpools at train stations.



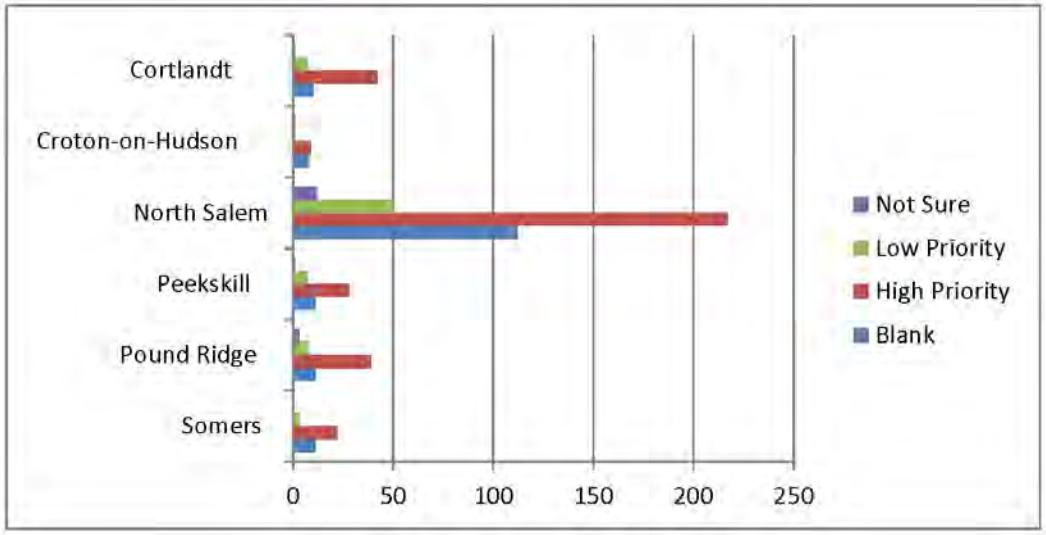
Replace municipal vehicles with hybrid, electric, or alternative fuel vehicles.



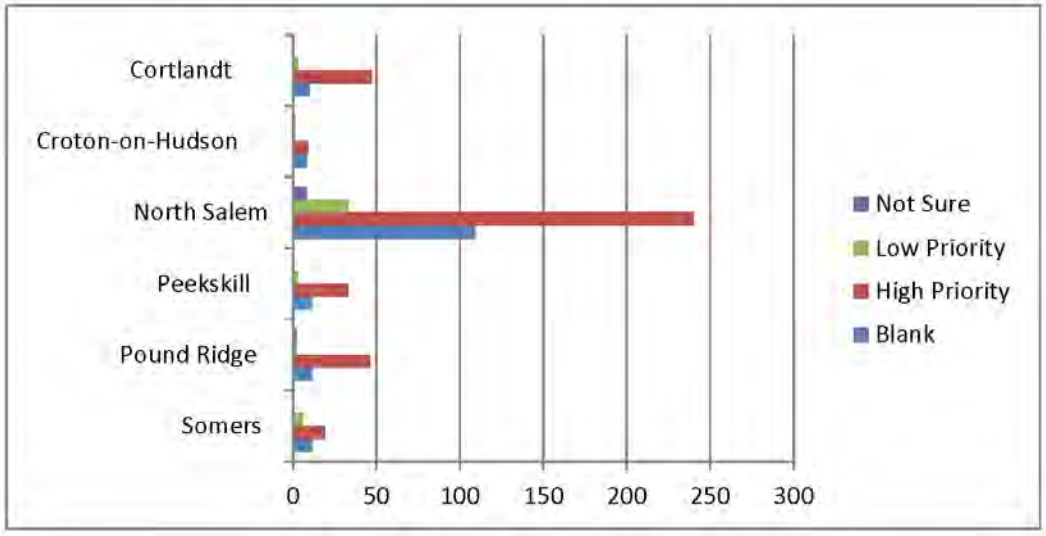
Encourage use of mass transit, walking or riding bicycles when possible.



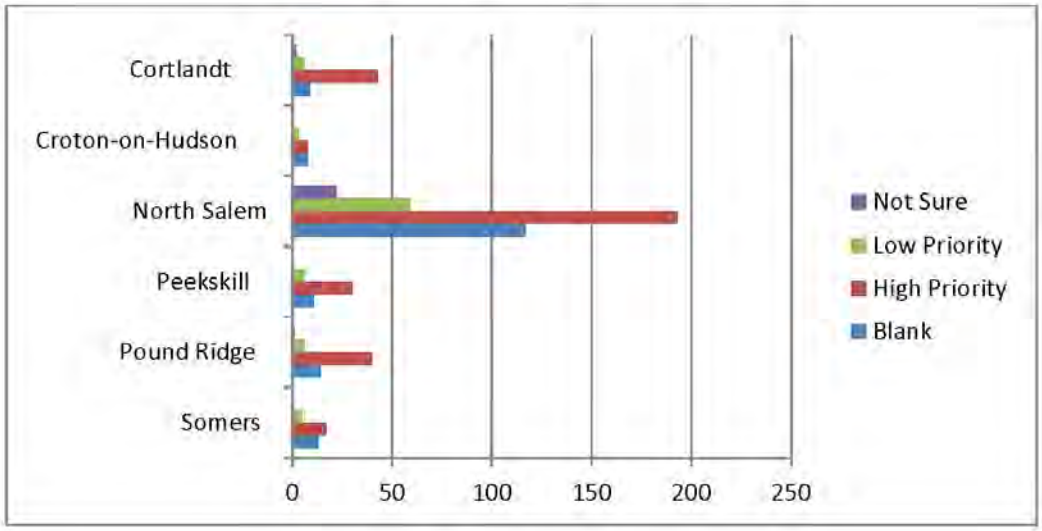
Protect farmland and agricultural spaces.



