Government Operations Climate Action Plan for the Town of Dover, New York

December 2018

Prepared by: **First Environment, Inc.**
91 Fulton Street
Boonton, New Jersey 07005

TABLE OF CONTENTS

TABLES

FIGURES

List of Acronyms

AR5 - Intergovernmental Panel on Climate Change's Fifth Assessment Report
CAGR – Compound Annual Growth Rate
CH_4 - methane
CO_2 – carbon dioxide
CO_2e - Carbon Dioxide Equivalents
CSC – New York State Climate Smart Communities
EF – GHG Emission Factor
eGRID – US EPA Emissions & Generation Resource Integrated Database
EPA – Environmental Protection Agency
GHG – greenhouse gas
GWP – global warming potential
HFC - hydrofluorocarbon
IMP – Inventory Management Plan
IPCC - Intergovernmental Panel on Climate Change
LPG – liquid petroleum gas (propane)
t – metric tonnes
MSW – municipal solid waste
MWh – Mega Watt hour
N_2O – Nitrous Oxide
NYS – New York State
NYSEG - New York State Electric and Gas Corporation
NYSERDA – New York State Energy Research and Development Authority
PE – Pledge Element
PFC - perfluorocarbon
SF_6 – sulfur hexafluoride
TCR – The Climate Registry
the Town – Town of Dover
US EPA - United States Environmental Protection Agency
UNFCCC – United Nations Framework Convention on Climate Change

Acknowledgments

November 2018

We are pleased to present this 2018 Town of Dover Government Operations Greenhouse Gas Inventory, Target Reduction Plan, and Climate Action Plan. It is our hope that future generations of Dover elected officials and residents will continue to inspire awareness and activism about the undeniable threats of climate change upon our Town's resplendent natural resources and the planet that we and all humankind lovingly call "Home."

Sincerely,

The Town of Dover Town Board

Supervisor Linda S. French

Deputy Supervisor Andrew House

Councilman Richard Yeno

Councilwoman Jane Meunier

Councilman Redmond Abrams

The Town of Dover Town Board wishes to thank the following agencies, officials, and individuals for their assistance with the development of this Town of Dover Government Operations Greenhouse Gas (GHG) Inventory, GHG Target Reduction Plan, and Government Operations Climate Action Plan:

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    - Evan van Hook - Chair, Conservation Advisory Council and Co-Chair, Dover Climate Smart Task Force
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- Deputy Town Clerk Bonnie Franks

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"We stand now where two roads diverge. But unlike the roads in Robert Frost's familiar poem, they are not equally fair. The road we have long been traveling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork of the road — the one less traveled by — offers our last, our only chance to reach a destination that assures the preservation of the earth."

- Rachel Carson, ***Silent Spring*** (1962)

"There's No Place Like Home."

- Dorothy, ***The Wonderful Wizard of Oz*** (1900)

Executive Summary

The Town of Dover (NY) is focused on providing leadership in addressing the causes and local impacts of climate change through actions at both the community and government operations levels. The Town government is committed to reducing greenhouse gas (GHG) emissions from its operations by implementing climate mitigation best practices that are practical and cost-effective. To assist in meeting this objective, the Town received a 2017 NYS DEC grant award to become a certified Climate Smart Community (CSC). Priority actions to be funded are a government operations GHG inventory, GHG target reduction plan, and government operations climate action plan.

The purpose of a local government climate action plan is to reduce GHG emissions from Town operations by prioritizing actions and to gather support for short- and long-term investments. This includes identifying and implementing climate actions that lead to tangible benefits for the local community. Implementation of these actions also results in CSC certification points, moving the Town of Dover closer to its goal of becoming a Bronze Certified Climate Smart Community.

A key element of the Town of Dover's Climate Action Plan is its GHG emissions inventory. The Town's total GHG emissions (also referred to as a carbon footprint) from government operations for its selected base year of 2017 amounted to 370 metric tonnes carbon dioxide equivalents (tCO_2e).

The largest source of government operations related GHG emissions is the town's fleet of vehicles, primarily the large trucks used for highway maintenance. Given the large area covered, fuel consumption and the related emissions were anticipated to be significant. The second largest source of emissions comes from the Town's owned and operated facilities (Town Hall, Town Highway Department buildings, Tabor-Wind House, and American

Legion). The last major area of emissions comes from District lighting throughout Town borders. These areas will be the focus for emission reductions.

The next major element of the Government Operations Climate Action Plan is to develop GHG reduction targets for the short (1-year), medium (5-year), and longer term (10-year) time horizons. Based on practical and cost effective climate action strategies, the following emission reduction targets have been set forth in this plan.

Government Operations GHG Reduction Target	Target Year	Reduction Goal from 2017 Base Year GHG Inventory (%)
Year 1	2019	3%
Year 5	2023	10%
Year 10	2028	20%

Meeting these targets results in additional bonus performance points counting toward Bronze, Silver, or Gold certification levels.

The following climate actions have been identified to meet or exceed the identified GHG emission reduction targets listed above.

Target Year	Climate Action Reduction Measures	Expected GHG Reductions (tCO2e/year)	Estimated Cost / Annual Savings	Comments
Year 1	Power Purchase Agreement (PPA) - Solar Energy	16	Cost: $1,800 Savings: $0	• Simple implementation • Low-medium cost • Significant GHG emission reduction
	CUMULATIVE TOTAL:	16 (4.3%)	✓	Exceeds Year 1 Target of 3%
Year 2 to 5	LED Lights Replacement - Ballfield	8	Cost: $12,400 Savings: $4,200/year	• Medium complexity • Medium cost • Medium GHG reductions
	Town Hall Lighting Sensors	2	Cost: $6,000 Savings: $1,000/year	• Simple implementation • Low cost • Minor GHG reductions
	Town Hall Retrofit - Energy Efficiency	6	Cost: $12,000 Savings: $3,250/year	• Medium complexity • Medium cost • Medium GHG reductions
	Phase I of LED Streetlight Replacement	8	Cost: $16,500 Savings: $6,500/year	• Complex implementation • High cost & large savings • Significant GHG emission reduction
	CUMULATIVE TOTAL:	40 (10.8%)	✓	Exceeds Year 5 Target of 10%
Year 6 to 10	Phase II of LED Streetlight Replacement	35	Cost: $ 72,200 Savings: $28,500/year	• Complex implementation • High cost & large savings • Significant GHG emission reduction
	CUMULATIVE TOTAL:1:	75 (20.3%)	✓	Exceeds Year 10 Target of 20%

Additional practical and cost effective climate actions have been identified to help the Town of Dover meet its Bronze level-Certification goal by 2020. The town has already been awarded 33 points of the 120 points needed to be certified at the Bronze level. Many of these climate actions have been, or will be, funded through available CSC grants. Additional sources of funding or guidance include the following initiatives:

- Mid-Hudson Streetlight Consortium (http://courtneystrong.com/about-mhsc/).
- New York State Energy Research & Development Authority (NYSERDA): Grants and loans for renewable energy projects (https://www.nyserda.ny.gov/About/Funding).

- New York Department of Environmental Conservation (https://www.dec.ny.gov/pubs/grants.html): Grants for environmental projects, some of which address Climate Change mitigation and adaptation, include:
    - purchasing land for the NYS Forest Preserve,
    - restoring habitat,
    - controlling invasive species,
    - upgrading municipal sewage treatment plants,
    - cleaning up waterfront property and creating a public park,
    - helping business develop ways to recycle material.
- New York State Clean Water Revolving Fund: low-interest loans for water shed protection (https://www.efc.ny.gov/cwsrf).
- Home Depot Community Impact Grants Program (https://corporate.homedepot.com/community/home-depot-foundation-grants).

In conclusion, the Town of Dover has established a credible base year (2017) GHG inventory of its local government operations. The largest sources of GHG emissions are the Town's fleet of vehicles, followed by its facilities and district lighting. Based on input from the Town's Green Team, Board and Citizens, practical climate actions have been identified to meet Year 1, 5 and 10 GHG reduction targets. In addition, these climate actions will also help meet the Town's goal of becoming the County's first Bronze-level certified Climate Smart Community.

1. Introduction

1.1 Background on the Town of Dover, NY in 2018

The Town of Dover is located in the bucolic Harlem Valley of Dutchess County, bordered to the east by the State of Connecticut and approximately 90 miles from New York City and Albany, New York. The Town separated from the Town of Pawling, New York in 1807 and comprises the unofficial hamlets of Dover Plains and Wingdale. Early settlement and industry centered on homestead farming, iron ore smelting, and limestone and marble quarry production.

The advent of public transportation, namely the New York & Harlem Railroad, with stops in Dover facilitated growth through the mid- to late-1800s. In the 1923, New York State constructed the Wingdale State Hospital (later named the Harlem Valley Psychiatric Center) that served as a major employer for seven decades. During World War II, the federal government constructed a short-lived military defense plant that manufactured magnesium from local limestone.

The Town experienced increased residential development during the 1980s, with an influx of families from downstate counties seeking housing and community-based culture. The state hospital's decommission in 1994 precipitated a period of economic uncertainty for residents and businesses that formerly supported the facility's day-to-day operations. In 2004, the campus was acquired for redevelopment as an active adult community. The national recession of late 2008 delayed the project's implementation. The campus was sold in 2014 and is currently a nonprofit private university.

By the start of the new millennium, most of Dover's former state workforce was assimilated into new employment. During these challenging years, local businesses and regional employers helped sustain the Town's economy. In 2012, the NYS DEC, serving as lead agency, approved construction of a 1,100-megawatt natural gas-fired electricity generation plant in the town. Construction is currently underway and the project is slated for completion by the fall of 2020. In 2018, the Dover Town Board and Planning Board granted site plan approval for the installation of a two-megawatt community solar panel farm that will offer purchase of renewable energy to local homes and businesses.

