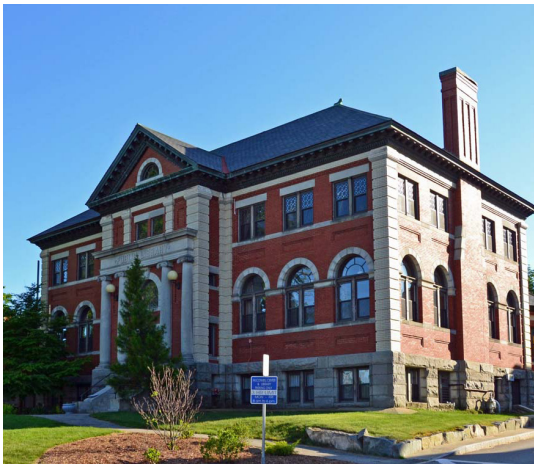
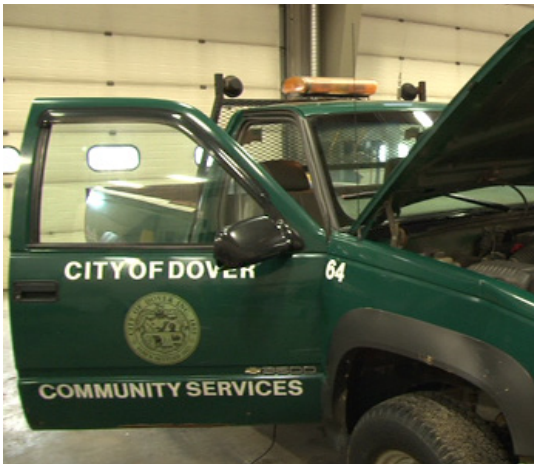
EXISTING RESOURCE ANALYSIS

COMMUNITY FACILITIES & UTILITIES MASTER PLAN CHAPTER UPDATE





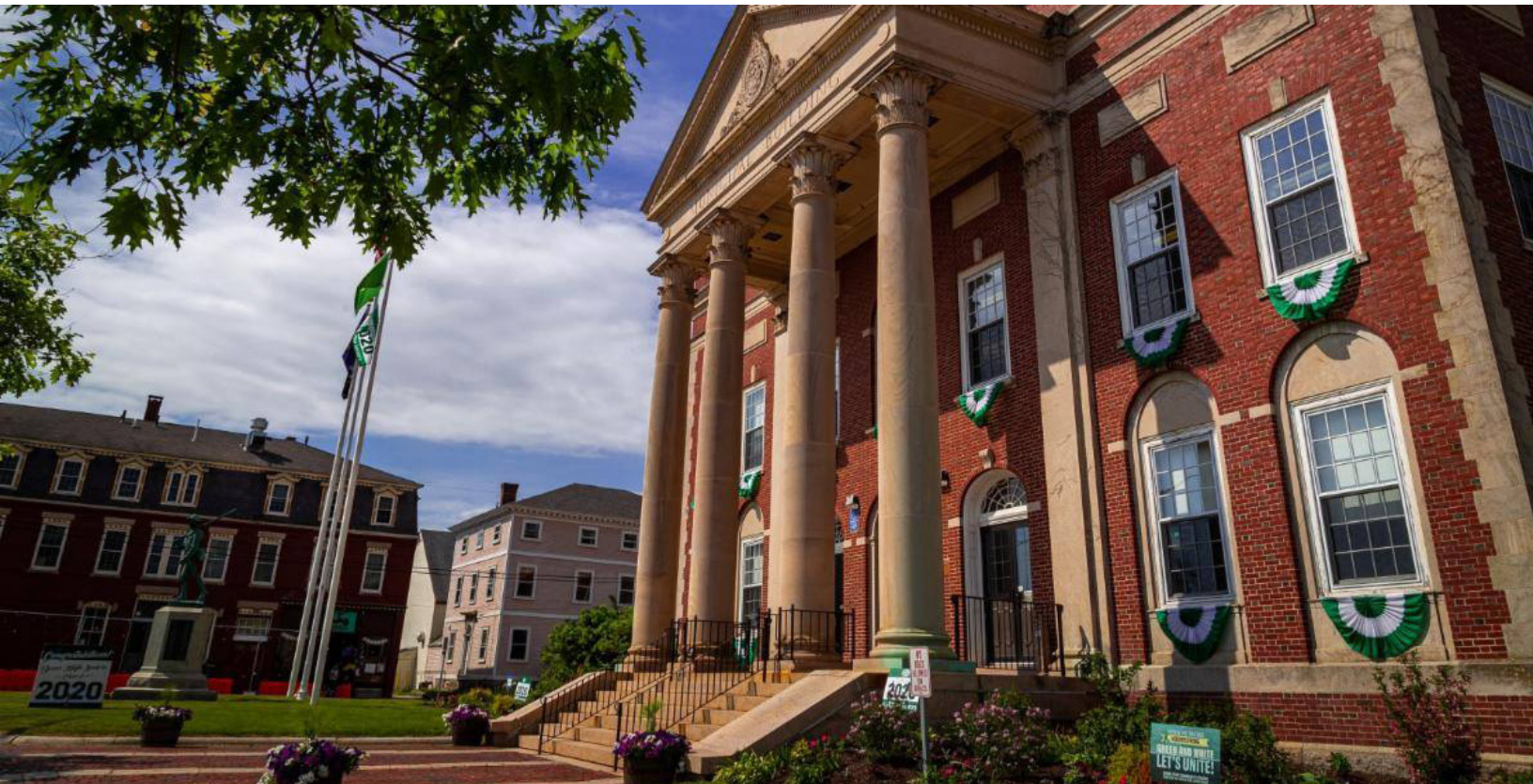
Prepared by Resilience Planning & Design