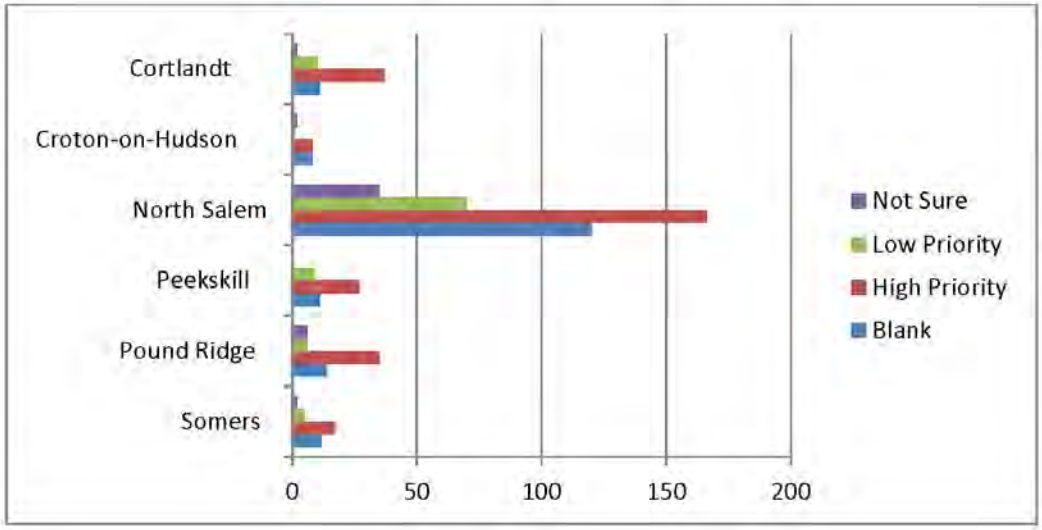
Protect forests and urban tree populations.



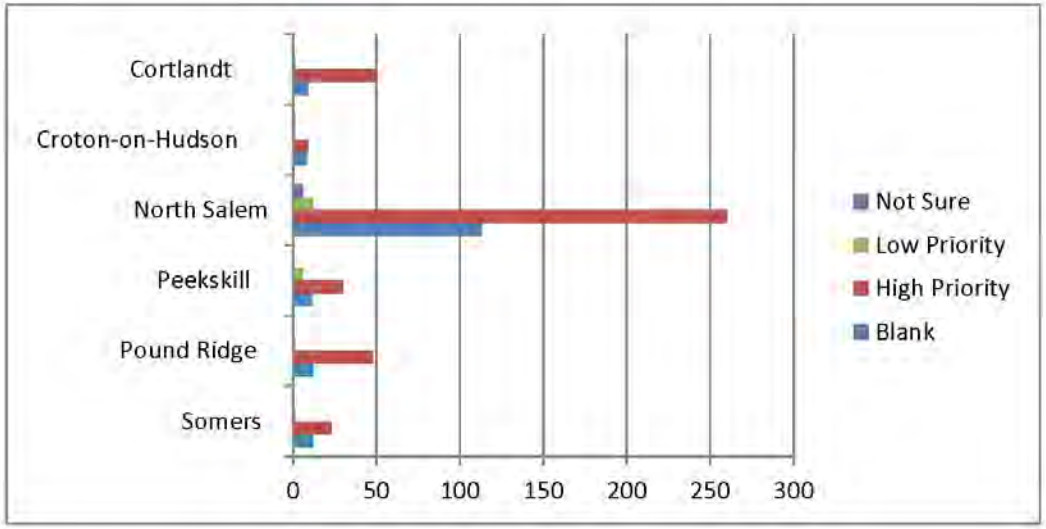
Establish sustainable growth as part of comprehensive community plans.



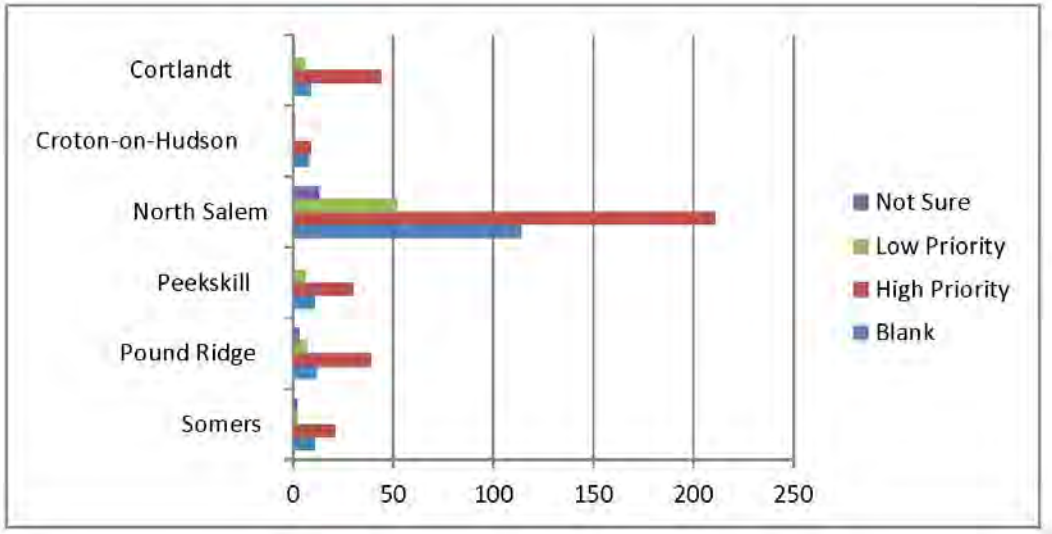
Establish sustainable growth in zoning laws.



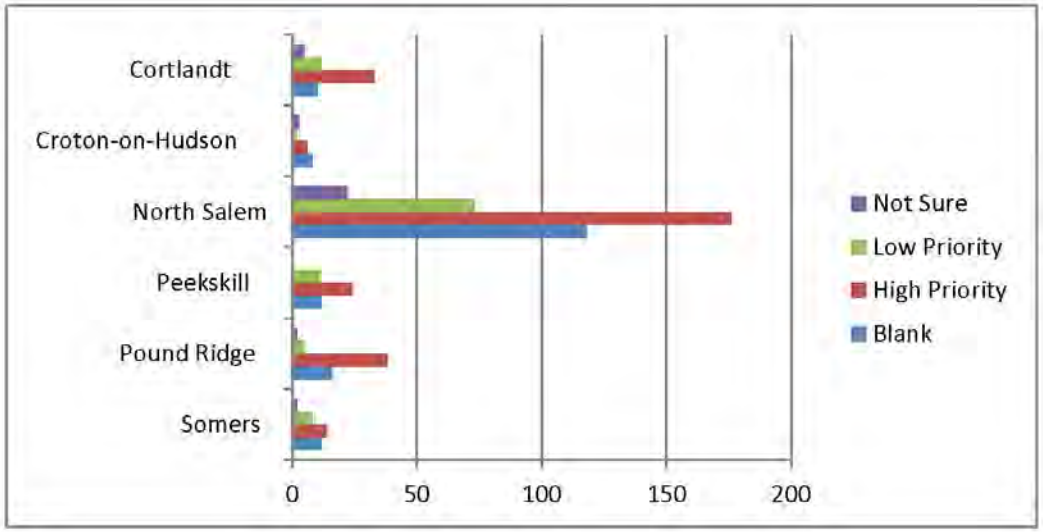
Protect groundwater quality.