As of July 2017, Dover's population was 8,456 residents (U.S. Census, 2018 Quick Facts). Age-specific demographic data reveal the following population subgroups: 65 percent adults

between the ages of 18 to 64 years; 13 percent seniors (age 65 years and older), and 22 percent youth (under 18 years of age). The 2016 median household income in Dover was $54,600 compared to the NYS average of $60,741 (U.S. Census Quick Facts). The median value of owner-occupied housing in the Town of Dover in 2016 was $244,300 compared to the NYS average for the same period of $286,300.

At this time, town leaders are working on an update of the Comprehensive (Master) Plan to better utilize the Route 22 transportation corridor as an economic engine to expedite and incentivize new commercial development. Based on a steady uptick in home purchases and welcome of renewable energy production as a new anchor of economic development, Dover is increasingly well-positioned to serve the requisites of a 21st Century community.

1.2 Background of the Town of Dover's Government Operations Greenhouse Gas (GHG) Emissions Inventory, GHG Reduction Target Plan and Government Operations Climate Action Plan

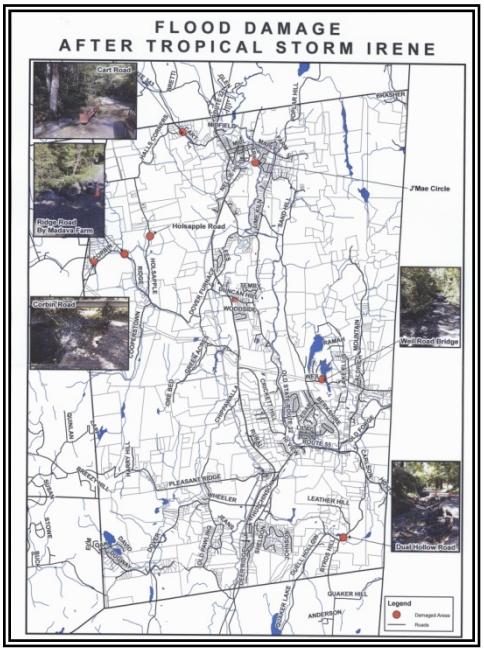
Dover's early settlement, similar to neighboring New England communities, centered on harvesting natural resources to provide munitions for the Revolutionary War, to build homesteads along with family farming, and raw material commerce. With the introduction of the railroad in the mid-1800s, local marble and limestone quarries were industrialized to cultivate and transport monoliths for monuments and government buildings in New York City and Washington, DC. During World War II, the federal government constructed a short-lived magnesium processing plant that utilized local materials. From the 1960s to mid-1980s, gravel and soil mining flourished with limited reclamation success until town leaders adopted a moratorium on new operations in 1999.

By the year 2000, Dover's population grew to 8,565 from 7,778 in 1990 with an influx of new residents from New York City, Westchester, and Putnam Counties that facilitated the Town's transition to a more commuter-based community. With the topographic necessity to locate residential and commercial development on slopes as well as the valley bottom, the negative impacts of climate change began to compromise the Town's natural and man-made infrastructure. Severe seasonal storms in 2005, 2007, and 2009 and hurricanes in 2011, 2012, and 2013 resulted in flooding of residential areas along the Ten Mile River and roadway failures serving neighborhoods on East and West Mountains.

In 2010, the Town of Dover served as the lead community in development and adoption of a multi-jurisdictional All Hazards Mitigation Plan (AHMP) of nine Northeastern Dutchess County communities. In 2015, Dutchess County consolidated individual and intermunicipal plans into a county-wide AHMP. In 2016, the Dover Town Board adopted the NYS Climate Smart Communities Pledge and established the Dover Climate Smart Task Force in cooperation with the Town's Conservation Advisory Council. In 2017, the Town was awarded a NYS DEC Climate Smart Communities Certification Program grant to achieve four priority certification actions: a town-wide road-stream crossing inventory; a natural resource inventory; a Government Operations greenhouse gas (GHG) emissions inventory, target reduction plan, and climate action plan; and a review of town policies, publications and procedures using the Climate Smart Resiliency Checklist.

This publication was funded in part through a 2017 NYS DEC Climate Smart Communities Certification Program grant. It provides 2017 baseline results of the Town's government operations GHG emissions inventory along with strategies to achieve notable GHG reductions at 1-, 3- and 10-year intervals. Lastly, the document offers recommendations for elected officials, department heads, and town staff members to serve as community leaders in local efforts and practices to protect the Town's resilient natural resources and ameliorate the preventable causes of climate change wherever possible.

Background on the Town of Dover prepared by Town Clerk Katie Palmer-House, Ed.D, December 2018



Map of flood damage in Dover after Tropical Storm Irene, 2011. Frequency and intensity of tropical storms and hurricanes are projected to increase due to climate change, leading to more frequent flooding.

1.3 Regional Efforts to Address Climate Change

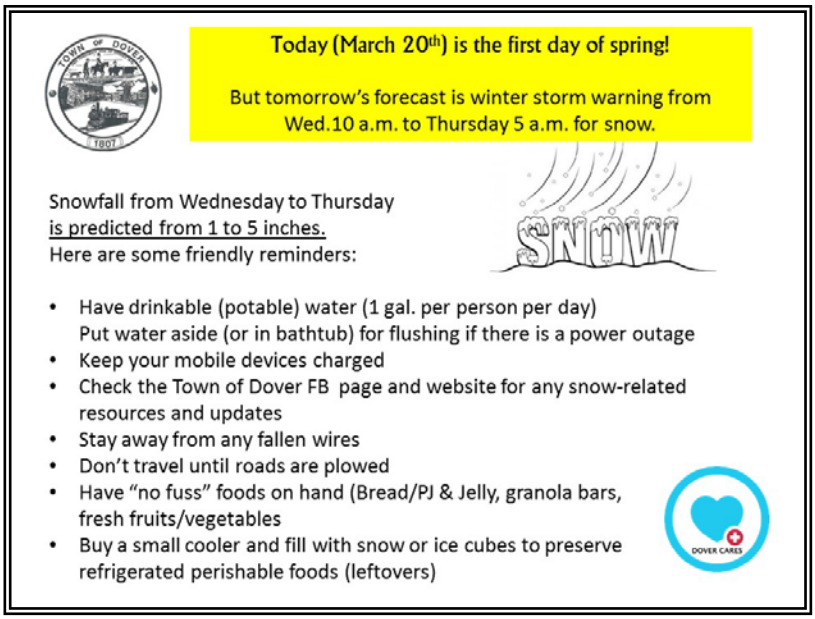
In 2010, Dutchess County published a comprehensive[1] report detailing the climatic conditions and air quality of the County as part of the Natural Resource Inventory. The County reported that the area was already facing impacts of climate change, such as increasing mean annual temperature and a longer frost-free season. The number of days with snow cover has decreased, and winter precipitation is anticipated to become more "slushy." The increase in heavy, dense, wet winter precipitation will increase the occurrence of icy roads and fallen trees and power lines, making winter storms more dangerous for motorists and residents.

The Report also describes the region's propensity for flooding. Each major stream in the County has a number of flood prone areas. Certain climatic phenomena, such as hurricanes, tropical storms, and severe thunderstorms often deliver heavy rainfall that causes flooding in the region. The Report also describes the result of climate change on flooding in the region. There is projected to be in increase in the frequency and intensity of extreme precipitation events, which will lead to more frequent and more severe flooding. Additionally, the level of the Hudson River is projected to rise, which will further exacerbate flooding.

In 2012, NYSERDA released the Mid-Hudson Regional Greenhouse Gas Emissions Inventory[2] for the base year 2010. This report included seven counties from the Mid-Hudson region of the state. Dutchess County emissions were consistent with those of other counties, and Dutchess County was about average in both overall GHG emissions as well as GHG emissions per capita. The largest emissions sector was transportation, followed by residential and commercial energy consumption. The Inventory was essential for understanding the sources of emissions in the region and in each county. Local governments now have a data-driven basis for proposing emissions reductions strategies to reduce the future impacts of climate change, many of which were described in the Dutchess County Natural Resource Inventory.

The Town of Dover is continuing to build upon these regional efforts, and its own efforts, to address both the causes of climate change and local impacts resulting from climate change. This report is a key component of that effort and will provide a baseline for continuing emissions reductions.

[1]The Natural Resource Inventory of Dutchess County, NY (November 2010)
http://www.co.dutchess.ny.us/CountyGov/Departments/Planning/16138.htm
[2] Mid-Hudson Regional Greenhouse Gas Emissions Inventory (December 13, 2012)
https://www.dec.ny.gov/docs/administration_pdf/midhudghginventory.pdf



Example of winter weather warning for 2018 snow storm. Extreme weather is projected to increase due to climate change, and winter precipitation will become heavier and wetter, leading to dangerous icy conditions and potential power outages.

2. Climate Smart Communities Program

Climate Change is one of the defining issues of our time. Global warming is of particular significance. The International Panel on Climate Change (IPCC) estimates a greater than 95 percent probability this warming is a result of human activity since the mid-20th century and proceeding at a rate that is unprecedented over millennia.[3] National, regional, and local governments from around the world are addressing this challenge by making commitments and taking actions to reduce their own operational emissions (carbon footprint).

In 2009, New York State established the Climate Smart Communities program as a partnership between state and local governments to reduce greenhouse gas emissions (GHGs) in response to Climate Change. Some of the benefits of this program include saving taxpayer dollars and advancing community goals for health and safety, as well as improving economic vitality, energy independence, and quality of life. This partnership includes six New York State agencies that jointly sponsored the CSC Program, including the New York State Energy Research and Development Authority (NYSERDA), Department of State, Department of Environmental Conservation, Department of Health, Department of Transportation, and the Public Service Commission.

