

# TOWN OF BEDFORD

## Climate Action Plan Progress Report

June 2014





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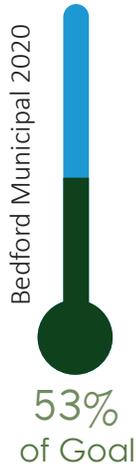
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## INTRODUCTION

The Town of Bedford adopted a comprehensive Climate Action Plan (CAP) in 2010 which outlined a variety of measures that should be implemented to reduce overall greenhouse gas emissions (GHG) in the Town. The Town established a goal of reducing its 2004 GHG emissions 20 percent by 2020. In order to determine whether they were meeting their goals, Bedford decided to evaluate what actions it has taken and to measure the impact of those actions to date.



Developed in coordination with Vanasse Hangen Brustlin, a technical consultant to New York State Energy Research and Development Authority (NYSERDA) and Department of Environmental Conservation (DEC) under the Climate Smart Communities program, this Progress Report outlines the current status of each measure identified in the Town of Bedford's 2010 Climate Action Plan (CAP). In addition, a metric has been identified for more specifically tracking the progress of each of the measures. The measure, status, metric, and where applicable, the progress to date, is provided in summary tables throughout this report. Wherever possible, the energy and greenhouse gas reduction impacts have also been quantified and included in this report.<sup>1</sup> Finally, this report also provides an update on the overall progress the Town has made in reaching its 20 by 2020 goal and what additional actions need to be accomplished.

The Town of Bedford has made significant progress toward meeting its 2020 goals. As indicated in Table 1, the Town needs to reduce municipal government emissions by 1,323 metric tons of carbon dioxide equivalent (CO<sub>2</sub>e) by 2020 in order to achieve a 20 percent reduction below 2004 levels. In the two years since the CAP was adopted, the Town is more than half way (53%) toward reaching its municipal reduction goal, having eliminated 706 metric tons CO<sub>2</sub>e. The Town is making even more progress in reducing community-wide emissions. By 2020, the Town needs to reduce community emissions by 158,061 metric tons CO<sub>2</sub>e and, in the two years since the CAP was adopted, has already achieved reductions of 125,965 metric tons CO<sub>2</sub>e, 79 percent of the way toward meeting its 2020 goal. It is also worth noting that without adjusting for growth, the Town has already surpassed reductions of 20 percent below 2004 levels. Municipal emissions have been reduced by 31 percent and community emissions by 54 percent compared to 2004 levels.

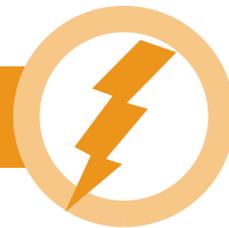
**Table 1: Overall Greenhouse Gas Reductions and Progress Toward 2020 Goals**  
(Units in Metric Tonnes of CO<sub>2</sub> Equivalent: MTCO<sub>2</sub>e)

	2004 Baseline	2020 Projected Emissions <sup>2</sup>	2020 Goal	Reduction Needed	Reduction as of 2012	% Progress Reaching Goal	Additional Reductions Needed by 2020
<b>Municipal</b>	2,309	3,170	1,847	1,323	706	53%	617
<b>Community</b>	275,951	378,822	220,761	158,061	125,965	79%	32,096

- Greenhouse gases were estimated in accordance with the Local Government Operations Protocol using energy, waste, and transportation activity data provided by the Town.
- Bedford's Climate Action Plan assumed a 2% growth rate for projecting emissions for 2020. This growth rate has been factored into the reductions needed to meet the 2020 target. Energy and greenhouse gas reductions have been quantified according to industry-accepted methods and standards.

The Town of Bedford has much to celebrate with regard to its climate action efforts to date, having made significant progress toward its goals since 2004. The following sections of this Progress Report provide more detail on how the Town has accomplished its greenhouse gas reductions in each of the four focus areas identified in its CAP. Those focus areas include:

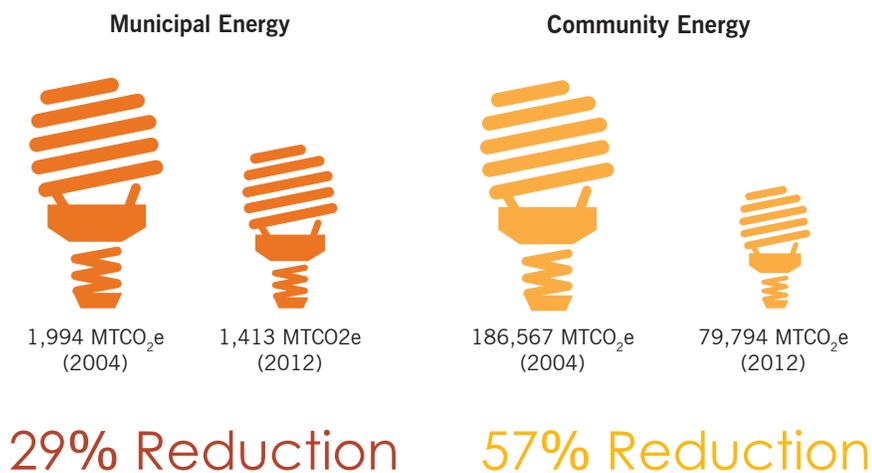




In its Climate Action Plan (CAP), the Town of Bedford identified a number of measures that would improve energy efficiency and promote renewable energy within municipal operations as well as throughout the community. These strategies, when taken in sum, have the potential to create the largest reduction in greenhouse gas emissions of any of the four focus areas of the Town's Plan. The Plan identified nine municipal measures and 15 community measures<sup>3</sup> that have the potential for contributing significantly to the Town's 2020 reduction goal, based on 2004 baseline figures. Equally important, these measures provide for additional co-benefits such as economic development, improved health and quality of life, improved energy security, and environmental enhancements.

Municipal energy measures identified in the CAP include policies to reduce energy consumption and increase use of renewable energy, retrofitting of equipment, energy efficiency purchasing, and installing renewable energy systems. Community measures include education and outreach around energy efficiency, financing for energy audits and retrofits, changes to residential and commercial building code, as well as policy changes to promote renewable energy installations. The Town has been extremely active in implementing several of these measures both within government operations and at the community scale, and is in the process of implementing many others.

## GHG Emissions



<sup>3</sup> The CAP contains more measures, but where progress can be tracked similarly, measures have been combined/synthesized.

**Table 2** outlines the Town's status and progress in implementing energy-related measures identified in the Bedford CAP. It also provides a recommended metric for tracking progress in the future as well as identifying co-benefits of the measure.

**Table 2: Energy Measures, Status, and Progress**

Measure	Status	Recommended metric	Progress	Co-Benefits
<b>MUNICIPAL ENERGY MEASURES</b>				
Renewable energy purchasing	Implemented	% electricity purchased from renewable sources	25 % electricity from wind	   
Energy efficiency retrofits in town facilities	In Progress	# of audits performed; % of recommendations implemented; Town facility energy reduction	1,078 MMBtu reduction in annual energy use, an 11% reduction	   
Municipal green building policy	In Progress	# buildings built to green standards	Under consideration; 1 building built to LEED Silver standards	   
Municipal green purchasing policy	Implemented	% of purchases meeting energy efficiency standards	Adopted; need more info	   
Energy efficiency/ENERGY STAR appliances (computers, printers, refrigerators, vending machines, water coolers, copiers)	Implemented	% of appliances and other equipment that are Energy Star	<i>additional data needed</i>	   
Efficiency lighting retrofits	In Progress	% of lighting upgraded	145 fixture upgrades in 2 buildings	   
Lighting occupancy sensors	In Progress	% of space using sensors	<i>additional data needed</i>	   
Use solar PV energy	Implemented	Capacity installed, kWh solar electricity generated; % of fossil fuel-based energy displaced	50 kW system installed; estimated to generate approx 40,000 kWh per year	   
Consider solar hot water systems for town owned buildings	Not Started	Energy, cost, emissions savings; # of systems	NA	   
<b>COMMUNITY ENERGY MEASURES</b>				
Financing for residential energy efficiency upgrades (Energize NY and Green Jobs Green NY)	Implemented	# of homes participating; Dollars allocated	600 homeowners signed up for Energize NY Program; 114 homes upgraded	   
Community scale renewable energy	In Progress	MW installed, by renewable type (e.g. solar, wind, geothermal, other); total renewable energy purchased	175 kW of installed solar PV	   

Table 2: Energy Measures, Status, and Progress [continued]

Measure	Status	Recommended metric	Progress	Co-Benefits
Energy efficiency retrofits of existing commercial facilities	In Progress	# of facilities implementing retrofits	Mechanism now in place to implement commercial PACE	   
Energy efficiency education for businesses	In Progress	# of educational programs held; # of businesses participating	1 program; 51 participants; 6 businesses implemented lighting upgrades as a direct result	   
Require home energy rating (HERs) at time of sale	Not Started	# homes sold since adoption (compliance %); Policy passed	NA	   
Promote existing home weatherization programs for low income households and seniors	Not Started	# of homes weatherized	NA	   
Bedford residential building energy code	Implemented	Updated code passed; # of homes built (percent compliance)	13 active building permits for homes that will meet this requirement	   
Bedford commercial building energy code	Not Started	Updated code passed; # of buildings (percent compliance)	NA	   
Education and outreach to residents on energy efficient appliances and HVAC equipment, including Energy Star labeled products and rebates, and Smart Grid opportunities	Not Started	# of residences/businesses reached; # of outreach materials or workshops organized	NA	   
Compact fluorescent light bulb distribution	Not Started	# of traditional light-bulbs exchanged for CFLs (this can only be tracked for Town sponsored events/programs)	NA	   
Switch electric heat to natural gas	Not Started	# of homes/business converted to natural gas	NA	   
Residential construction feebate program	Not Started	# of new buildings meeting standard (receiving rebate) versus # of new buildings charged fee	NA	   
Ordinance review for renewable energy installation	Not Started	Completion of review and document summarizing findings and recommendations	NA	   
Accelerate permitting process for green buildings	Not Started	# of accelerated permits processed (and average time)	NA	   
Energy efficient multi-family housing	Not Started	# of new units built in compliances (% compliance)	NA	   