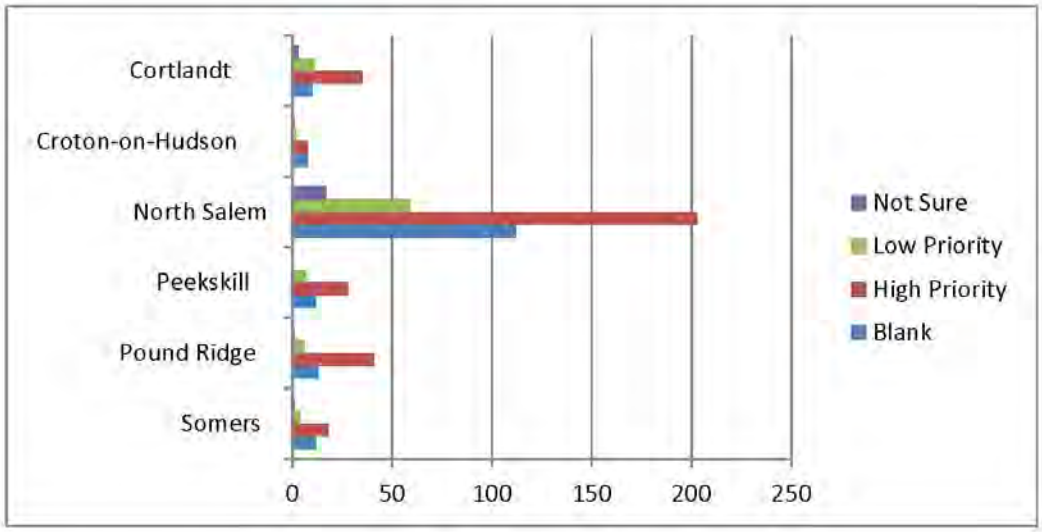
Improve stormwater retention and runoff.



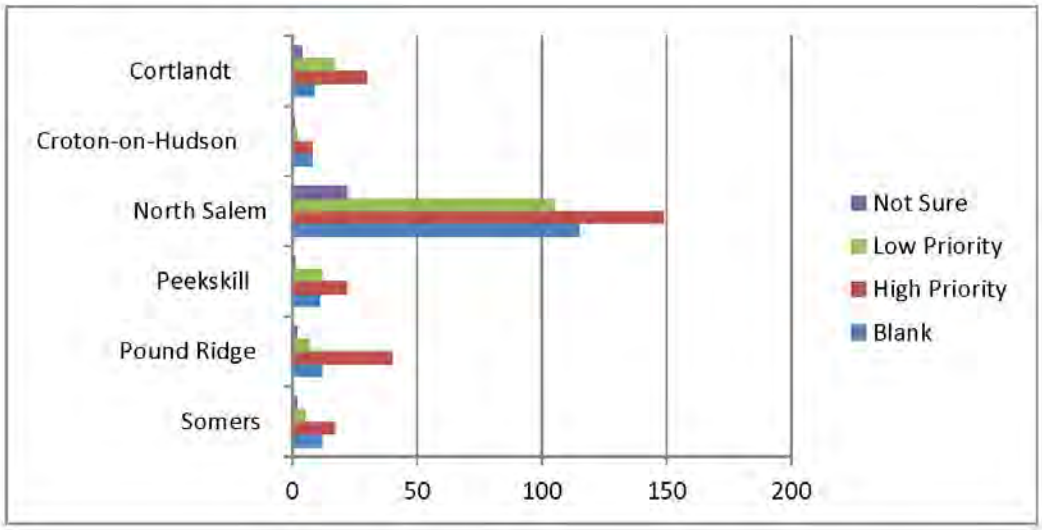
Create uses for storm and greywater.



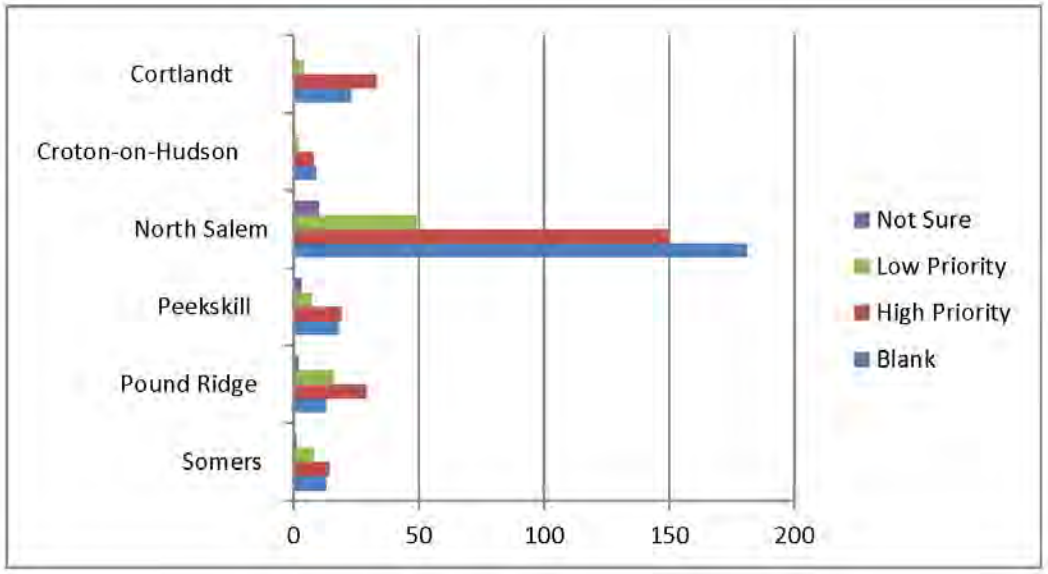
Reduce pesticide and fertilizer use through volunteer and educational programs.