[3] IPCC Fifth Assessment Report, Summary for Policymakers

2.1 Purpose and Goals

The purpose of the CSC Certification program is to encourage ongoing implementation of actions related to climate action mitigation of climate change through reduction of greenhouse gas emissions and adaptation to effects of climate change, and to recognize achievements of local governments. The primary goal is to provide a more structured framework and guidance for local governments to advance their local climate action through their existing CSC Pledge and the elements listed above. Participation in CSC and the CSC Certification Program is voluntary.[4]

The CSC certification program is designed to address 10 focus areas, or "pledge elements," including:

1. Pledge to be a Climate Smart Community;
2. Set Goals, Inventory Emissions, Plan for Climate Action;
3. Decrease Community Energy Use;
4. Increase Community Use of Renewable Energy;
5. Realize Benefits of Recycling & Other Climate-Smart Solid Waste Management;
6. Reduce GHG Emissions Through Climate-Smart Land-Use Tools;
7. Enhance Community Resilience & Prepare for the Effects of Climate Change;
8. Support Development of a Green Innovation Economy;
9. Inform & Inspire the Public;
10. Commit to an Evolving Process of Climate Action.

Once a local government adopts the CSC Pledge and submits a certified copy of the adopting resolution to the Department of Environmental Conservation (DEC), it will automatically become a Registered Climate Smart Community. Each CSC can then implement actions at its own pace. There is no time limit between adoption of the pledge and commencement of the remainder of the certification process.

2.2 The Certification Process

CSC Certification is based on a rating system. This system is designed to:

- be broadly applicable and useful to all local governments in New York State;
- user friendly;
- acknowledge early adopters;
- promote ongoing action; and
- reward leaders.

[4] New York State Department of Environmental Conservation, 2014, p 1-6. Climate Smart Communities Certification Manual. Albany, New York. http://www.dec.ny.gov/energy/50845.html.

The rating system includes a variety of actions that can have an effect on reducing GHG emissions, enhancing local resilience, or building a green economy. Each action is assigned a score. Score points are awarded based on the program priority, duration, impact, and certainty the action will take place. The types of actions include:

- GHG Inventory development, assessment, and reporting;
- various plan developments including Climate Action planning;
- new policies, laws, or zoning;
- education and outreach;
- partnership and collaboration;
- operational changes;
- programs, services, and incentives;
- facilities and infrastructure;
- reporting; and
- bonus points for innovation and overall performance.

Certified Climate Smart Communities (CSCs) can also earn bonus points by demonstrating innovation or achieved performance. The more actions implemented, the more points are awarded resulting in award levels and certification.

2.3 Award Levels and Certification

The CSC Certification program is based on two types of actions:

- Priority actions: A group of actions that must be completed for each award level. Applicants must complete the required priority actions for each award level along with a minimum number of additional priority actions for each award level.
- Optional actions: All actions that are not labeled as priority. Applicants may select any optional actions to complete to earn points toward one of the award levels.

In addition to certification, CSCs can achieve several award levels: bronze, silver, and gold. Award levels are based on the total points earned and the completion of selected priority actions. For each of the certification and award levels, the program specifies a minimum number of priority actions that must be completed, as indicated in Table 1, as well as a minimum number of points that must be accumulated by completion of optional actions in addition to the points earned by completion of priority actions.[5]

[5] New York State Department of Environmental Conservation, 2014, p I-12, Table 2. Climate Smart Communities Certification Manual. Albany, New York. http://www.dec.ny.gov/energy/50845.html.

Table 1. CSC Certification Program Requirements

Award Level	Description	Point Requirement	Minimum Pledge Elements	Mandatory Actions	Minimum Additional[2] Priority Actions	Minimum Performance / Innovation Points
Registered Climate Smart Community	Local governments are recognized as being registered with the program upon signing the CSC pledge.	N/A	PE1	1.1	N/A	0
Certified Climate Smart Community, Bronze	First level of certification or local governments that have made a commitment and have begun to take action.	120 points	At least 1 action completed under 4 different PEs	PE1 Action: CSC Task Force & PE1 Action: CSC Coordinator	3 priority actions	0 Points
Certified Climate Smart Community, Silver	The Second level of certification, for local governments that have implemented a wide variety of climate action actions for government operations and the community.	300 points	At least 1 action completed under 7 different PEs	PE1 Action: CSC Task Force & PE1 Action: CSC Coordinator	6 priority actions	10 Points (10% reduction)
Certified Climate Smart Community, Gold	The highest level of certification, for local governments that have successfully taken action to address all pledge elements and can demonstrate tangible reductions in GHG emissions.	Under Development	Under Development	Under Development	Under Development	Under Development

[2] Additional priority actions include 1.2, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 7.1, and 7.3.

The priority actions are focused largely on relatively low-cost assessments and policies that build baseline knowledge and plan for future action, or that establish local government as a leader in emerging fields. The number of priority actions that must be completed increases with each level of certification. The Town of Dover's efforts are summarized in the Local Framework for CSC Certification Efforts Section below.

The CSC Grants program for 2018 has set aside $8.2 million for Implementation including climate change adaptation and non-energy (e.g., food waste & transportation) mitigation projects. An additional $550,000 is available for CSC Certification including climate action

planning, inventory, and assessments (smaller projects). Funding for this Climate Action Plan, including development of Dover's GHG inventory, came from the 2017 grant program.

2.4 Regional CSC Certification Efforts

To date, 234 New York communities have adopted the Climate Smart Communities pledge. Over 35 percent of New Yorkers live in these "pledged" ("registered") communities. In 2016, the Town of Dover Town Board adopted the Climate Smart Communities pledge joining the following communities in Dutchess County:

- County of Dutchess
- City of Beacon
- Town of Clinton
- Town of Hyde Park
- Town of LaGrange
- Town of North East
- Town of Poughkeepsie
- Town of Pine Plains
- Town of Red Hook
- Town of Rhinebeck
- Town of Union Vale
- Town of Wappinger
- Village of Rhinebeck
- Village of Tivoli
- Village of Wappingers Falls

This means the Town of Dover is looking to become the first local government in Dutchess County and one of the first in the region to become Climate Smart Certified.

2.5 Local Framework for CSC Certification Efforts (Status)

In addition to passing a resolution adopting the CSC pledge, the first Pledge Element and Priority Action 1.1, the Town has created a Climate Smart Community task force which has appointed a Climate Smart Community coordinator. Both of these are mandatory actions needed to meet Dover's goal of becoming a CSC certified community at the Bronze Level. The following Table 2 provides a listing of Pledge Element (PE) actions completed, ongoing, or planned by the Town of Dover. A description of each climate action is presented with the year of actual or expected implementation.

Table 2. Mandatory, Priority and Pledge Element (PE) Actions Completed, Ongoing or Planned

Year	Pledge Element: Climate Action	Description	Points[6]	Cumulative Points
2017	PE1: CSC Task Force	Create a community Climate Smart Community task force climate mitigation and adaptation	20	20
2017	PE1: CSC Coordinator	Appoint a Climate Smart Community coordinator	10	30
2018	PE1: National/Regional Climate Program	Join a national or regional climate campaign or program (ICLEI)	3	33
2018	PE2: Government Operations GHG Inventory Inventory	Develop a government operations GHG emissions inventory	16*	49
2018	PE2: Government Operations Climate Action Plan	Develop a government operations climate action plan	14*	63
2019	PE3.10: Adopt a Vehicle Fleet Efficiency Policy	Develop a government operations GHG inventory for vehicles	4*	67
2019	PE4: Green Power Procurement Policy	Adopt a green power purchase policy to ensure increasing local government energy supplies come from renewables	4	71
2019	PE4: Purchase renewable energy credits	Purchase renewable energy credits (RECs)	7	78
2019	PE6: Natural Resources Inventory	Develop a natural resource inventory	8*	86
2019	PE7: Climate Smart Resiliency Planning	Review existing community plans and projects to identify climate adaptation strategies and policies or projects that may decrease vulnerability	6*	92
2019	PE6: Comprehensive Plan with Sustainability Elements	Develop and adopt a comprehensive plan with sustainability elements	10^	102
2019/20	PE3: Government Building Energy Audit	Conduct energy audits of local government buildings	8	110
2019/20	PE3: Water-efficient fixtures	Install water-efficient fixtures	2	112
2019/20	PE3: Purchasing policy	Adopt an environmentally preferable purchasing policy	2	114

[6] For Actions that can result in a range of points, the middle or median was used to estimate points received.

Year	Pledge Element: Climate Action	Description	Points[6]	Cumulative Points
2019/20	PE4: Renewable Energy Feasibility Study	Conduct feasibility studies for renewable energy installations	4	118
2019/20	PE5: Waste Reduction Education Campaign	Create an educational campaign to encourage recycling, composting and waste reduction	2	120
2019/20	PE5: Recycling Bins in Government Buildings	Provide recycling bins next to all trash receptacles in local government buildings	3	123
2019/20	PE7: Watershed Assessment	Create or update a watershed assessment to identify flooding and water quality priorities.	4	127
2019/20	PE8: Buy Local/Buy Green Campaign	Create a "buy local/buy green" campaign	2	129
2019/20	PE9: Climate-related Public Events	Host climate-related educational seminars, workshops, conferences, or fairs	3	132
2019/20	PE9: Local Climate Action Website	Maintain a website on local climate protection efforts	3	135
2019/20	PE9: Social Media	Use social media to inform the community about the progress of local government's efforts	3	138
2019/20	PE10: Partnerships with Other Entities	Cooperate with neighboring communities and partner agencies	3	141
2022	Performance: Reduce GHGs from Government Facilities	Reduce GHG emissions from government owned facilities 10%+ (2022 goal)	15	156
2022	Performance: Reduce GHGs from Government Vehicles	Reduce GHG emissions from government owned vehicles 10%+ (Hybrid vehicle/s)	15	171

*** CSC Grant Funded**
^ CSC Grant Application Submitted

In addition to the two completed mandatory actions (1.1 & 1.3) and one priority action (creation of its CSC task force), Dover is planning actions in four additional Pledge Elements (PE) levels. This will satisfy the Bronze level requirement to have actions in a least four PE levels. The Town of Dover has also identified a number of additional climate actions leading to an excess of 120 points by 2020 to meet the Town's Bronze-level CSC Certification goal.