# Energize Bedford

Initiated in 2011, the Energize Bedford program is a community-based energy efficiency program aimed at educating residents about the array of tools, resources, information, and financing available to help them become more energy efficient. Energize Bedford helps residents get a comprehensive home energy assessment, identify appropriate retrofits (or “tune-ups”), find contractors to assist with the retrofits, secure financing to make the requisite changes, and secure quality assurance for the completed upgrades.

## Energize Bedford Impact

Homes upgraded - 114

Economic Activity - \$1,446,432

Jobs Created - 16

Annual Savings - \$162,792

Annual GHG Reductions - 228 MTCO<sub>2</sub>e

Equivalent of 38 Cars removed from the road (avg annual output of gasoline powered cars = 6 mtco<sub>2</sub>e/year)



## ADDITIONAL HIGHLIGHTS

**Established Energy Improvement Corporation (EIC):** This organization helps provide low cost financing and community-based support for energy efficiency programs and alternative energy systems throughout the Town.

**Water Filtration Facility:** The Town built a new water filtration plant to connect the water supply to the Delaware Aqueduct, thereby allowing for a changeover from well usage. The facility was built to LEED Silver standards and includes solar PV cells.

**Town building audits and retrofits:** Energy audits were performed on the major Town-owned buildings and facilities. Based on the results, lighting upgrades were completed at the Police Department and Highway Department Buildings. Multiple Town buildings installed electronic thermostats, and photo sensors were installed for Town-owned outdoor lighting.

**Put More Green in Your Business event:** The Town held a workshop targeting small businesses to encourage them to install lighting upgrades. The program had 51 participants.



## Additional Energy Policies Implemented or Underway

- **Bedford Energy Conservation Code for Residential Dwellings:** Newly built or renovated residential homes must comply with NYSECC and achieve a “70” HERS rating, thanks to the passing of an updated Bedford Energy Conservation Code for Residential Dwellings.
- **Municipal green purchasing policy:** A policy on green municipal purchases has been adopted. This requires purchasers to consider life-cycle energy costs, sustainability of materials, recyclability of products, and transportation and packaging costs when making purchasing decisions.
- **Outdoor lighting code:** A Dark Sky Commercial Ordinance was passed that will require all new commercial buildings to reduce night-time light pollution through an array of technical and behavioral changes.
- **Municipal green building policy:** A policy to require new or renovated buildings to be LEED certified is now under consideration.

## Energy Education and Outreach Activities Implemented or Underway

- **Energy efficiency education for businesses:** Bedford has implemented a program educating businesses about the need and benefits of energy efficiency.

All of the efforts outlined in this report will contribute to the Town's progress in meeting its 2020 goal. It is important to note, however, that it is not always possible to quantify the direct impacts of a measure. For this reason, **Table 3** details the progress that has been achieved with regard to air quality improvements, energy reductions, and GHG emissions reductions for a set of individual measures as well as bundled measures that, when combined, result in quantifiable impacts.