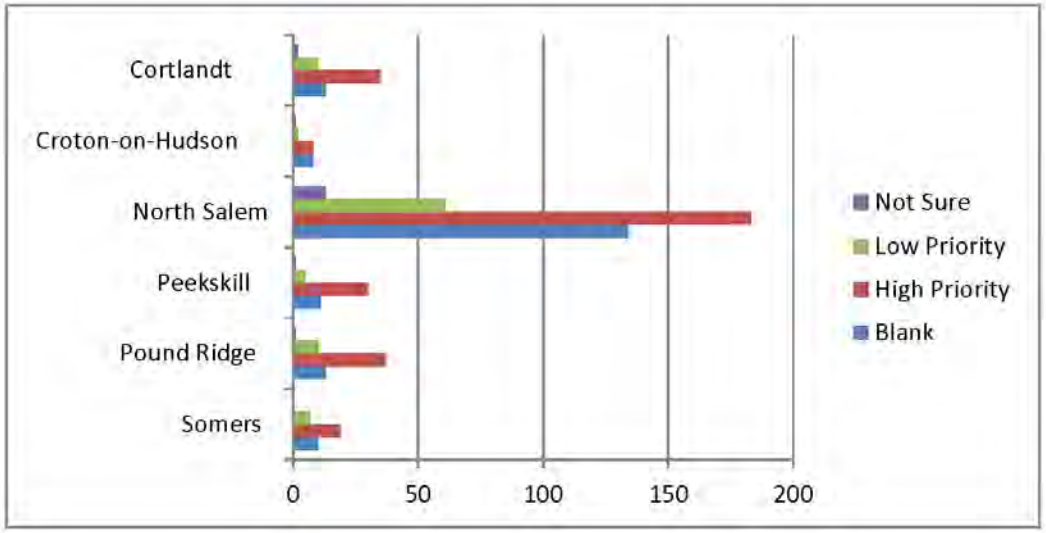
Limit pesticide and fertilizer use by law.



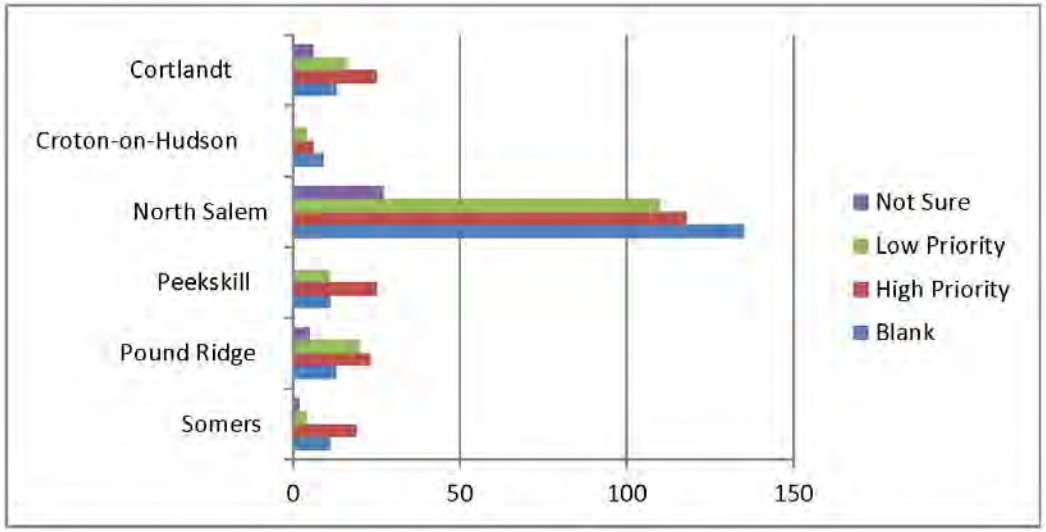
Implement municipal garbage and recycling collection if not already implemented.



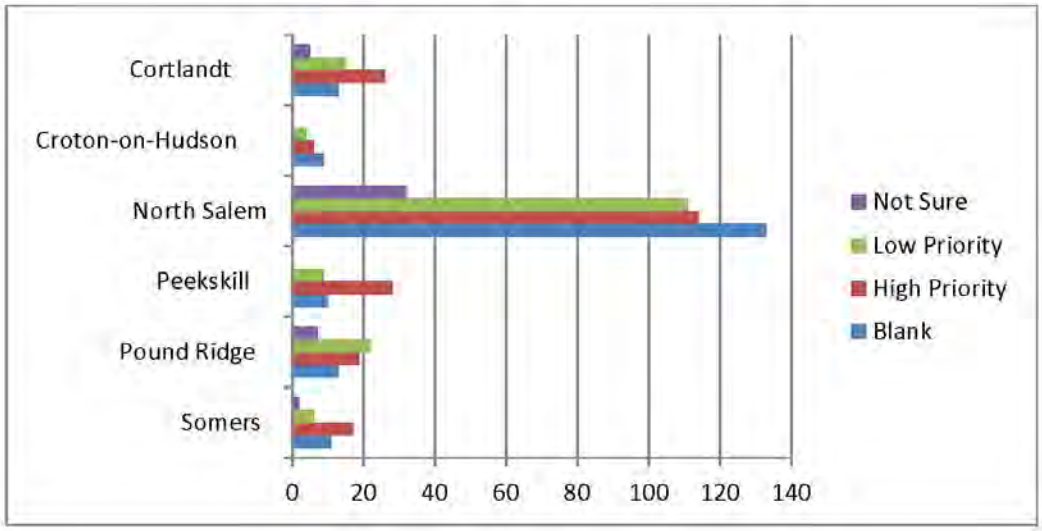
Expand existing recycling programs.



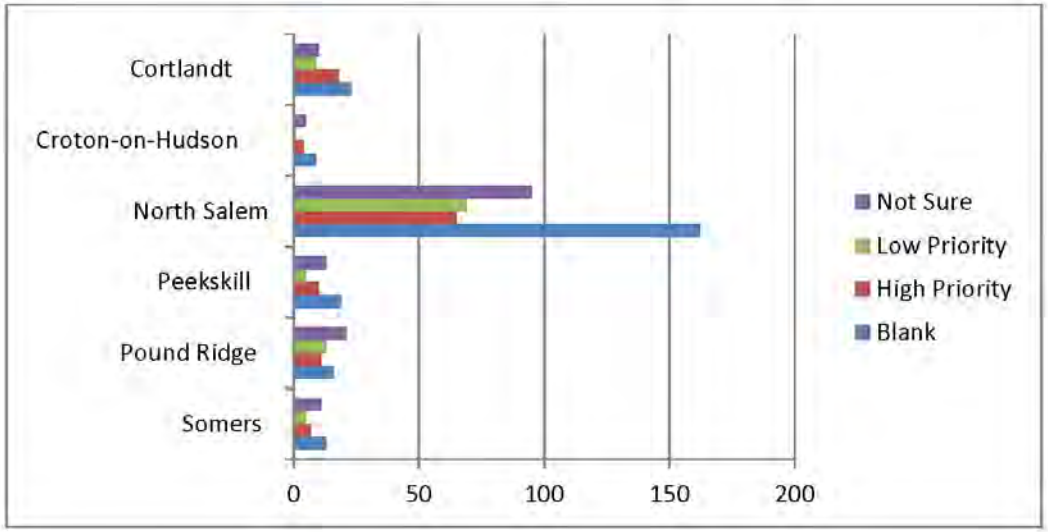
Encourage community on-site composting.



Implement community composting.