INTRODUCTION

The City of Dover is currently updating its 2009 Community Facilities and Utilities Master Plan chapter. The planning process undertaken will develop a comprehensive vision for the City of Dover's municipal facilities, services, and infrastructure, and public and private utilities (such as water, wastewater, stormwater, power, etc.). To complete this update, the City is working with consultant Resilience Planning and Design (RP&D) to assess these facilities, services, and utilities and identify ways to plan for the future of each so that they may inform and guide the writing of the new chapter. This purpose of this document is to provide an analysis of existing planning documents. RP&D collected, reviewed, and synthesized these resources and examined how they relate to the update of the Community Facilities and Utilities Master Plan chapter. These documents include:

- 2020 Culture and Recreation Chapter
- 2019 Illicit Discharge Detection and Elimination Plan
- 2018 Climate Adaptation Chapter
- 2018 Energy Commission Annual Report
- 2018 Greenhouse Gas and Nitrogen Inventory Report for Municipal and School Operations
- 2016 Stewardship of Resources Chapter
- 2015 Land Use Analysis Chapter
- 2014 Climate Change Risk Assessment and Interviews
- 2012 Vision Master Plan Chapter
- Current Community Service Projects

This report summarizes the findings from the review of existing documents and resources and will inform the udpate of this Master Plan chapter. Please note that the only resources not reviewed for this report is the 2009 Community Facilities chapter and the 2021-2026 Capital Improvements Program (CIP). The 2009 chapter will be reviewed separately as we move further into the inventory phase of the project.



KEY FINDINGS

Culture and Recreation Master Plan Chapter - 2020

- ***Question –*** to what degree is there overlap between the "Facilities, Grounds, and Cemetery" aspect of Community Services and the responsibilities of the Recreation Department? We should address this in the chapter.
- Should the recreation facilities be mapped and addressed as "community facilities", if so how?
- Establish an ***inspection checklist and operations and maintenance schedule*** for all City-owned recreation facilities to provide guidance to Community Services on estimated repair and replacement costs and timeframes.
- ***Conduct safety audits*** for City-owned recreation facilities to develop recommendations on ways to improve park designs, as well as operational and programming solutions to improve safety.
- Develop a ***tree maintenance plan*** for each City park ***(move to community facilities chapter update).***
- ***Recreation Department is suggesting:*** Increase organization capacity by hiring a full-time individual to supervise all park development, maintenance, and programming. Responsibilities will include the regular inspection of parks, and addressing issues such as repairing park elements, safety, graffiti, vandalism, storm damage, etc. This person should meet at least one of the following criteria: certified playground safety inspector and/or licensed arborist. ***How would this impact/assist community services?***
- Collaborate with the University of New Hampshire to coordinate with student groups enrolled in urban planning programs, as well as those seeking a degree in arboriculture or other forestry studies to assist the City with tree maintenance.
- ***Recreation Department is suggesting:*** Partner with the High School to engage students participating in agriculture/horticulture classes, athletic leadership, recreation activities and clubs, or community-based internships to ***assist the City with park maintenance.***
- ***Promote existing ways for the public to report problems*** quickly and easily or alert the City on any ongoing issues with recreational facilities using available technology (phone apps, QR codes, etc.).
- ***Improve communication between Recreation Department and Community Services*** by ensuring that Recreation Department staff are included in the Community Services' monthly supervisory meetings.
- ***There are many site-specific facility improvements suggested as new capital improvement projects or ongoing maintenance needs*** in the implementation section, and these require involvement from Community Services. ***We need to address these somehow. Should these be part of a city-wide map of community facilities?***