**Table 3: Energy, GHG, and Criteria Air Pollutant Reductions from Implemented Energy Measures<sup>4</sup>**

2004 Baseline Energy Use	2012 Energy Use	2004 Baseline GHG (metric tons CO <sub>2</sub> e)	2012 GHG (metric tons CO <sub>2</sub> e)	Energy Reduction/ Renewable Energy Generation	GHG Reduction (MT CO <sub>2</sub> e)	Reductions of Criteria Air Pollutant (lbs)				
						NOx	SOx	CO	VOC	PM-10
<b>MUNICIPAL</b>										
<b>Renewable Energy Purchasing<sup>5</sup></b>										
2,152,304 kWh electricity	1,804,141 kWh electricity	871	501	25% from wind	125	329	269	470	53	415
<b>Energy Efficiency Improvements in Town Facilities</b>										
10,033 MMBtu energy	8,955 MMBtu energy	949	691	1,078 MMBtu	258	9,532	817	2,347	775	972
<b>Use solar PV energy</b>										
NA	NA	NA	NA	40,000 kWh/year from solar	11	NA	NA	NA	NA	NA
<b>COMMUNITY</b>										
<b>Residential Energy Improvements</b>										
911,811 MMBtu energy	720,401 MMBtu energy	146,451	54,750	191,410 MMBtu	91,701	161,270	9,345	37,139	13,413	8,750
<b>Commercial Energy Improvements</b>										
400,452 MMBtu energy	351,893 MMBtu energy	40,116	25,044	48,559 MMBtu	15,072	48,202	15,490	29,282	4,990	22,988
<b>Renewable Energy Installed</b>										
NA	NA	NA	NA	175 KW solar capacity installed - 213,227 kWh annual	59	NA	NA	NA	NA	NA

<sup>4</sup> In some cases, multiple measures have been "bundled" to indicate energy and GHG reductions from a combined set of actions because the reduction cannot be isolated to the specific measure alone.

<sup>5</sup> Estimated electricity generation from solar energy installation were calculated using the PVWatts Site Specific Calculator developed by the National Renewable Energy Laboratory: [http://www.nrel.gov/rredc/pvwatts/site\\_specific.html](http://www.nrel.gov/rredc/pvwatts/site_specific.html)

# TRANSPORTATION



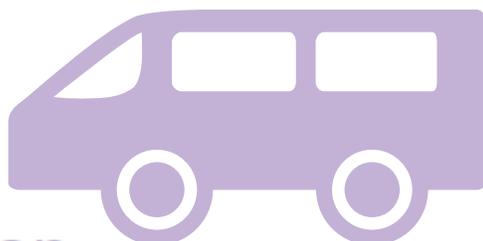
In its Climate Action Plan (CAP), the town of Bedford identified a number of measures aimed at reducing greenhouse gas emissions in the transportation sector. Overall, a total of 31 measures (9-municipally focused; 22-community focused) have been identified to help achieve the Town's total greenhouse gas reduction goal.

The Town has acknowledged that transportation-related measures are often the most challenging measures to implement because they necessitate three things: changes to infrastructure; changes in policy; and changes in individual behavior. Measures identified in the CAP include replacing the municipal fleet with more energy-efficient vehicles, upgrading Town infrastructure, and incorporating and promoting sustainable transportation. The Town has implemented a number of key foundational efforts that will help reduce transportation-related emissions.

## GHG Emissions

### Municipal Vehicle Fleet

**31% Reduction**  
in Municipal Vehicle Fleet



1045 MTCO<sub>2</sub>e  
(2004)



722 MTCO<sub>2</sub>e  
(2012)

### Community-wide Transport

**23% Reduction**  
in Community-wide Transport



74,693 MTCO<sub>2</sub>e  
(2004)



57,329 MTCO<sub>2</sub>e  
(2012)

**Table 4** outlines the status and progress of these measures along with a recommended metric for tracking progress on each measure, and the co-benefits associated with each.

**Table 4: Transportation Measures, Status, and Progress**

Measure	Status	Recommended Metric	Progress	Co-Benefits
<b>MUNICIPAL TRANSPORTATION MEASURES</b>				
Use smaller fleet vehicles	In Progress	# of vehicles replaced with smaller vehicles	10 vehicles replaced with smaller, more fuel-efficient vehicles (EVs and hybrids as indicated below)	   
Electric vehicles	In Progress	# of electric vehicles in fleet; # of EV charging stations	Replaced 2 vehicles with EVs; Installed 2 EV charging stations for municipal use	   
Hybrid vehicles in municipal fleet	In Progress	# of hybrid vehicles in fleet	Replaced 8 vehicles with hybrids	   
Fleet conversion to biodiesel (B20)	Not Started	Gallons (annual) switched from diesel to biodiesel	NA	   
Compressed natural gas (CNG) vehicles	Not Started	# of CNG vehicles; # of new CNG fueling infrastructure	NA	   
Increase rail transit ridership	Not Started	Percent of Town employees using rail transit	NA	   
Promote use of public transportation, carpooling, and vanpooling	Not Started	Percent of Town employees using transit, car/vanpooling (biking/walking); Financial incentives for alternative commute to employees	NA	   
Enforce Westchester County's anti-idling law for town owned trucks	In Progress	NA	NA	   
Police on bicycles	In Progress	# of police on bicycles	4 bicycles	   
<b>COMMUNITY TRANSPORTATION MEASURES</b>				
Use smaller fleet vehicles	Not Started	# of corporate fleets that have replaced vehicles with smaller, more efficient, and/or alternative fuel vehicles	NA	   
Increase ownership of hybrid and/or electric vehicles	In Progress	# of hybrid and electric vehicles registered in Town of Bedford	792 vehicles; approx 8% of total vehicles	   
Fleet conversion to biodiesel (B20)	Not Started	# of fueling facilities providing biodiesel	NA	   