Join the Westchester County Solid Waste District if not already part of the district.



Appendix D Implementation Status Tracking Tool

E & E developed an Implementation Status Tracking Tool as an Excel spreadsheet that can be used to compile and track NWEAC Traction Leader activities. One NWEAC Traction Leader representative should be selected to maintain and update the spreadsheet, posting the most up-to-date version on http://www.nweac.org/.

The tool includes four tabs:

1. *2012 Municipal Measures* identifies measures being implemented by NWEAC Traction Leaders for reduce municipal GHG emissions.

2. *2012 Community Measures* identifies measures being implemented by NWEAC Traction Leaders and their communities to reduce community-wide GHG emissions.

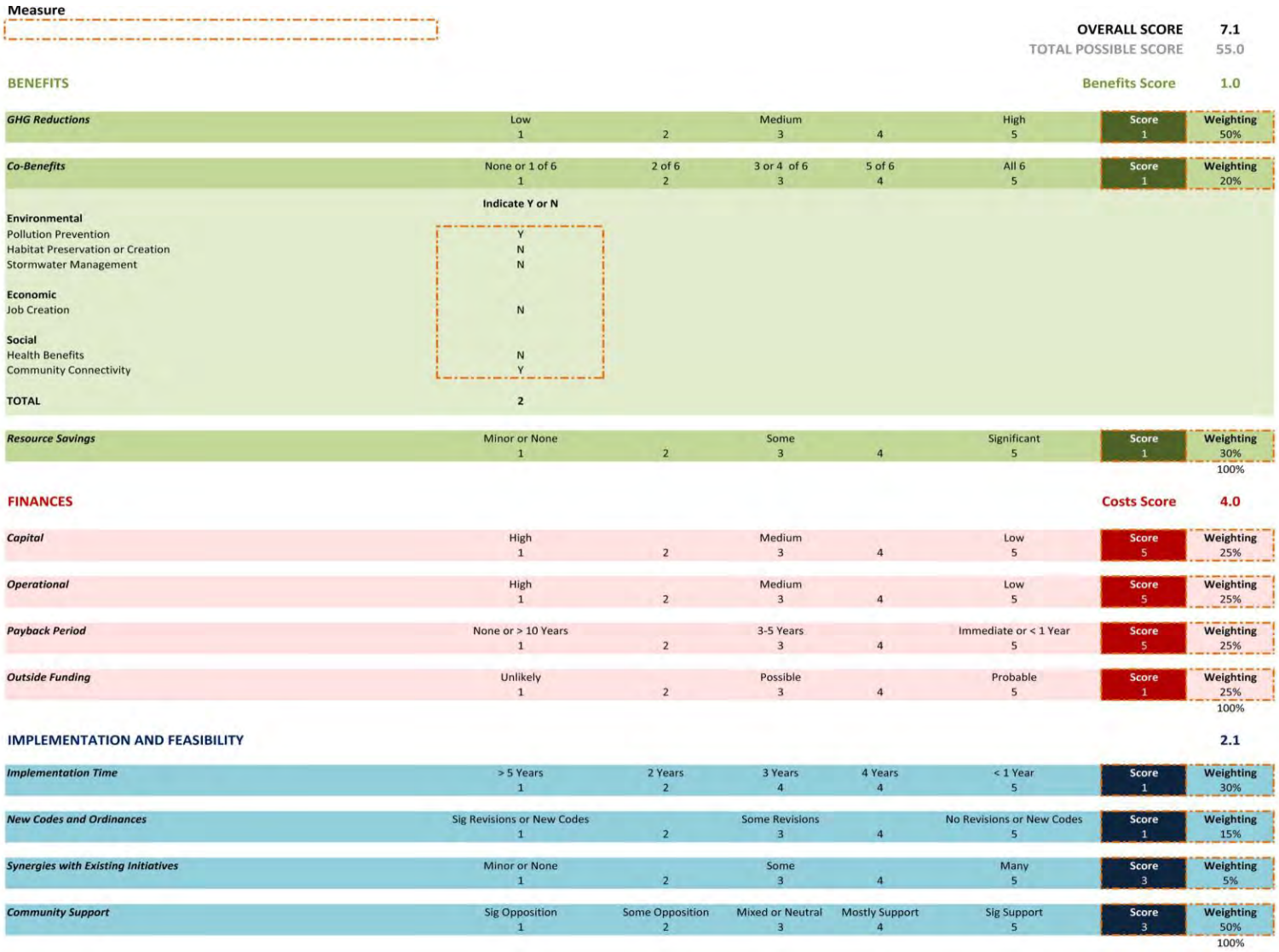
   E & E gathered information for the first two tabs based on discussions and knowledge gained through the GHG inventory process and site visits as well as through internet research. The NWEAC Traction Leaders should update these tabs to reflect all climate action measures being implemented as of 2012.

3. *Priority Measures and Tracking* provides areas for community priority measures to be implemented by NWEAC Traction Leaders as well as a timeline of when the projects are slated to begin.

4. *NWEAC Program Actions Schedule* provides space for NWEAC Traction Leaders to log key NWEAC Traction Leader-led events that facilitate information sharing and updates on implementation of CAP measures.

Appendix E Climate Action Ranking Tool

E & E developed a climate action ranking tool in an Excel spreadsheet for communities to use independently to rank projects. A screenshot of the tool is provided below. Fields to be manipulated by each community are outlined with orange dotted lines.



Measure							
						OVERALL SCORE	7.1
						TOTAL POSSIBLE SCORE	55.0
BENEFITS						Benefits Score	1.0
GHG Reductions	Low 1	2	Medium 3	4	High 5	Score 1	Weighting 50%
Co-Benefits	None or 1 of 6 1	2 of 6 2	3 or 4 of 6 3	5 of 6 4	All 6 5	Score 1	Weighting 20%
	Indicate Y or N						
Environmental							
Pollution Prevention	Y						
Habitat Preservation or Creation	N						
Stormwater Management	N						
Economic							
Job Creation	N						
Social							
Health Benefits	N						
Community Connectivity	Y						
TOTAL	**2**						
Resource Savings	Minor or None 1	2	Some 3	4	Significant 5	Score 1	Weighting 30%
							100%
FINANCES						Costs Score	4.0
Capital	High 1	2	Medium 3	4	Low 5	Score 5	Weighting 25%
Operational	High 1	2	Medium 3	4	Low 5	Score 5	Weighting 25%
Payback Period	None or > 10 Years 1	2	3-5 Years 3	4	Immediate or < 1 Year 5	Score 5	Weighting 25%
Outside Funding	Unlikely 1	2	Possible 3	4	Probable 5	Score 1	Weighting 25%
							100%
IMPLEMENTATION AND FEASIBILITY							2.1
Implementation Time	> 5 Years 1	2 Years 2	3 Years 4	4 Years 4	< 1 Year 5	Score 1	Weighting 30%
New Codes and Ordinances	Sig Revisions or New Codes 1	2	Some Revisions 3	4	No Revisions or New Codes 5	Score 1	Weighting 15%
Synergies with Existing Initiatives	Minor or None 1	2	Some 3	4	Many 5	Score 3	Weighting 5%
Community Support	Sig Opposition 1	Some Opposition 2	Mixed or Neutral 3	Mostly Support 4	Sig Support 5	Score 3	Weighting 50%
							100%

Appendix F Resources

This appendix provides useful resources, funding information, and case studies to supplement information provided for the climate action measures discussed in Chapter 3 of this report.