One of the most significant climate smart actions listed above is the completion of this Climate Action Plan.

2.6 Climate Action Plan Development and Interagency Collaboration

The purpose of a local government climate action plan is to reduce GHG emissions from Town operations by prioritizing actions and to gather support for short- and long-term investments. This includes identifying and implementing climate actions that are practical, cost-effective, and lead to tangible benefits for the local community. These benefits include:

- costs savings via energy efficiency and reduced energy consumptions;
- cost savings via reduced maintenance and storm damage;
- increased tax revenue via improved property values and new green economic developments and jobs;
- increased visibility of the Town of Dover with potential businesses via leadership awards; and
- grant and low-interest loan opportunities via various State programs.

Development of this Government Operations Action Plan (CAP) project was commissioned as part of the Town of Dover's (NY) grant-funded and community-sponsored activities to achieve Climate Smart Community Certification. The scope of this plan includes establishing a local government operations GHG inventory. This tool will be used to select a base year, set realistic emissions reduction targets, and track GHG performance moving forward. Once the local government operations GHG inventory has been quantified, GHG emission target/s and related emission reduction actions can be identified, prioritized, and implemented. These targets and actions are broken into short (1-5 years), medium (6-10 years), and long-term (over 10 years) time horizons. This allows the Town of Dover to see short-term impacts and benefits while keeping longer term goals in mind.

Several New York State agencies have various programs targeted at reducing GHG emissions from municipal operations. For example, New York State Energy Research and Development Agency (NYSERDA) has a Clean Energy Communities Program. Local governments in New York State can use the Clean Energy Communities program to implement clean energy actions, save energy costs, create jobs, and improve the environment. In addition to providing tools, resources, and technical assistance, the program recognizes and rewards leadership for the completion of clean energy projects.

2.6.1 GHG Inventory Base & Target Years

The Town's government activity data for the calendar year 2017 was collected, reviewed, and entered into a GHG inventory quantification tool. Because this was the most recent full year of complete data collection, 2017 has been selected as the Town of Dover's base emission year. The base year emissions serve as the foundation for establishing Business-as-Usual (BAU) and

reduction forecasts over the short (2019), medium (2023), and long terms (2028). BAU refers to a scenario where the Town pursues no measures or actions aimed at reducing energy consumption and GHG emissions. For more details on the quantification of the Base Year and determination of the Reduction Target as well as the BAU and reduction forecasts, see Appendix A – GHG Inventory and Emission Reduction Plan

2.6.2 Government Operations GHG Reduction Goals

Table 3 presents the reduction goals set for the target years. These goals were established in conjunction with the Climate Smart Dover Task Force, stakeholder input, and consideration to New York State's energy plan that aims to achieve a 40 percent reduction in absolute greenhouse gas emissions from 1990 levels by 2030. In addition, Governor Cuomo's Clean Energy Standard will require 50 percent of New York State's electricity to be sourced from renewable energy sources by 2030.

Table 3. GHG Emission Reduction Goals

Target	Target Year	Reduction Goal from 2017 Base Year GHG Inventory (%)	Reduction Goal from 2017 Base Year GHG Inventory (tCO2e)
Year 1	2019	3%	11.1
Year 5	2023	10%	37
Year 10	2028	20%	74

The reduction goals are presented in percent reduction and in metric tonnes of CO_2 equivalent subtracted from the 2017 base year carbon footprint. These goals also take into account any projected growth or contraction in GHG emissions due to economic activity.

One of the first steps in the climate action plan process is establishing a baseline from which to set goals and measure progress. The baseline GHG inventory provides the local government the data needed to prioritize actions that will offer the best return on investment, whether through cost, energy consumption, or GHG emissions savings.

A GHG emissions inventory of government operations must include all applicable sources of Scope 1 (direct) emissions such as fuel combustion and Scope 2 (indirect) emissions such as electricity usage. Reporting Scope 3 indirect emissions that are not Scope 2, such as

government travel, is encouraged. A summary of the most significant specifics for the Town of Dover's GHG inventory can be found in the following Section 3 – Understanding the Town of Dover's Carbon Emissions. A full version of the Town of Dover's Government Operations GHG inventory is included in Appendix A, detailing the methods, assumptions and quantification results for the GHG inventory as well as the modeling and forecast of the BAU emissions scenario used to evaluate the effectiveness of the proposed reduction actions.

3. Understanding the Town of Dover's Government Operations-Related Carbon Emissions

A GHG emissions inventory identifies an organization's GHG emission sources and quantifies them according to a set of acknowledged conventions using established estimation methodologies.

The Town's air emission inventory quantifies six common GHG. These are the most commonly used GHG recognized from human-made sources, as identified in the United Nations Framework Convention on Climate Change Kyoto Protocol (UNFCCC). The method used to quantify these emissions is the International Local Government GHG Emissions Analysis Protocol. The base protocol was developed by the GHG Protocol initiative and modified by the International Council for Local Environmental Initiative (ICLEI).

The GHG inventory of local government operations (LGO) identifies the amounts of electricity and fuels used in municipal buildings, streetlights, fleets and other operations controlled by the local government. The LGO GHG inventory does not include emissions generated by the Town residents and businesses, including power generation facilities, if present. The emissions from these sources are accounted for separately and constitute the Community GHG emissions inventory, which are reported under a different Protocol. While a community-wide GHG inventory is a Climate Smart Communities certification action and may be conducted by the Town of Dover in the future, it was not included in the scope of this report.

3.1 Government Operations-Related Greenhouse Gas Inventory

Organizational boundaries define the limits of a GHG inventory by identifying the activities that are owned and/or controlled by the Town and determining which emission sources should be included in its GHG inventory.

Operational boundaries in a GHG inventory refer to the specific types of emission sources that are included within the Town GHG inventory's organizational boundaries. A key distinction in setting operational boundaries is whether GHG emissions sources are categorized as direct emissions or indirect emissions.

- Direct emissions (or Scope 1): result from emission sources that are owned or operated by the organization.
- Indirect emissions (or Scope 2 and Scope 3): emissions that are due to an organization's activities but occur from sources owned or controlled by another organization.
  - Scope 2 indirect emissions cover consumption of three-party provided electric power, steam, heating, and cooling.
  - Scope 3 emissions are all other indirect emissions not covered in Scope 2. Scope 3 emissions are not included in this report.

3.2 Major Sources of Greenhouse Gas (GHG) Emissions in Government Operations

A complete list of emission sources in the Town GHG inventory are listed in the following tables, organized by Scope and Sector.

3.2.1 Scope 1 - Direct Emissions (Fuel Consumption & Refrigerants)

The following sources were identified as Scope 1 sources of GHG emissions:

Table 4: Scope 1 Emission Sources

Source	Emission Category
Dover Town Hall	Emissions from Stationary Fuel Combustion
Town Highway Dept. Garage	Emissions from Stationary Fuel Combustion
Tabor-Wing House	Emissions from Stationary Fuel Combustion
Route 55 - Park	Emissions from Stationary Fuel Combustion
Highway - Non Road - Diesel	Emissions from Off Road Vehicles
Highway - Non Road - Gasoline	Emissions from Off Road Vehicles
Highway - Light Trucks - Gas	Fleet Vehicle Emissions
Highway - Light Trucks - Diesel	Fleet Vehicle Emissions
Light Truck - Rec. Dept.	Fleet Vehicle Emissions
Highway - Heavy Trucks	Fleet Vehicle Emissions
Passenger Vehicle – Town	Fleet Vehicle Emissions
Commercial A/C including Domestic Refrigeration	Hydrofluorocarbon & Refrigerant Emissions
Mobile Air Conditioning	Hydrofluorocarbon & Refrigerant Emissions

Scope 1 emissions were estimated from activity (usage) data related to the above sources. This included fuel consumption data and use of refrigerants. These include gasoline, diesel fuel, fuel oil, propane, R410A, and R134A.

3.2.2 Scope 2 - Indirect Emissions (Electricity Use)

The following sources were identified as Scope 2 sources of GHG emissions.

Table 5: Scope 2 Emissions Sources

Source	Emission Category
Dover Town Hall	Emissions from Grid Electricity
Town Highway Dept. Garage	Emissions from Grid Electricity
Town Highway Dept. Salt Shed	Emissions from Grid Electricity
Tabor-Wing House	Emissions from Grid Electricity
American Legion	Emissions from Grid Electricity
Dover Plains Library	Emissions from Grid Electricity
Route 55 – Ballfield	Emissions from Grid Electricity
Route 55 – Field	Emissions from Grid Electricity
Route 55 – Park	Emissions from Grid Electricity
District Lighting - Dogtail Corner	Emissions from Grid Electricity
District Lighting - Dover Plains	Emissions from Grid Electricity
District Lighting - Farm & Mitchell Dr.	Emissions from Grid Electricity
District Lighting – Wingdale	Emissions from Grid Electricity
District Lighting - Town Park	Emissions from Grid Electricity

Scope 2 emissions were estimated from activity (usage) data related to the above sources. This included electricity consumption data such as Kwh purchased.

3.2.3 Source Exceptions

No sources of PFCs, NF3, or SF6 (other standard greenhouse gases) were identified in the Town inventory boundary.

Emissions from the American Legion and the Library were considered under the Town operational control, though technically these are separate entities located within the Town buildings.