Table 4: Transportation Measures, Status, and Progress [continued]

Measure	Status	Recommended Metric	Progress	Co-Benefits
<b>Education and promotion of low-carbon transportation options, including public transit, carpooling, vanpooling</b>	In Progress	# of education/outreach events (or population reached); Ridership #s	Promotion of senior bus, Hart bus	   
<b>Electric vehicle charging stations in parking structures and other locations</b>	In Progress	# of charging stations	6 charging stations (DOE grant)	   
<b>Compressed natural gas vehicles</b>	Not Started	# of CNG vehicles	NA	   
<b>Initiate a carshare</b>	Not Started	# of carshare participants	NA	   
<b>Study to determine commuting patterns</b>	Not Started	Yes/No study completed	NA	   
<b>Enforce Westchester County's anti-idling law</b>	In Progress	NA	NA	   
<b>Increase bike and pedestrian infrastructure, create bicycle friendly zones</b>	In Progress	Miles of bike/pedestrian trails/paths	Bedford Center Rd multiuse pathways - 6 miles of pathway	   
<b>Integrate bicycle and transit</b>	Not Started	# of bike "parking spaces" near transit	NA	   
<b>Create pedestrian friendly zones and increase hamlet sidewalks</b>	Not Started	# of pedestrian friendly zones established	NA	   
<b>Provide bicycles for daily trips</b>	Not Started	# of bikes available through bike share	NA	   
<b>Safe routes to schools</b>	In Progress	Town participation in program; # of students walking to school; # of "Walk to School Days"	Town participating in Safe Routes to Schools program	   
<b>Retrofit school buses with oxidation catalysts</b>	Not Started	# of buses retrofitted	NA	   
<b>School bus emissions controls- particulate trap</b>	Not Started	# of buses retrofitted	NA	   

# Bedford 2020's Fuel-Efficient Car Show

More than 1100 people attended New York State's first fuel-efficient car show, showcasing electric, hybrid, and plug-in hybrid vehicles. Leaders from Mount Kisco and Pound Ridge were also in attendance at the car show held at Mount Kisco's Grand Prix NY. The event allowed attendees to test drive numerous models of hybrids and electric vehicles, and to learn about the benefits of these vehicles in reducing the region's transportation related emissions.



## ADDITIONAL HIGHLIGHTS

**Replace municipal fleet with hybrid and electric vehicles:** The Town replaced 10 vehicles in its fleet with 2 electric vehicles and 8 hybrid vehicles.

**Install EV infrastructure:** The Town installed 2 EV charging stations for the municipal fleet to use and 6 charging stations for public use.

**Increase bicycle and pedestrian infrastructure:** 6 miles of multiuse pathway has been installed along the Bedford Center Road.



## Municipal Transportation-Related Policies Implemented or Underway

- **Bicycles for police:** Four bicycles have been purchased for Town police use.
- **Anti-idling law:** The Town is working to actively enforce the Westchester County anti-idling law.

## Community Transportation Policies and Outreach Implemented or Underway

- **Incentivize and promote energy-efficient vehicles:** Along with the public EV charging stations, the Town passed an incentive providing a \$50 reduction in parking passes at both commuter lots for owners of hybrid cars.
- **Safe Routes to School:** The Town is participating in the Safe Routes to School Program to encourage more children to walk and bike to school.
- **Promote low-carbon transportation options:** the Town has invested significant effort in promoting public transit by making changes to existing commuter lots and by encouraging use of the senior bus and the Hart bus.

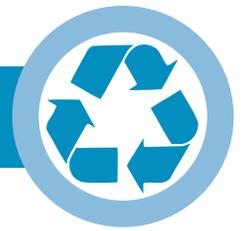
All of the efforts outlined in this report will contribute to the Town's progress in meeting its 2020 goal. It is important to note, however, that it is not always possible to quantify the direct impacts of an individual measure. For this reason, **Table 5** details the progress that has been achieved with regard to air quality improvements, energy reductions, and GHG emissions reductions for a set of individual measures as well as bundled measures that, when combined, result in quantifiable impacts.