It is important to note that funding opportunities for climate action and energy reduction efforts are numerous and constantly changing. The website www.renewNWEAC.org provides up-to-date resources on the latest funding, research, and other support opportunities for climate action and energy efficiency.

Energy Efficiency

New York Power Authority (NYPA)

NYPA has various programs available to municipalities. Alicia Baly, Account Executive, can be contacted at Alicia.baly@nypga.gov or 914-287-3495.

- ***NYPA Energy Efficiency Services***
  NYPA Energy Services offers turnkey services including audit, design, construction, and commissioning. NYPA provides financing with recovery from participants through energy savings. The interest rate is extremely competitive; however NYPA adds a project management charge to the total project. Projects may include lighting upgrades, boilers and chillers, refrigerators, how water heaters, solar panels, energy efficient windows, etc.

  Information is available at http://www.nypa.gov/services/esp.htm.

New York State Energy Research and Development Authority (NYSERDA)

Municipal customers of NYPA and ConEd are only eligible for NYSERDA program for facilities that purchase electricity or natural gas from ConEd. Municipalities do not pay into the Systems Benefit Charge (SBC) for electricity purchasing from NYPA, and NYSERDA programs are SCB-funded.

Meridith Nierenberg is the Region 4 Point of Contact and can be contact at 631-258-5554 (cell) or 845-331-2238 (office).

- ***NYSERDA Flexible Technical Assistance (FlexTech)***
  NYSDERA provides cost-shared technical assistance services to identify energy savings in buildings and facilities. Technical assistance is more detailed and customized than the Energy Audit Program.

  Information is available at http://www.nyserda.ny.gov/Page-Sections/Commercial-and-Industrial/Programs/FlexTech-Program.aspx.

- ***NYSERDA New Construction Program***
  This program can provide assistance when incorporating energy-efficiency measures into the design, construction, and operation of new and substantially renovated buildings.

  Technical assistance is available to help evaluate energy efficiency measures and provide guidance to the design team on incorporating new and emerging energy efficient technologies into a building.

Funding is available to offset additional costs associated with the purchase and installation of approved equipment.

Assistance also may be available for commissioning services and green building opportunities.

Information is available at http://www.nyserda.ny.gov/en/Page-Sections/Commercial-and-Industrial/Programs/New-Construction-Program.aspx.

- ***NYSERDA Existing Facilities Program***
  This program offers a portfolio of incentive opportunities to offset the cost of energy improvement in existing commercial and industrial facilities. *Incentives should be compared to NYSERDA and ConEd as incentives can only be accessed from one source for a particular measure.*

  Information is available at http://www.nyserda.ny.gov/Page-Sections/Commercial-and-Industrial/Programs/Existing-Facilities-Program.

  - *Pre-Qualified Path*
    The pre-qualified path includes small, simple change-outs up to $30,000. Applications are submitted within 90 days of project completion. Eligible categories include lighting, HVAC, chillers, motors, interval meters, variable frequency drives, commercial refrigeration, commercial kitchen, equipment and washers, gas efficiency - check for funding availability.
  - *Performance Based Path*
    The performance-based path includes large custom improvement up to $5 million. Performance-based incentives are provided to encourage applicants to implement larger-scale projects that increase energy efficiency and produce verifiable annual energy savings. These incentives are available on a pro-rated basis related to the annual kiloWatt or MMBtu savings generated. Applications must be submitted either before or within 90 days of project contracting. Applicants can receive $30,000-$5 million for projects in a variety of categories. Performance-based incentives must meet minimum energy saving thresholds and require an engineering analysis to substantiate energy savings after project completion. In some cases, post-installation measurement and verification is also required.

ConEdison (ConEd)

Municipal customers are only eligible for programs offered by ConEd for facilities that use electricity or natural gas purchased from the utility and when the SCB is paid. Most NYPA customers have few ConEd electrical accounts.

Information is available at http://www.coned.com/energyefficiency/business.asp.

- ***ConEd Commercial and Industrial Electric and Gas Rebate Programs***
  This is for eligible commercial and industrial customers with very high usage facilities. It provides rebates for certain upgrades, including lighting fixtures, LED exit

signs, chillers, packaged HVAC systems, motors, and water and steam boilers.

More information is available at http://www.conedci.com/program.aspx, 877-979-6347, or conedci@lmbps.com.

The application is available at http://www.conedci.com/Documents/ConEd_Program_App_v6.pdf. Eligibility should be confirmed before applying.

- *ConEd Small Business Direct Install*
  This program focuses on the needs of customers with a demand of less than 100kW, which includes most municipal facilities. Eligible customers receive free energy assessments, and 70% of the cost of recommended lighting upgrades will be covered. Lighting upgrades could include replacement of existing fluorescent fixtures with high efficiency lamps and ballasts, changing incandescent bulbs to CFLs, and upgrading exit signs to LED technology.

  Information is available at http://www.coned.com/energyefficiency/businessdirect.asp or 888-945-5326.

  The online application is available at https://www.conedsmallbusiness.com/contact/.

- *ConEd Commercial and Industrial Custom Programs*
  This program offers performance-based incentives for installing high-efficiency gas and electric equipment for customized projects that are not covered under the equipment rebate program. It includes up to 50% of costs, with a cap of $67,000, for a technical feasibility study for potential electric and gas energy efficiency measures. This program is focused on facilities with heavy consumption and would not be applicable for most municipal facilities.

  Information is available at http://www.conedci.com/Custom.aspx or 877-797-6347.

Energize Bedford

The Energize Bedford Program is a program funded by DOE and NYSERDA that promotes residential energy efficiency. The program provides free home energy assessments and helps residents select contractors and secure financing to implement efficiency improvements.

The program began in 2010 and is in the pilot stages with eventual rollout to all 14 NWEAC communities. Information is available at http://energizebedford.org/, http://twitter.com/EnergizeBedford, or http://www.facebook.com/EnergizeBedford.