3.3 Quantification of Government Operations Emissions

3.3.1 Total GHG Emissions

The total GHG emissions for the Town of Dover's municipal operations is 370.19 tCO_2e. The Town's Total GHG emissions by scope (Scope 1 and 2) are presented in the following Table 6.

Table 6: Total GHG Emissions by Scope (tCO_2e)

GHG Emissions	tCO_2e
Scope 1 Emissions	253.97
Scope 2 Emissions	116.22
Total	**370.19**

For comparison, the 2012 Mid-Hudson Regional Greenhouse Gas Emissions Inventory[7] report that for the year 2010, the total community GHG emissions for the Town of Dover was 90,756 tCO2e (10.4 tCO_2e per capita). The total community GHG emissions for Dutchess County was 3,268,721 tCO_2e (11.0 tCO_2e per capita).

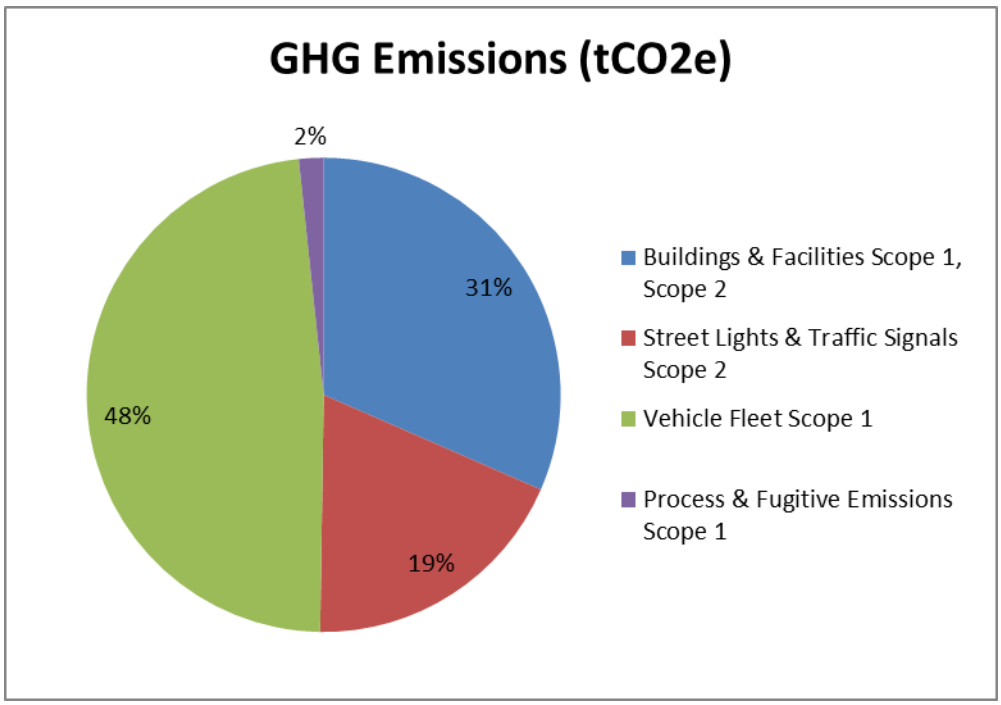
The Town's total Scope 1 GHG emissions amounted to 253.97 metric tonnes carbon dioxide equivalents (tCO_2e). As a point of reference, 253.97 tCO_2e is approximately equivalent to the GHG emissions produced by an average passenger vehicle driven 622,475 miles, according to the US EPA's Greenhouse Gas Equivalencies Calculator.

The Town's total Scope 2 GHG emissions amounted to 116.22 metric tons carbon dioxide equivalents (tCO_2e). These emissions are associated with electricity usage by the Town and are roughly equivalent to the GHG produced from electricity use by 12.5 homes for one year.

The breakdown by sector is presented in the following Figure 1. The Town total GHG emissions are divided between stationary combustion such as fuel oil, gas heating; and mobile combustion, such as diesel consumption by the Town fleet vehicles, with a small amount associated with refrigerant releases from refrigeration or air conditioning systems.

[7] https://www.dec.ny.gov/docs/administration_pdf/midhudghginventory.pdf

Figure 1: GHG Emissions by Sector, in Percentage



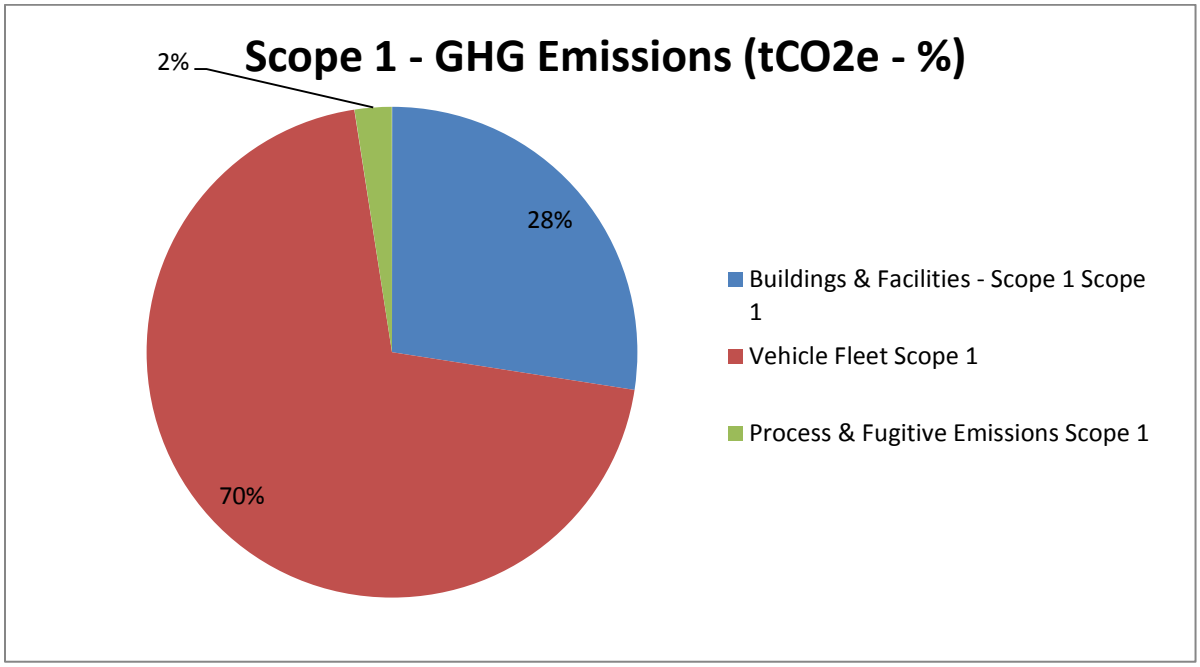
The results highlight the predominance of the vehicle fleet as the major source of GHG emissions. Scope 1 emissions (stationary fuel combustion) from buildings and facilities and electricity consumption by streetlights are almost equal, ranking as the next largest sources. Electricity consumption by buildings and facilities rank fourth, followed by a small amount of fugitive emissions (refrigerant releases from air conditioning/refrigeration equipment).

The following paragraph presents a more detailed breakdown of the Town of Dover's Scope 1 and 2 emission sources.

3.3.2 Scope 1 GHG Emissions

The distribution of Scope 1 emissions by sector is shown in percentage and in tCO_2e in the pie chart below.

Figure 2: Scope 1 Emissions by Sector, in Percentage

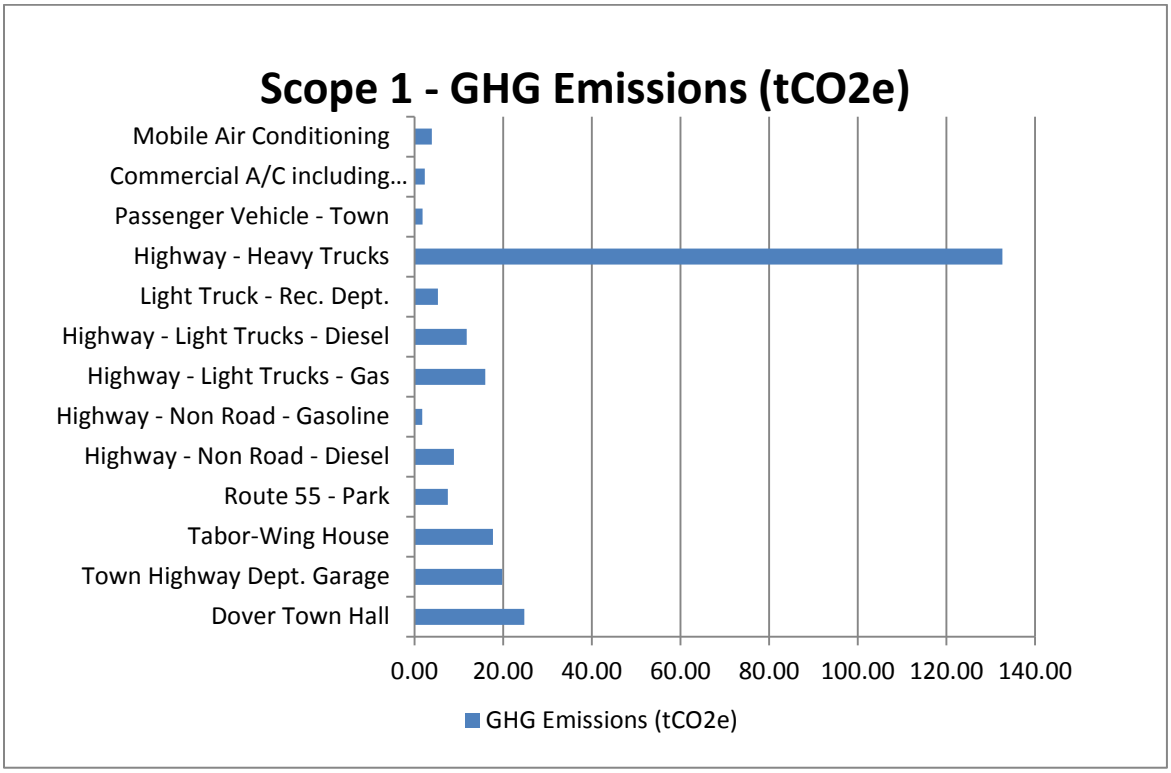


The results highlight again the predominance of the vehicle fleet as the major source of GHG emissions. Scope 1 emissions (stationary fuel combustion) from buildings and facilities rank as the second largest source followed by a small amount of fugitive emissions (refrigerant releases from air conditioning/refrigeration equipment).