**Table 5: Energy, GHG, and Criteria Air Pollutant Reductions from Transportation Measures**

2004 Baseline Energy Use	2012 Energy Use	2004 Baseline GHG (metric tons CO <sub>2</sub> e)	2012 GHG (metric tons CO <sub>2</sub> e)	Energy Reduction	GHG Reduction (MT CO <sub>2</sub> e)	Reduction of Criteria Air Pollutant (lbs)				
						NO <sub>x</sub>	SO <sub>x</sub>	CO	VOC	PM-10
<b>MUNICIPAL</b>										
<b>Reduce municipal fleet vehicle fuel use<sup>6</sup></b>										
14,349 MMBtu energy	9,926 MMBtu energy	1,045	722	4,423 MMBtu	323	763	103	9,764	1,225	118
<b>COMMUNITY</b>										
<b>Reduce community scale vehicle fuel use</b>										
959,118 MMBtu energy	736,150 MMBtu energy	74,693	57,329	222,968 MMBtu	17,364	15,371	1,930	621,320	68,683	3,039

<sup>6</sup> In some cases, multiple measures have been "bundled" to indicate energy and GHG reductions from a combined set of actions because the reduction cannot be isolated to the specific measure alone.

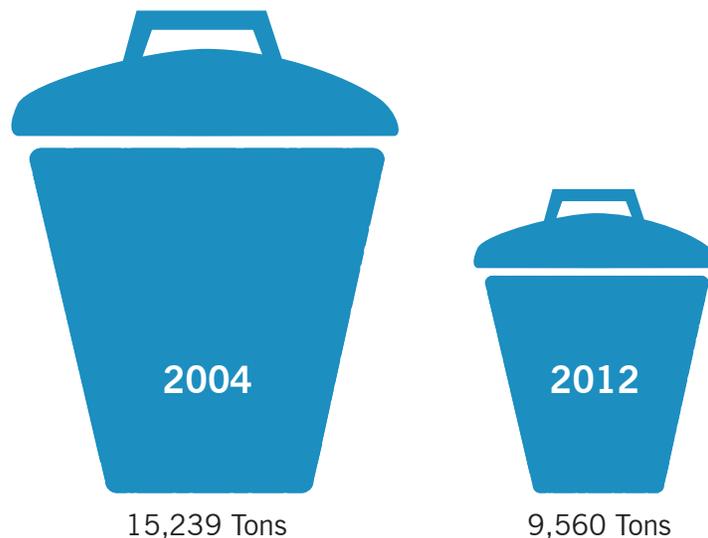
# WASTE & RECYCLING



In its Climate Action Plan (CAP), the Town of Bedford identified 21 measures that would reduce emissions from the waste sector in municipal operations as well as throughout the community. The Plan identified six municipal measures and 15 community measures<sup>7</sup> that aimed to reduce waste generation, increase recycling, and divert waste from landfills. Equally important, these measures provide for additional co-benefits such as job creation, cost savings, improved health, and improved awareness of municipal environmental programs.

Municipal waste and recycling measures identified in the CAP included policies to reduce government-generated waste, increase recycling, and improve and expand composting initiatives. Community measures included education and outreach to community members and businesses, improved reuse and the creation of composting facilities, and financial incentives and disincentives to encourage recycling and composting. The Town has been extremely active in implementing several of these measures and is in the process of implementing several others.

## Community Waste



**37% Reduction**  
in Community Waste

<sup>7</sup> The CAP contains more measures, but where progressed can be tracked similarly, measures have been combined/synthesized.

**Table 6** outlines the status of and progress toward achieving the waste and recycling measures included in the Town's CAP. It also provides recommended metrics for tracking progress and the co-benefits associated with each.

**Table 6: Waste/Recycling Measures, Status, and Progress**

Measure	Status	Recommended Metric	Progress	Co-Benefits
<b>MUNICIPAL WASTE &amp; RECYCLING MEASURES</b>				
Zero waste goal for public events	Not Started	Tons waste generated at public events	NA	   
Municipal green procurement and recycling policy	Implemented	% of purchased materials that are recyclable or have recycled content	Adopted green procurement policy; Recycling mandated in Town offices	   
Composting bins at town parks	Not Started	# of composting bins; Tons of compost material picked up	NA	   
Expand and enhance existing municipal composting	In Progress	Tons waste composted	Landscaping waste is composted; specific government portion not yet tracked	   
Reuse/recycling of construction materials	In Progress	Tons material re-used or recycled (or % of total construction materials)	Recycle asphalt, gravel, and stone for 32 miles of Town roads	   
Low-VOC procurement policy for cleaning products and paint	In Progress	Policy adopted - yes/no	Testing green cleaning products	   
<b>COMMUNITY WASTE &amp; RECYCLING MEASURES</b>				
Bedford waste and recycling study	Implemented	Study completed	Yes	   
Develop reporting requirements for carters	Implemented	Requirement passed; % of carters reporting	Created reporting requirements for waste haulers - destination, tonnage, composition	   
Establish/expand curbside recycling programs and increase plastic recycling eligibility	In Progress	Waste tonnage; recycling rate	Single Stream recycling began in September 2013	   
Waste and recycling education campaign	In Progress	# of materials created and distributed	Single Stream recycling Education fliers & Wheel of Trash Game at multiple Bedford2020 events	   
Implement pay-as-you-throw program	In Progress	Waste tonnage; Recycling rate	To be phased in beginning 2014	   