KEY FINDINGS

Illicit Discharge Detection and Elimination Plan - 2019

- The City of Dover Community Services Department is responsible for updating the stormwater system mapping pursuant to the 2017 MS4 Permit. The City of Dover has completed the following updates to its stormwater mapping to meet the Phase I requirements:
  - Outfalls and receiving waters (previously required by the MS4-2003 permit)
  - Open channel conveyances and pipe networks
  - Interconnections with other MS4s and other storm sewer systems
  - Most municipally owned stormwater treatment structures
  - Water bodies identified by name and indication of all use impairments as identified on the most recent EPA approved Massachusetts Integrated List of Waters report
- The Community Services Department will complete an initial outfall and interconnection inventory and priority ranking to assess illicit discharge potential based on existing information. ***Status of this project?***

KEY FINDINGS

Climate Adaptation Master Plan Chapter- 2018

- **Drinking Water**
  - According to this chapter, the one of the most important projected impacts of drought on Dover's water quality include ***risks to local drinking water supplies.***
  - Currently, the City operates and maintains seven wells that adequately and safely provide drinking water to approximately 80 percent of residents that are connected to the municipal water system. Although Dover has experienced a roughly 17-percent increase in population over the past two decades, ***annual demand for water has held steady*** at around 800,000,000 gallons due to regulations in the plumbing code, leak detection activities, and updates to the meter system.
- **Stormwater:**
  - Dover has approximately 2,465 acres of impervious surfaces representing nearly 15 percent of the City's land area and a 0.9 percent increase since 2010. Climate change impacts related to frequency and intensity of rain events will exacerbate stormwater runoff. This chapter identified deep sump catch basins and a rigorous cleaning program as being key to meeting these future challenges. ***How is the City implementing this?***
  - Another major concern is a rise in sea level inundating and covering sewer mains, which would have a major impact on inflow and infiltration. ***How is the City preparing for this?***
  - Dover is part of the EPA MS4 Program. Following a period of assessment and monitoring, the City will be required to begin stormwater upgrades to its infrastructure to reduce pollutants entering impaired water bodies and streams. ***When does the infrastructure upgrade phase begin?***
  - This chapter noted that implementing green infrastructure in densely developed urbanized areas will be difficult and expensive. According to the City's Community Service Department costs are estimated to be approximately $100,000 to $200,000 per year. ***How can funding needs be addressed?***
  - The ***Berry Brook Watershed Restoration*** project is an example of how the City can effectively design and build green infrastructure systems.
- **Public Safety and Emergency Response:**
  - Disruption of transportation access due to inundation from sea level rise, increased riverine flooding, or storm surges from a larger hurricane or nor'easter can cause significant issues for ***emergency responders*** including mutual aid with surrounding communities, extended power outages, longer emergency response times, isolation challenges, and evacuations. ***How might this relate to community water/stormwater infrastructure resiliency?***
  - According to the Dover Climate Risk in the Seacoast (C-RiSe) vulnerability assessment, ***the City may experience inundation from sea level rise on State Routes 4 and 16.*** Both areas are recognized as critical transportation links for economic, commerce, tourism, and commuter access. Flooding and potential road closures at these locations would significantly affect the City's mutual aid services with Newington, Portsmouth, and Durham.
- **Energy:**
  - 2008 Energy Action Plan was revised in 2018 - ***still need revised version***
  - Dover is home to ***two of seven LEED certified buildings*** in Strafford County : Liberty Mutual (Gold, 2008) and the Children's Museum of NH (Silver, 2009).
  - According to Dover's Detailed Energy Audit (2009), the City uses electricity, natural gas, propane,

and oil to heat, cool, light, and power other building-related processes.