3.3.3 Scope 1 Emissions by Source

The following chart presents Scope 1 emissions from each specific source, as identified in the inventory.

Figure 3: Scope 1 Emission by Source (tCO_2e)

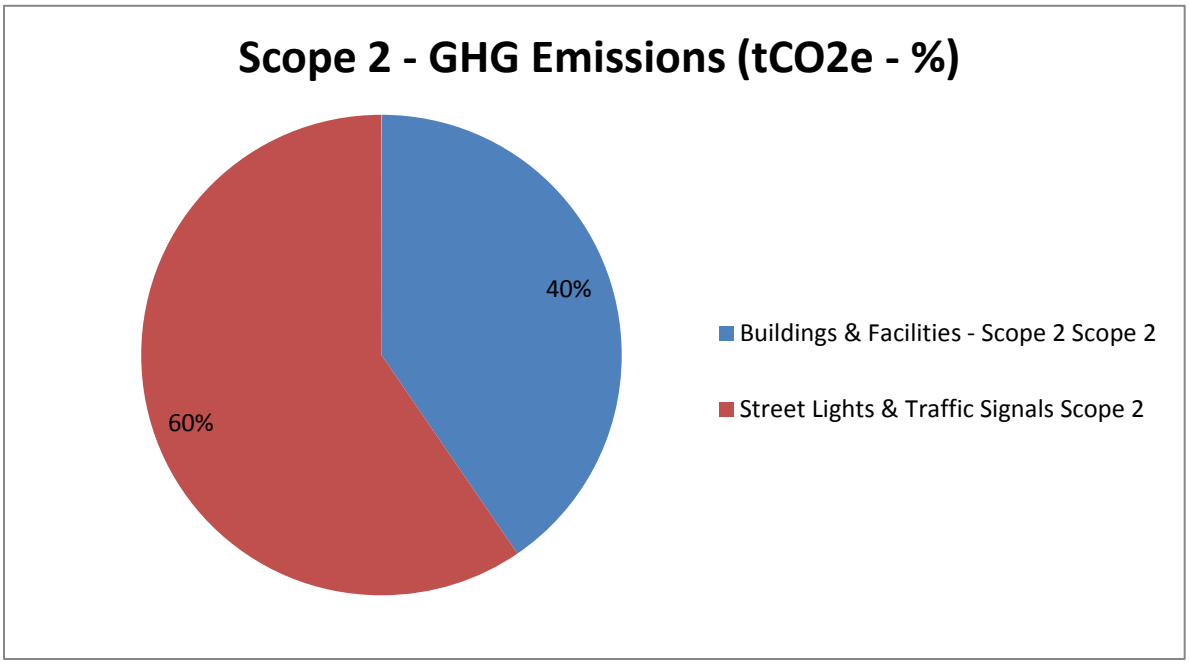


The detailed breakdown above indicates the fleet of heavy trucks used by the maintenance departments is the largest source of Scope 1 emissions. The result is not surprising considering the large service area covered by the highway department, due to the extension of the Town jurisdiction area.

3.3.4 Scope 2 Emissions by Source

The distribution of Scope 2 emissions by sector is shown in percentage and in tCO_2e in the pie chart below.

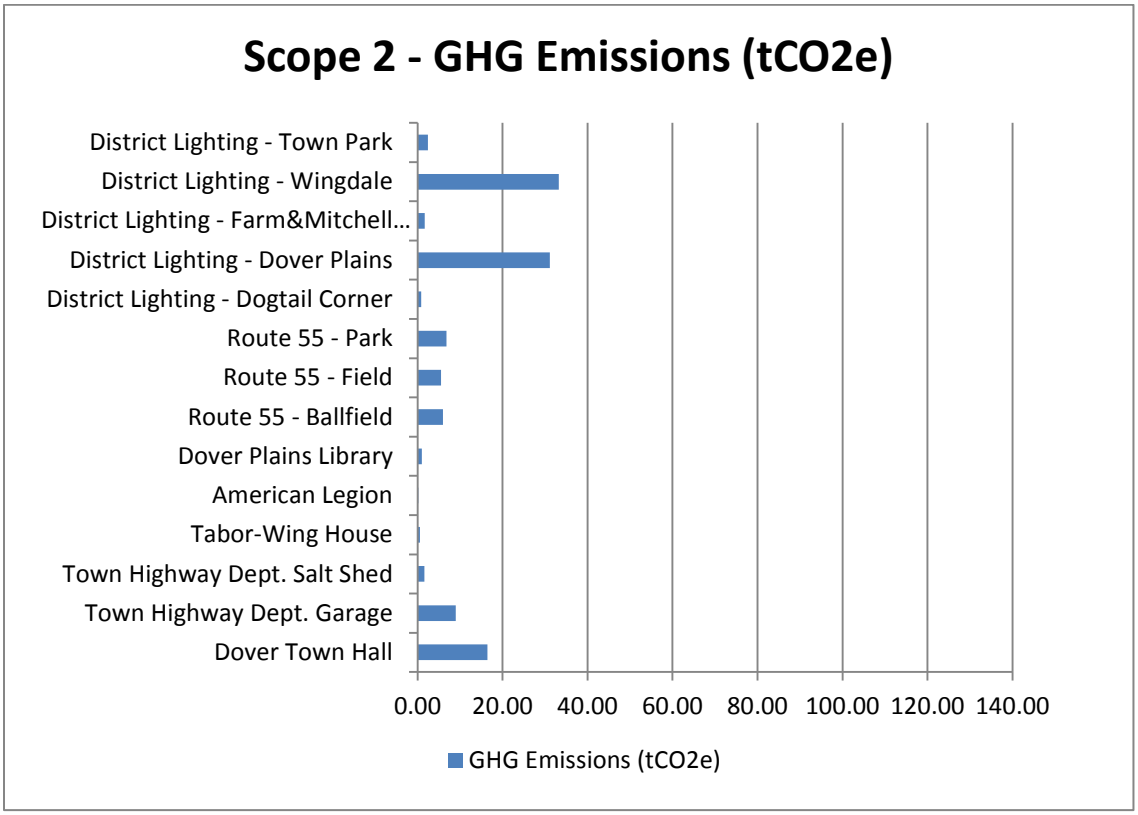
Figure 4: Scope 2 Emissions by Sector, in Percentage



The results indicate that electricity consumption by streetlights is higher than that by buildings and facilities (which also include lighting for the park and ball park facilities).

The following chart shows the Scope 2 emissions from each specific source, as identified in the inventory.

Figure 5: Scope 2 Emission by Source (tCO_2e)



The results show that two of the lighting districts are responsible for the majority of the Scope 2 emissions, followed by the Town Hall and Highway Maintenance garage. The immediate conclusion is the actions to reduce GHG emissions should therefore prioritize the reduction of energy consumption by lighting equipment.

3.3.5 Comparison to Other Inventories

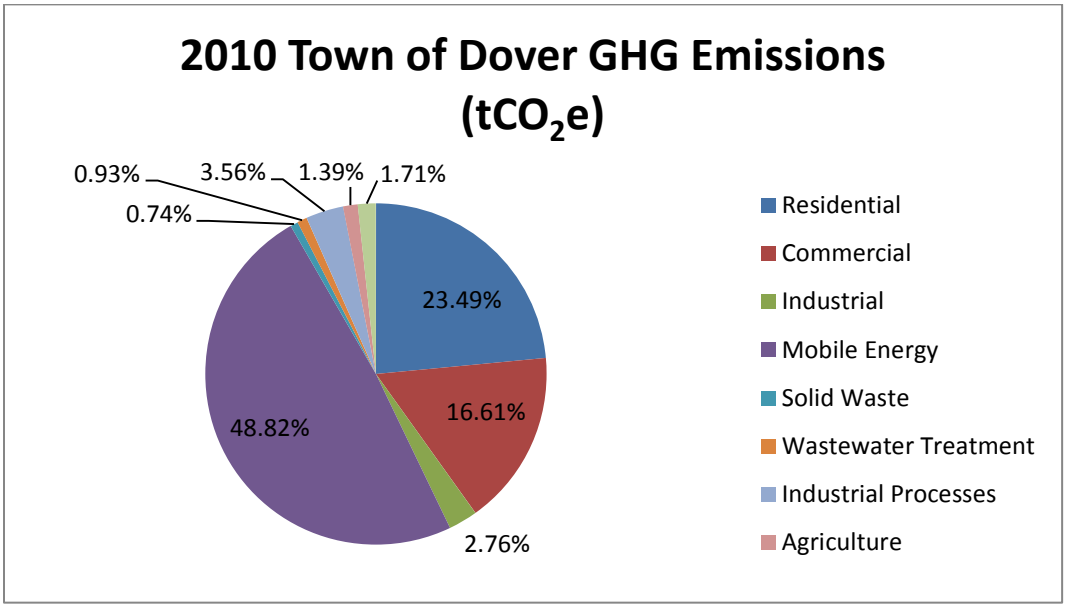
The scope of this report included all municipal operations within the Town of Dover for the base year 2017. The largest emissions source was the municipal vehicle fleet, followed by municipal facilities and then District lighting.