**Table 6: Waste/Recycling Measures, Status, and Progress [continued]**

Measure	Status	Recommended Metric	Progress	Co-Benefits
Reuse facilities/programs	Not Started	Tons waste diverted	NA	   
Establish/expand business recycling programs	Not Started	Waste tonnage; Recycling rate; # of businesses participating	NA	   
Organics composting facility	Implemented	Tons material composted	1,600 tons	   
Home composting initiative	In Progress	# of participating homes	Home Compost Tour Spring 2013	   
Reuse/recycling of construction materials	Not Started	Tons waste recycled/reused from construction projects	NA	   
Zero waste goal for public events and events on public land	Not Started	Tons waste generated at events on public land; # of events that achieve zero waste	NA	   
Green business programs	Not Started	# of businesses participating	NA	   
Plastic and paper bag fee/reusable bag distribution	Not Started	# of bags distributed; # of businesses participating	NA	   
#6 plastic ban	NA	Ban implemented - yes/no	Law now requires recycling #1-7	   
Tap water campaign	Not Started	Participants (residents/businesses) pledging to eliminate plastic bottles	NA	   

## Additional Waste & Recycling Policies Implemented or in Progress

- **Municipal green purchasing:** A policy on green municipal purchases has been adopted. This requires purchasers to consider life-cycle energy costs, sustainability of materials, recyclability of products, and transportation and packaging costs when making purchasing decisions.
- **Reporting requirements for waste haulers:** Waste haulers must now provide reporting on their activities, including the weight, composition and destination of their hauled waste.

# Single Stream Recycling Ordinance

A new Waste and Recycling Ordinance for the Town has been developed and implementation is underway. Single Stream Recycling is mandated by this ordinance and began September 2013.



## ADDITIONAL HIGHLIGHTS

### Westwood Organics program:

The Town has signed a contract with Westwood Organics to allow residents to use the Beaver Dam Compost Facility for their leaf and wood waste. The facility mulches or composts these items. Residents may, in turn, pick up mulch and compost from the facility at no charge. Approximately 20,000 cubic yards of tree debris was processed into mulch in 2012.

### Post-Sandy Wood Waste Recycling:

County data show 695 tons of Bedford wood waste from Superstorm Sandy were recycled rather than landfilled. County-wide, 46,804 tons of wood were recycled after the storm.

All of the efforts outlined in this report will contribute to the Town's progress in meeting its 2020 goal. It is important to note, however, that it is not always possible to quantify the direct impacts of a measure. For this reason, **Table 7** details the progress that has been achieved with regard to air quality improvements, energy reductions, and GHG emissions reductions for a set of individual measures as well as bundled measures that, when combined, result in quantifiable impacts.

**Table 7: GHG Reductions from Implemented Waste Measures**

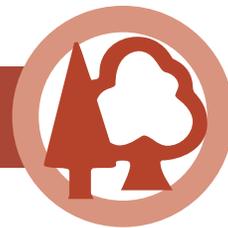
2004 Baseline, Waste (tons)	2012 Waste (tons)	Waste Reduction (tons)	GHG Reduction (MT CO <sub>2</sub> e)
<b>Community</b>			
<b>Reduce waste and increase recycling/waste diversion <sup>8</sup></b>			
15,239	9,560	5,679	17,364

<sup>8</sup> In some cases, multiple measures have been "bundled" to indicate energy and GHG reductions from a combined set of actions because the reduction cannot be isolated to the specific measure alone. In comparison of waste tonnage, note that 2004 waste tonnage was estimated using national average numbers, whereas 2012 waste tonnage was provided directly by the waste haulers based on actual waste collected.

### Reduction of Waste



# LAND AND WATER USE



The Town of Bedford has made notable progress since 2010 in advancing more sustainable land and water use strategies. In total, the Town has identified 20 measures (6 municipal and 14 community measures) that will reduce greenhouse gas emissions while simultaneously fostering smarter land use practices and greater water use efficiency.

Overall, the measures identified in this sector focus on four primary areas: water conservation, transit oriented development, landscape alternatives, and locally sourced food. Few of these measures have quantifiable greenhouse gas reductions, but all measures have an array of co-benefits that will help the Town become a healthier, more walkable, and more efficient community. **Table 8** outlines the progress and status of land and water related measures identified in the Climate Action Plan.