Transportation

US Department of Transportation (USDOT)

- *USDOT Mitigation and Air Quality Improvement Program*
  Information on funding for employer-based transportation plans, public outreach, shuttle services, vanpool and carpool programs, and bicycle and pedestrian programs is available at is available at http://www.fta.dot.gov/documents/cmaq08gd.pdf.

NYPA

- *NYPA Electric Transportation Program*
  NYPA promotes the development and demonstration of electric, hybrid-electric, and plug-in hybrid vehicles for customer fleets. A broad range of prototype and early production electric-drive vehicle technologies and charging infrastructure is evaluated under this program, including heavy-duty and medium-duty trucks and buses, and light-duty vans and passenger vehicles.

  All NYPA electric customers are eligible to apply for participation in the program, and funding from the annual program budget is available for customer projects on a first come, first service basis. NYPA funds can only be used to cover some portion of the incremental cost of the proposed electric-drive vehicle technology and cannot be used to cover the base cost, that is, the cost of equivalent conventional gasoline or diesel fueled vehicles. The amount of funding available for each project will vary depending on the annual budget, priority budget commitments, and project scope. Proposals must meet all funding criteria, which include technical applicability, technology testing, and data collection and reporting. In additional, all program participants are required to contribute cost share to the projects.

  The program uses NYPA funds to leverage significant amounts of additional funding from the project – NYPA funds overall amount to less than 25% of the total program cost. NYPA's program COST. NYPA's program partners include station and national government and industry organizations, such as DOE, EPA, the Electric Power Research Institute, NYSDERDA, and NYSDOT. By collaborating with these organizations, NYPA is able to share lessons learned and help move the industry forward.

New York State Department of Environmental Conservation (NYSDEC)

- *NYSDEC Recycling Coordinator Funds*
  Funding for eligible recycling coordination and education projects covers 50% of costs and cannot exceed $2 million per project. The application for recycling coordinator funding can be accessed on at http://www.dec.ny.gov/docs/materials_minerals_pdf/rcpreappfi.pdf.

NYSERDA

- *NYSERDA AFV Program*
  NYSERDA provides financial assistance and technical information to encourage fleets to purchase AFVs and install fueling facilities or charging stations. Vehicles powered by natural gas, propane, and electricity—including certain hybrid vehicles—are eligible under many of the programs NYSERDA offers. Incentives are available

to encourage the use of biofuels such as ethanol and biodiesel. Information is available at http://www.nyserda.ny.gov/en/Page-Sections/Research-and-Development/Transportation/Alternative-Fuel-Vehicles.aspx.

- *NYSERDA Clean Fueled Bus Program*
  Information is available at http://www.nyserda.ny.gov/Page-Sections/Research-and-Development/Transportation/Alternative-Fuel-Vehicles/Clean-Fueled-Bus-Program.aspx?sc_database=web.

- *NYSERDA Clean Air School Bus Program*
  Information is available at http://www.nyserda.ny.gov/Page-Sections/Research-and-Development/Transportation/Alternative-Fuel-Vehicles/Clean-Air-School-Bus-Program.aspx.

- *NYSERDA Diesel Idling Reduction Program*
  Information is available at http://www.nyserda.ny.gov/Page-Sections/Research-and-Development/Transportation/Alternative-Fuel-Vehicles/Diesel--Idling-Reduction-Program.aspx.

- *NYSERDA BioFuel Station Initiative*
  Information is available at http://www.nyserda.ny.gov/Page-Sections/Research-and-Development/Transportation/Alternative-Fuel-Vehicles/Biofuel-Station-Initiative-Program.aspx.

NYSDOT

- *NYSDOT Federal Section 5311 Program*
  Information on funding for public transportation projects in areas is available at https://www.dot.ny.gov/divisions/policy-and-strategy/public-transportation/rural-programs/5311.

- *NYSDOT Transit State Dedicated Fund*
  Information on funding for mass transit capital projects can be found at https://www.dot.ny.gov/divisions/policy-and-strategy/public-transportation/funding-sources/SDF.

- *NYSDOT Safe Routes to School Program*
  Information on funding for projects that encourage biking and walking to school is available at https://www.dot.ny.gov/divisions/operating/opdm/local-programs-bureau/srts.

- *NYDOT Transportation Enhancement Program*
  Information on reimbursement for pedestrian and bike facilities is available at https://www.dot.ny.gov/programs/tep.

Westchester County

- *Westchester County Smart Commute Team*
  The Smart Commute Team assists companies with resources and programs for employee transportation. Information is available at http://transportation.westchestergov.com/commuter-services/smart-commute/smart-commute-team.

Long Beach School District Clean Fleet

The Long Beach School District received over $1.2 million from NYSERDA to purchase 20 Compressed Natural Gas (CNG) buses, retrofit existing diesel-fueled buses, and develop a CNG fueling station. The Long Beach School District has 7 schools, 4,500 students, and a bus fleet of 38 vehicles.

The school district provided $1.5 million, KeySpan Energy Delivery provided $500,000, the Greater Long Island Clean Cities Coalition provided over $344,000, and the USDOE provided over $187,000 and a project consultant. USDOE funding is part of the Federal Department Energy Special Projects.

Special Projects Funding is awarded to Clean City Organization stakeholders. Information on Special Project can be found at http://www.nyserda.ny.gov/Page-Sections/Research-and-Development/Transportation/Alternative-Fuel-Vehicles/Federal-Department-Energy-Special-Projects.aspx.

More information on this project can be found at http://www.nyserda.ny.gov/Page-Sections/Research-and-Development/Transportation/Alternative-Fuel-Vehicles/~/media/Files/EERP/Commercial/Programs/Alternative%20Fuel/Clean%20Fuel%20Bus/Long-Beach-School-Bus.ashx.

Waste

NYSDEC

- ***NYDSEC Guidelines for Recyclable Market Planning***
  Guidelines are available at http://www.dec.ny.gov/docs/materials_minerals_pdf/capapp.pdf.

- ***NYSDEC Guidelines for Permitting Compost Facilities***
  Information on permitting composting facilities can be found at http://www.dec.ny.gov/regs/4411.html.

- ***NYSDEC Recycling and Composting Capital Project Funds***
  Information on the application for NYSDEC recycling and composting capital project funding is available at http://www.dec.ny.gov/docs/materials_minerals_pdf/cappreappfi.pdf.

Cornell Waste Management Institute

- The Cornell Waste Management Institute offers a wealth of information regarding composting, ranging from technical information to setting up a Master Composter program. Resources are available at http://cwmi.css.cornell.edu/composting.htm#smallcomposting.