These results align with those from the 2012 Mid-Hudson Regional Greenhouse Gas Emissions Inventory[8] report, which analyzed the community emissions in 2010. For the Town of Dover, the largest source of community emissions was transportation, and the next highest sources were residential and commercial energy usage. In Dutchess County, transportation was also the largest source of emissions, and the next largest sources were, again, residential and

[8] https://www.dec.ny.gov/docs/administration_pdf/midhudghginventory.pdf

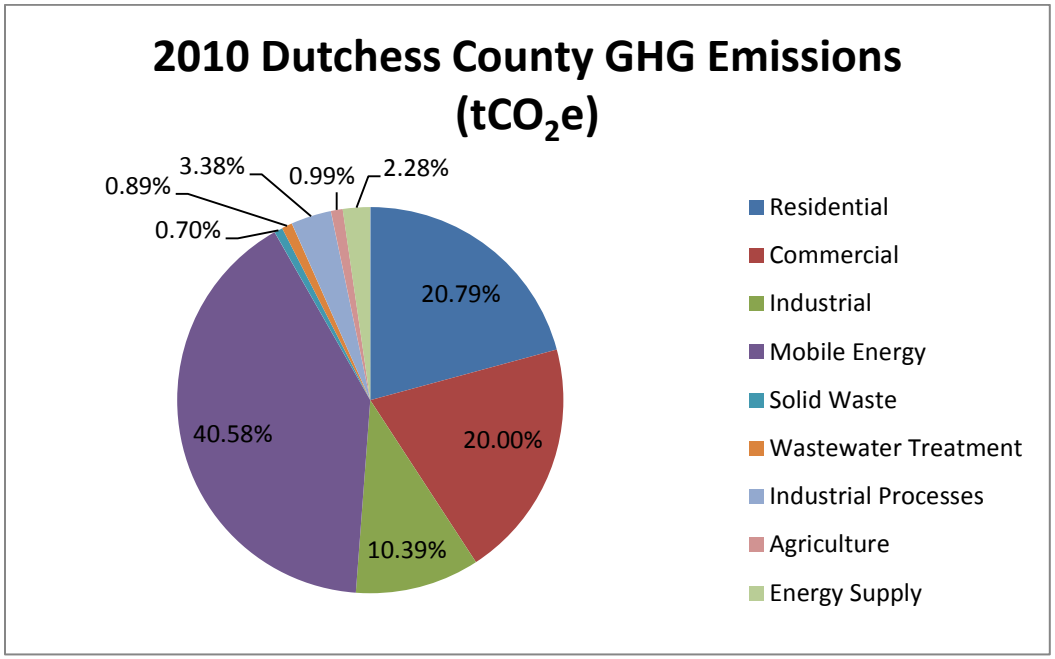
commercial energy usage. The following Figures show the percentage of emissions contributors in the Community inventories for the Town of Dover and Dutchess County.

Figure 6: 2010 Town of Dover Community Emissions by Sector, in Percentage



Source: Mid-Hudson Regional Greenhouse Gas Emissions Inventory, 2012

Figure 7: 2010 Dutchess County Community Emissions by Sector, in Percentage



Source: Mid-Hudson Regional Greenhouse Gas Emissions Inventory, 2012

Throughout the Town and County, focusing emissions reduction planning on transportation and residential and commercial energy usage will have the largest impact on GHG emissions. The next section will provide information and ideas about how to achieve significant and measurable emissions reductions for the municipal operations in the Town of Dover.

4. Government Emissions Reduction Focus – Reduction Plan

4.1 Practical Considerations

Several factors must be considered when identifying climate actions that make sense for the Town of Dover. These include

- estimated GHG reduction from implementation,
- estimated Cost (initial and ongoing),
- estimated Savings (electricity and fuel),
- timing (short-, medium-, or long-term),
- ability to cost-effectively meet GHG reduction targets ("Bang for the Town's Buck").

4.2 Priority Reduction Actions

Based on the potential CSC certification actions identified in Table 2 and the targeted areas of GHG reduction identified in Section 3, First Environment used available information and the ICLEI software – ClearPath – to model anticipated GHG emission reductions, costs, and savings for the following priority climate actions:

- Town Hall Lighting Sensors,
- Town Hall retrofit - energy efficiency,
- Electric - Hybrid Vehicle,
- Vehicle Fleet Efficiency and Rightsizing,
- LED Streetlight Replacement,
- Town Ballfield LED Lights Replacement,
- Solar Energy – Power Purchase Agreement.

Based on a detailed analysis of each of these climate actions, the following table summarizes the results. For a detailed description of this analysis and reduction plan, see Appendix A.

Reduction Measure	Expected GHG Emission Reduction (tCO_2e/year)	Priority	Comment
PPA - Solar Energy	-16	1	Simple implementation; Low-Medium Cost; Significant GHG emissions reduction
LED Streetlight Replacement	-43	1	Complex implementation; High Cost; Significant GHG emissions reduction

Reduction Measure	Expected GHG Emission Reduction (tCO_2e/year)	Priority	Comment
Diesel Fleet Rightsizing	-14	2	Medium complexity implementation; Low Cost; Significant GHG emissions reduction
LED Lights Replacement - Ballfield	-8	2	Medium complexity implementation; Medium Cost; Medium GHG emissions reduction
Gasoline Fleet Rightsizing	-1.5	3	Medium complexity implementation; Low Cost; Medium GHG emissions reduction
Town Hall Lighting Sensors	-2	3	Simple implementation; Low cost; Minor GHG emissions reduction
Electric-Hybrid Vehicle	-1.5	3	Simple complexity implementation; Medium Cost; Significant GHG emissions reduction
Town Hall retrofit - energy efficiency	-6	3	Medium complexity implementation; Medium Cost; Medium GHG emissions reduction

5. Government Operations Climate Action Plan Implementation and Impact

The following government operations-related climate actions were selected based on the practical considerations and priority analysis above. In addition, actions were selected to maximize CSC points needed for certification.

5.1 Actions to Meet Year 1 Goal of 3 Percent Reductions

The following table summarizes the recommended action of establishing a Power Purchase Agreement (PPA) with the Town's local provider of renewable energy. This action is anticipated to exceed the Town of Dover's Year 1 (2018/19) reduction goal of three percent.

Reduction Measure	Expected GHG Emission Reduction (tCO_2e/year)	Possible CSC Points	Estimated Cost / Annual Savings	Comment
Power Purchase Agreement (PPA) - Solar Energy	**16**	**2-4**	**Cost: $1,800** **Savings: $0**	• **Simple implementation** • **Low-medium cost** • **Significant GHG emission reduction**
TOTAL Since Year 1:	**16 (4.3%)** **> 3% reduction**			

5.2 Actions to Meet Year 5 Goal of 10 Percent Reductions

The following table summarizes the recommended actions focused on LED lighting and energy efficiency upgrades. These actions are anticipated to exceed the Town of Dover's Year 5 (2022/23) reduction goal of 10 percent.

Additional Reduction Measures	Expected GHG Emission Reduction (tCO2e/year)	Possible CSC Points	Estimated Cost / Annual Savings	Comment
LED Lights Replacement - Ballfield	**8**	**1-4**	**Cost: $12,400** **Savings: $4,200/yr**	• Medium complexity implementation • Medium cost • Medium GHG emission reduction
Town Hall Lighting Sensors	**2**	**1-5**	**Cost: $6,000** **Savings: $1,000/yr**	• Simple implementation • Low cost • Minor GHG emission reduction
Town Hall Retrofit - Energy Efficiency	**6**	**1-5**	**Cost: $12,000** **Savings: $3,250/yr**	• Medium complexity • Medium cost • Medium GHG emission reduction
Phase I of LED Streetlight Replacement	**8**	**1-5**	**Cost: $16,500** **Savings: $6,500/year**	• Complex implementation • High cost & large savings • Medium GHG emission reduction
TOTAL Since Year 1:	**40 (10.8%) >10% reduction**			

Example of Cobra Head-style streetlight currently in use. Replacing existing streetlights with LED streetlights could result in significant emissions reductions.

5.3 Actions to Meet Year 10 Goal of 20 Percent Reductions

The following table summarizes the recommended actions focused on LED streetlight replacement. This action is anticipated to exceed the Town of Dover's Year 10 (2027/28) reduction goal of 20 percent.

Additional Reduction Measures	Expected GHG Emission Reduction (tCO2e/year)	Possible CSC Points	Estimated Cost / Annual Savings	Comment
Phases II and III of LED Streetlight Replacement	**35**	**5-10**	**Cost: $ 72,200 Savings: $28,500/year**	• **Complex implementation** • **High cost** • **Significant GHG emission reduction**
TOTAL Since Year 1:	**75 (20.3%) >20% reduction**			

A more detailed analysis of the proposed actions and expected benefits and cost is included in the GHG Inventory report, attached in Appendix A

Mill Street, part of the Dover Plains lighting district, and one of several lighting districts eligible for LED streetlight replacement

5.4 Potential Sources of Funding and Guidance for Government Operations Capital Projects to Reduce GHG Emissions

Because the initial capital costs for the proposed climate actions can be large, First Environment has identified potential sources of funding (grants and loans). The following initiatives and State agencies can also provide guidance to additional funding sources as well as guidance to project implementation.

- Mid-Hudson Streetlight Consortium (http://courtneystrong.com/about-mhsc/).
- New York State Energy Research & Development Authority (NYSERDA): Grants and loans for renewable energy projects (https://www.nyserda.ny.gov/About/Funding).
- New York Department of Environmental Conservation (https://www.dec.ny.gov/pubs/grants.html): Grants for environmental projects, some of which address Climate Change mitigation and adaptation include:
    - purchasing land for the NYS Forest Preserve,
    - restoring habitat,
    - controlling invasive species,
    - upgrading municipal sewage treatment plants,
    - cleaning up waterfront property and creating a public park,
    - helping business develop ways to recycle material.
- New York State Clean Water Revolving Fund: low-interest loans for water shed protection (https://www.efc.ny.gov/cwsrf).
- Home Depot Community Impact Grants Program. (https://corporate.homedepot.com/community/home-depot-foundation-grants).