**Table 8: Land and Water Measures, Status, and Progress**

Measure	Status	Recommended Metric	Progress	Co-Benefits
<b>MUNICIPAL LAND AND WATER MEASURES</b>				
Water conservation (water saving shower heads, high efficiency toilets, water saving effects)	In Progress	Municipal water consumption; # of fixtures upgraded	Fixed leaks; installed low flow fixtures in one building	
Plant trees to shade buildings	Not started	# of trees planted that provide shade to municipal buildings	NA	
Low-maintenance landscaping	Implemented	Mowing frequency; fuel use from maintenance equipment	Parks Department uses mulch attachment on lawn mowers	
Non-asphalt pavements	Not started	% of municipal property with non-asphalt pavement	NA	
<b>COMMUNITY LAND AND WATER USE MEASURES</b>				
Transit oriented development	Not started	Transit Ridership; VMT	NA	
Build stormwater capacity through municipal codes and regulations	Not started			
Modified town water billing system	Implemented	Water consumption (residential and commercial)	Sliding scale water rates that increase with consumption levels	

**Table 8: Land and Water Measures, Status, and Progress [continued]**

Measure	Status	Recommended Metric	Progress	Co-Benefits
<b>Water conservation (water saving shower heads, efficiency clothes washers, water saving faucets, high efficiency toilets, promote education, information, and training on water conservation and re-use systems)</b>	Not started	Water consumption (residential and commercial)	NA	   
<b>Increase supply, availability, and consumption of local food</b>	Implemented	Quantity of local food sold and purchased	VegOut program provides resources to connect residents to local healthy food options. 2 local institutions now purchase local food (Northern Westchester Hospital & Rippowam-Cisqua School)	   
<b>Plant and preserve trees</b>	Implemented	# of trees planted; annual change in # of trees	Participation in Trees for Tribes program; Branch Out program; Designated a Tree City USA; 350 trees planted	   
<b>Low-maintenance landscaping</b>	Not started	Mowing frequency; fuel use from maintenance equipment	NA	   
<b>Gasoline lawnmower replacement</b>	Not started	Amount of gasoline used for lawn mowing compared to baseline	NA	   
<b>Non-asphalt pavements</b>	Not started	% of non-asphalt pavement	NA	   

# Pesticide Pledge Program

Bedford 2020 is asking community members to take a pledge agreeing to manage their lawns without the use of synthetic pesticides or chemical fertilizers, and to also properly dispose of pharmaceuticals. The goal is to have at least 60% of Bedford's 24,000 acres of land managed without synthetic pesticides or chemical fertilizers by 2020. This will protect the community's water quality and the health of its residents.



## ADDITIONAL HIGHLIGHTS

**Water efficiency and conservation:** A number of improvements and repairs were made in municipal buildings to reduce municipal water use.

**Modified water billing system:** A new billing system was implemented charging users on a sliding scale based on their water use.

**Tree City, USA:** The Town achieved "Tree City, USA" designation and passed a policy that restricts tree cutting and replacement during permitting.

**Trees for Tribes, Bedford Tree Advisory Board, and Branch Out:** These programs have resulted in the planting of 350 trees, resulting in an estimated carbon sequestration benefit of 14 metric tons CO<sub>2</sub>e.<sup>9</sup>

<sup>9</sup> Carbon sequestration from tree planting was calculated using EPA formulas: <http://www.epa.gov/cleanenergy/energy-resources/refs.html#seedlings>



## Municipal Land and Water Measures Implemented or Underway

- **Low-maintenance landscaping:** The Town Parks Department uses a mulch attachment on mowers where applicable, reducing the need for leaf blowers.
- **Open Space Fund:** The Town passed a policy to preserve and protect open space which included establishing an Open Space Fund. The Fund has allowed the Town to purchase approximately 50 acres of land, as of September 2013. The Town's commitment to preserving open space was confirmed in November 2012 through a community referendum supporting this initiative.

## Community Land and Water Measures Implemented or Underway

- **Pesticide prohibition:** The Town passed a policy prohibiting the use of turf pesticides on Town land, including parks.
- **Trees for Tribs:** The Conservation Board, in conjunction with the Department of Environmental Conservation, planted trees at the BH Memorial Park and at Fox Lane High School under the "Trees for Tribs" program.
- **"Leave Leaves Alone" program:** The Town initiated a "Leave Leaves Alone" program, which is an educational program to inform homeowners and landscapers about the advantages of mulching leaves on site.
- **"Branch Out" program:** the "Branch Out" program has been initiated and has helped to plant 250 trees throughout the Town thus far.
- **Tree replacement policy:** A policy was created mandating the replacement of trees cut down during subdivision creation or on fragile land, steep slopes, ridgelines, wetlands, or serving as wetland buffers.
- **Institutional Food Hub Project:** The Town started an Institutional Food Hub Project to increase supply, availability, and consumption of local food.

This report was prepared by VHB | Engineering, Surveying and Landscape Architecture, P.C.



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