- The City's electricity supplier is Eversource Energy. Natural gas is supplied by Direct Energy. DF Richard provides propane, and Hanscom Truck Stop provides heating oil.
- With the Energy Audit in 2009, Dover began taking steps to identify and track energy use at City-owned facilities in order to assess areas where improvements in management or energy efficiency could reduce energy use and cut costs. During a baseline period (June through July 2016), the City spent a total of $2,338,365 on energy: $1,967,657 for electricity, $288,054 for natural gas, $33,922 propane, and $48,732 for heating oil. ***How does this compare to current expenditures?***
- The Dover Ice Arena, Dover Indoor Pool, and McConnell Center are the largest users of natural gas and propane. ***Is this still true? Are renewable energy sources being explored?***
- Over the past several years, the City has worked with energy consultant Johnson Controls Inc. (JCI) on ***facility improvements*** to ***cut energy costs***, increase the ***reliability and energy efficiency*** of the City's mechanical and electrical systems, and maintain or improve ***occupant comfort and well-being.***
- Although Dover does not own or operate any renewable energy sources, they are something the City has been pursuing. In 2018, the City will issue two new RFPs. One is for a solar installation on the roof of the new high school (a priority since the City Council has authorized $70,000 in extra structural expenses to support the array), and the other is for solar power on the Transportation Center roof. ***Progress on these?***

- **Climate Change Risks:**
  - Three sources were referenced to determine the risks to critical municipal facilities: Dover's 2013 Multi-Hazard Mitigation Plan, the C-RiSe vulnerability assessment, and the New England Climate Adaptation Project: Summary Climate Change Risk Assessment. Among the assets and resources that were evaluated are the ***police and fire stations, hospitals, and City Hall.*** According to data collected over the years, ***no critical municipal facilities are subject to flooding under future sea level rise and storm surge scenarios;*** however, a large storm, such as a hurricane, ***may damage*** various critical facilities and emergency shelters.
  - Dover has not completed an ***in-depth analysis of the vulnerability of the City's culverts*** to sea-level rise; however, it can be assumed that culverts adjacent to affected roadways (Boston Harbor Road, Cote Drive, Dover Point Road, Hilton Park Road, Spur Road, and Wentworth Terrace) may experience future flooding problems and washouts. ***Future action? Or has this already been completed since this chapter was written?***
  - According to the C-RiSe assessment***, two active dams*** in Dover may be ***susceptible to sea level rise.*** They are at the Tuttle Market Gardens Farm Pond and the E. Boulanger Farm Pond.
  - Areas of the City's water and sewer districts are vulnerable to potential sea level rise. If drinking water infrastructure were to fail, the risk of exposure to pathogens and harmful chemicals might increase. ***How is the City addressing these concerns?***
  - The City's Wastewater Treatment Plant is a 4.7-MGD facility off Middle Road adjacent to the Piscataqua River. Located about 1,200 feet from the river's edge, the plant faces no flooding threat associated with sea level rise; however, ***more frequent extreme storms may create challenges in the future.***
  - Several areas in Dover experienced severe impacts during the 2006/2007 floods. A number of manhole covers on Henry Law Avenue and River Street blew off their frames and raw discharges flowed into the Cocheco River. The Mill Street pump station was shut down to relieve flow, which caused raw sewage to discharge to the Bellamy River. The Mill Street station also had to be shut down in 2007 due to storm surge from extremely high tides. Raw sewage was pumped from a sewer manhole on Rutland Street to the drainage system, which discharged to the Bellamy River, to relieve the Rutland Manor apartment complex. ***How can the City increase the resiliency of its infrastructure and response programs to mitigate these issues?***

KEY FINDINGS

Dover Commission Annual Energy Report- 2018

Energy Commission Mission

The Dover Energy Commission shall advise the City through its boards and committees on ways to reduce energy use, develop alternative energy sources and increase economic security and energy independence. The goal of the Energy Commission is to promote and encourage energy conservation measures for Dover residents, businesses and municipal operations. The Commission will work with the City Council to review current energy efficiency practices and possible future actions. The Commission's work will be available to the Planning Board as a resource with respect to energy consideration in the next Master Plan Update.