6. Leading by Example: What town officials, appointed boards, department heads and town staff can do to protect their communities from negative impacts of climate change

While elected officials are generally regarded as statutory government leaders, they cannot legislate a paradigm shift toward more mindful use and conservation of environmental resources. The Dover Town Board has taken the important first steps to adopt the Climate Smart Communities Pledge and register with the CSC certification Program. The Town's Conservation Advisory Council (CAC) and the Climate Smart Dover (CSD) Task Force have also provided visionary leadership by identifying actions toward achieving Bronze-level CSC certification. This section will highlight additional initiatives and actions that elected officials, the Conservation Advisory Council, and the Climate Smart Dover Task Force can implement in cooperation with town department heads and staff members through this Government Operations Climate Action Plan.

The CSC certification program provides an invaluable framework for municipal and community leaders to identify, prioritize, and execute actions recommended in the nine CSC Pledge Elements that contribute to a cleaner, healthier, and more ecologically sustainable environment.

The title of this section - to lead by example - asserts the basic assumption and informed frame of reference that every person is a leader who sets an example of ethical, altruistic, and accountable behavior. There is no single solution to protect our community from the escalating negative impact of climate change. However, there are a myriad of ways that every person can make a world of difference in leaving the world and future generations less burdened by our indifference.

Lord Robert Baden Powell, credited as the founder of the world scouting movement, wrote these poignant words in his last message to scouts in 1941:

"Try to leave the world a little better than when you found it… then you have not wasted your time, but have done your best."

This section provides recommendations for elected officials, appointed boards, department heads, and town staff to select and implement actions outlined in the nine CSC Pledge

Elements to help leave the Town of Dover a little better than when they found it and, through the process, to lead the community by their example.

Dover Town Hall

6.1 Town of Dover Elected Officials

The development of this Govt. Operations Climate Action Plan provides the touchstone of the Town's commitment to protecting its natural resources and implementing workplace practices that help reduce GHG emissions and waste and promote recycling and reuse. At the time of this document's publication (December 2018), the Town has made significant progress toward completion of these specific CSC actions to achieve Bronze-level certification (with funding support of a NYS DEC Climate Smart Communities Certification Program grant):

- Adoption of the Climate Smart Communities Pledge (Pledge Element 1.1);
- Designation of Climate Smart Communities certification coordinators and a Climate Smart Dover Task Force (PE 1.2 and 1.3);
- Government Operations Greenhouse Gas (Emissions) Inventory, 1, 5 and 10-Year GHG Reduction Target Plan (PE 2.1 and 2.3);
- Government Operations Climate Action Plan (PE 2.5);
- Natural Resource Inventory (PE 6.17);
- Town-wide Road-Stream Crossings Inventory and Vulnerability Assessment Study (PE 7.1);
- Review of Existing Community Plans and Projects to Identify Climate Adaptation Strategies and Policies or Projects that May Decrease Vulnerability (PE 7.3);
- Joined a National or Regional Climate Campaign or Program (PE 1.5);
- Maintain a website on local climate protection efforts (PE 9.4).

Based on municipal and community interests revealed in the course of this project, it is recommended that Town of Dover officials consider these CSC Pledge Element actions to further lead efforts to protect town-based natural resources and implement CSC workplace practices:

- Conduct energy audits of local government buildings (PE 3.1).
- Upgrade interior lighting (PE 3.2).
- Install water-efficiency fixtures (PE 3.4).
- Adopt a vehicle fleet efficiency policy (PE 3.10).
- Right-size the local government fleet (PE 3.11).
- Convert streetlights to LED (PE 3.15).
- Reduce number of outdoor fixtures (PE 3.17).
- Upgrade outdoor lighting to more efficient and/or solar technology (PE 3.18).
- Provide recycling bins next to all trash receptacles in local government buildings (PE 3.20).
- Provide e-waste collection in local government buildings (PE 3.22).
- Establish a financing mechanism for energy efficiency and renewable energy projects in government-owned buildings (PE 3.25).
- Adopt a green power purchasing policy to ensure increasing local government energy supplies come from renewables (PE 4.1).
- Conduct feasibility studies for renewable energy installation (PE 4.3).
- Purchase renewable energy credits (PE 4.4).
- Develop and adopt a Comprehensive Plan with Sustainability Elements (PE 6.1).
- Incorporate smart growth principles into land-use policies and regulations (PE 6.2).
- Adopt a Complete Streets policy (PE 6.9).
- Update the Multi-Hazard Mitigation Plan to address changing conditions and identify specific strategies into local plans and projects (PE 7.6).
- Develop and implement a heat emergency plan (PE 7.7).
- Create or update a watershed assessment to identify flooding and water quality priorities (PE 7.10).
- Develop or enhance early warning systems and community evacuation plans (PE 7.22).

6.2 Town-Appointed Boards

The Town of Dover has appointed volunteer boards comprised of talented residents who assist elected leaders with review of land use development projects, preservation and enjoyment of open space and recreational facilities, and with conservation of town-based natural resources. At this time, those administrative and advisory entities include: the Climate Smart Dover Task Force, Conservation Advisory Council, Master Plan Technical Review Committee, Planning Board, Recreation Commission and Zoning Board of Appeals.

Using acquired knowledge of the local community through this project and the CSC Action Checklist as a guide, we recommend these entities consider the following actions to assist town leaders with educating residents about the negative impact of climate change and promoting smart growth, sustainable development, and conservation of natural resources:

- Host household hazardous waste collection days (PE 5.12).
- Create an organic or yard waste collection program (PE 5.11).
- Create an educational campaign to encourage recycling, composting, and waste reduction (PE 5.13).
- Set up and mange a resource recovery center to encourage reuse of gently used or new materials that have been discarded (PE 5.6).
- Create resource-efficient site design guidelines (PE 6.5).
- Create and promote local farmers markets (PE 8.6).
- Create a "buy local/buy green" campaign (PE 8.7).
- Create a climate change education, outreach and engagement program, focusing on mitigation and adaptation (PE 9.1).
- Create and support an energy reduction campaign or challenge (PE 9.2).
- Host climate-related educational seminars, workshops, conferences or fairs (PE 9.3).
- Use social media to inform the community about the progress of local government's efforts (PE 9.5).

6.3 Town Department Heads

Within each town department there are workplace practices and procedures that can be implemented to help reduce waste, promote recycling, and raise awareness about the impact of climate change. We invite town department heads to consider implementing these CSC actions to support the Town's goal to protect the community from the negative impact of climate change and lead by example:

- (Assist town leaders to) Adopt an environmentally preferable purchasing policy (PE 3.24).
- Incorporate energy efficiency and waste handling provisions in standard specifications and government contracts (PE 3.26).
- Engage employees through a green pledge of competition (PE 3.29).
- Incorporate green principles, commitments or requirements into staff training (PE 3.30).
- Adopt a zero waste initiative (department) policy (PE 5.1).
- (Assist town leaders to) Adopt a green procurement policy that emphasizes local sourcing (PE 8.4).
- Implement a new innovative action (PE 11.1).
- Implement an action using an innovative approach (PE 11.2).
- Increase the use of renewables for local government operations (PE 12.3).
- Reduce waste volume from local government operations (PE 12.4).

6.4 Town Staff

Every employee contributes to the Town's overall efforts to successfully manage consumable and reusable resources. Actions eligible toward Climate Smart Communities certification include those that staff members can accomplish individually, through department teams, and in self-selected groups. We recommend the following CSC certification actions that Town of Dover employees can organize and implement to promote greater awareness about the need to address climate change issues in workplaces and the community:

- Create an internal green team focused on climate mitigation and adaptation (PE 1.4).
- Implement a car-sharing program for local government staff (PE 3.4).
- Conduct a local government waste audit and track diversion rate over time (PE 3.23).
- Engage (fellow) employees through a green pledge for competition (PE 3.29).
- Discourage the use of disposable bags (PE 5.2).
- Use social media to inform the community about the progress of local government's efforts (PE 9.5).
- Cooperate with neighboring communities and partner agencies (PE 10.3).
- Implement a new innovation action (PE 11.1).
- Implement an action using an innovative approach (PE 11.2).
- Reduce GHG emissions from government-owned facilities (PE 12.1).
- Reduce GHG emissions from government-owned vehicles (PE 12.2).
- Increase use of renewables from local operations (PE 12.3).
- Reduce waste volume from local government operations (PE 12.4).

7. Conclusion

This Government Operations Climate Action Plan is the product of a partnership between the Town of Dover and the NYS DEC Climate Smart Communities Program to collaborate on strategies to reduce the negative impacts of climate change. Information on town GHG emission sources submitted by department heads and staff were instrumental to the completion of this report. The Climate Smart Dover Task Force and Town of Dover Conservation Advisory Council provided invaluable assistance in the development and review of this publication. We are grateful to First Environment, Inc.'s associates, Luca Nencetti and Dr. Phillip Ludvigsen for their expertise in the analyses of greenhouse gas emissions and resourcefulness in the development of climate action plans. During this process, the significance of a Climate Action Plan on the health and welfare of all Dover children, families and residents has not gone unnoticed. May we leave the world a little better than when we found it, to glimpse Lord Powell's vision, that in having done our part with earnest hands and hearts, we have done our best.

Appendix A – Greenhouse Gas Emissions Inventory and 10 Years Forecast for the Government Operations Activities – Base Year 2017