Oil Recycling – Westchester County Biodiesel Facility

The county picks up waste vegetable oil at the county jail, all county parks, golf course concession stands, and the Westchester Medical Center. By collecting and processing used vegetable oil, the county saves significantly on costs for petroleum diesel.

The collected vegetable oil is processed into a clean burning alternative fuel that can be used alone or blended with conventional diesel and used as motor fuel and heating oil. The county is using this fuel in boilers of county buildings, county trucks and vans, a snow plow, pick-up truck, a farm tractor, and a full-size garbage truck.

100% biodiesel (B100) emits 80% less carbon dioxide than petroleum-based diesel. Some Westchester County vehicles have been adapted to use B100. To learn more about biodiesel fuel, visit www.biodiesel.org.

Renewable Energy

NYSERDA

NYSERDA does not have an incentive program specific to local governments but incentives are described at http://www.nyserda.ny.gov/Program-Areas/Energy-Efficiency-and-Renewable-Programs/Renewables.

For solar electric, municipalities quality for $1.75 per Watt or $1,740 per kW, capped at 25 kW per site or meter.

For solar thermal, municipalities quality for a maximum of $25,000 per site or meter.

For small wind, incentives start at $3.50 per Watt and depend on the size of the turbine.

Land Use and Open Space

Department of Housing and Urban Development (HUD)

- ***HUD Brownfields Economic Development Initiative (BEDI) Grant Program***
  BEDI assists cities with the redevelopment of abandoned, idled, and underused industrial and commercial facilities.

  HUD does not encourage applications whose scope is limited only to site acquisition or remediation where there is no immediately planned redevelopment.

  Information is available at http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/BEDI.

Economic Development Association (EDA)

- Information is available at www.eda.gov.

Hudson River Valley Greenway Conservancy

- ***Hudson River Valley Grants Program***
  Grant awarding is contingent on funding availability. Grants are awarded for no more than 50% of the total project cost.

  Information is available at http://www.hudsongreenway.ny.gov/grantfunding/ConservancyGrant.aspx.

National Parks Service (NPS)

- *NPS Land and Water Conservation Fund*
  The NPS Land and Water Conservation Fund matches grants to states and local governments for the acquisition and development of public outdoor recreation areas and facilities as well as funding for shared federal land acquisition and conservation strategies. More information is available at http://www.nps.gov/lwcf/.

New York State Department of State (NYSDOS)

- *NYSDOS Financial and Technical Assistance*
  With NYSDEC, NYSDOS provides financial and technical assistance to municipalities and community-based organizations. Funding can be used to complete revitalization plans and implementation strategies for areas affected by the presence of brownfield sites, as well as site assessments for strategic sites. Projects can receive up to 90% of eligible costs to complete revitalization plans and implementation strategies.

  More information is available at http://www.nyswaterfronts.com/grantopps_BOA.asp.

NYSDEC

- *NYSDEC Brownfield Redevelopment Toolbox*
  Information is available at http://www.dec.ny.gov/docs/remediation_hudson_pdf/bftoolbox.pdf.

- *NYSDEC Brownfield Cleanup Program*
  Taxpayers who enter into a Brownfield Cleanup Agreement (BCA) with NYSDEC may be eligible for tax credits relating to the cleanup and redevelopment of a brownfield site.

  More information is available at http://www.dec.ny.gov/chemical/8450.html.

- *NYSDEC Environmental Restoration Program*
  The $200 million Environmental Restoration Fund is part of the $1.75 billion Clean Water/Clean Air Bond Act of 1996 (Bond Act). Under the Environmental Restoration Program, the State provides grants to municipalities to reimburse up to 90 percent of on-site eligible costs and 100% of off-site eligible costs for site investigation and remediation activities.

  More information is available at http://www.dec.ny.gov/chemical/8444.html.

- *NYSDEC Environmental Protection Fund (EPF) - Title 9*
  EPF – Title 9 provides funds for local governments and not-for-profit organizations to purchase park lands or historic resources as well to develop and preserve these resources.

  More information is available at http://www.dec.ny.gov/lands/5071.html.

- *NYSDEC Environmental Restoration Program*
  The $200 million Environmental Restoration Fund is part of the $1.75 billion Clean Water/Clean Air Bond Act of 1996 (Bond Act). Under the Environmental Restoration Program, the State provides grants to municipalities to reimburse up to 90 percent of on-site eligible costs and

100% of off-site eligible costs for site investigation and remediation activities.

Information is available at http://www.dec.ny.gov/chemical/8444.html

US Environmental Protection Agency (USEPA)

- *USEPA Essential Smart Growth Fixes for Urban and Suburban Zoning Codes*
  Information is available at http://www.epa.gov/smartgrowth/pdf/2009_essential_fixes.pdf.

- *USEPA EPA State and Local Climate and Energy Program*
  Information is available at http://www.epa.gov/statelocalclimate/local/topics/land.html.

- *USEPA EPA Office of Solid Waste and Emergency Response*
  Information is available at http://www.epa.gov/statelocalclimate/local/topics/land.html.

- *USEPA Brownfield Act*
  The USEPA Brownfield Act authorizes $100 million per year for grants to states, local governments, and tribes, as well as entities such as quasi-public redevelopment agencies and authorities.

  More information is available at http://epa.gov/brownfields/mmatters.htm.

- *USEPA Capitalized Brownfield Revolving Loan Funds (RLF)*
  RLF grants provide funding for a grant recipient to capitalize a revolving loan fund and to provide subgrants to carry out cleanup activities at brownfield sites. The loan amount is returned into the fund and re-lent to other borrowers when loans are repaid.

  Information is available at http://epa.gov/brownfields/rlflst.htm.

Small Business Association (SBA)

- *SBA Microloans and Section 504 Development Company Debentures*
  Provides approved small businesses with long-term, fixed-rate financing used to acquire fixed assets for expansion or modernization.

  504 loans are made available through Certified Development Companies.

  Examples of activities that receive funding include modernizing or upgrading facilities; the purchase of existing buildings; the purchase of land and land improvements; the construction of new facilities or modernizing, renovating or converting existing facilities; reduction of energy consumption by at least 10 percent; increased use of sustainable design.

  Information is available at http://www.sba.gov/content/cdc504-loan-program.

US Department of Agriculture (USDA)

- *USDA Forest Service: Forest Legacy Program*
  This program supports state efforts to protect environmentally sensitive forest lands. FLP encourages partnerships with local governments and land trusts. Participation is limited to private forest landowners.

  Information is available at http://www.fs.fed.us/spf/coop/programs/loa/flp.shtml.

Appendix G CAP Updates and Progress Reports

Progress reports and updates will be incorporated at a later date.