Recent Activities (taken from the Executive Summary)

- Efforts by the Commission in 2017-2018 focused on energy conservation, alternate energy sources, and the benefits of Distributed Energy Generation and Energy Use Management.
- The Commission worked on two initiatives to bid the installation of Solar Photo Voltaics (PV) on the new High School and the Transportation Center.
- In collaboration with the Seacoast Energy Hub, which is part of a state network of six regional energy groups, the City and the Commission were major participants in the first round of the "Energize 360" campaign, a community-led effort among local energy leaders to encourage residents to measure, reduce and use renewable energy. The total amount of annual CO2 offset realized from Dover's Energize 360 campaign, to include both weatherization and photo voltaic system installation, amounted to over 157,000 lbs.
- The Commission also recommended to the Dover City Council a resolution supporting exploration of an important energy source, off-shore wind, which was adopted by the Council.
- The Commission received input from concerned citizens and groups at many of its meetings during the year. These conversations provided valuable information about the concerns of our citizens and the possibilities for concerted action to improve our energy consumption footprint.
- The Commission toured the manufacturing facility of Affinity LED Lighting in the Washington Street Mills, the supplier for the City's Light-Emitting Diode (LED) streetlight retrofit.
- In the fourth quarter of 2017, the City began retrofitting 1,781 streetlights with LED fixtures manufactured by Affinity LED Lighting, a small business located here in Dover. A grant from Eversource for $100,000 helped fund the project. The projected savings on electricity is $130,000/year. The installation also includes "smart controls" which will help monitor and control the lights, and potentially yield further savings in the future. LED light retrofits have also been completed at the McConnell Center, Community Services building, and the recently renovated ground floor Customer Service Center at City Hall, with the remainder of the building to be completed in the near future.

Energy Use

- During FY2016, the energy source with the largest percentage of the total cost was electricity with 83%. Natural gas was the second largest with 12% of the total cost.
- Dover consumes energy via its fleet of vehicles used by the Community Services, Police, Fire and Recreation Departments. In FY 2017, total consumption was 100,133 gallons or $178,538.86.

KEY FINDINGS

Greenhouse Gas and Nitrogen Inventory Report for Municipal and School Operations - 2018

Background

Through a University of New Hampshire Sustainability Fellowship undertaken by a UNH doctoral student, the City of Dover has become the first municipality in North America to complete a baseline footprint for both greenhouse gas (GHG) and nitrogen impacts of local government operations. This inventory, generated by using Environmental Protection Agency's Portfolio Manager and the University of New Hampshire's Sustainability Indicator Management and Analysis Platform (SIMAP) tool, informs Dover's policymakers, residents, property owners, and business owners on how to best introduce mitigation measures, helping Dover contribute to a global effort.

The following examples show Dover's commitment to addressing climate change:

- November 2017 retrofit of 1,781 streetlights to LED fixtures.
- 2016 wastewater facility upgrade which improved nitrogen removal efficiency.
- Power purchase agreements with Revision Energy involving the installation of solar panels on the new Dover High School, the Children's Museum of NH, and the Indoor Pool.
- Purchase of the first electric vehicle in the City fleet by the Information Technology Department.

Findings:

- Overall, municipal operations generated 9,896 metric tons of carbon dioxide equivalent (MT of C02e) in 2016 and 9,560 MT of C02e in 2017, representing a 3.4% reduction from year to year. Reactive nitrogen released to the environment was 40 MT and 42.3 MT in 2016 and 2017, respectively, a 5.4% increase.
- Electricity made up approximately 57% of the emissions produced in 2016, and 54% in 2017. Natural gas was the secondhighest contributor at about 36% in 2016 and 39% in 2017. The remaining sources (diesel, #2 oil, and propane) contributed a combined 7% in 2016 and 2017.
- ***Municipal Fleet:*** The total diesel usage in 2016 was 37,010 gallons and in 2017 was 36,522 gallons, yielding a 1.3% reduction. The total unleaded gasoline usage in 2016 was 57,414 gallons and in 2017 was 62,619 gallons, resulting in an 8.7% increase. The Community Services Department consumed over half of the diesel used in 2016 and 2017, equating to approximately 60% and 57% of total fleet fuel use. The Fire Department was the second-highest consumer in 2017. The combined usage between the Police and Recreation Departments was under 1% in 2016 and 2% in 2017.
- ***Fertilizer:*** In 2016, a total of 19,103 lbs. of fertilizer were applied to City and School Properties. Comparatively, 22,019 lbs. were applied in 2017, representing a 14.2% increase over 2016. The reason for the spike in use is a result of Green Grass Landscaping (GGL), the main landscaper for the City, applying fertilizer on four occasions in 2017 versus three in 2016. Nitrogen made up approximately 14% of the total quantity applied in 2016, which rose to 17% in 2017.
- ***Wastewater:*** As a result of the massive facility upgrade completed in 2016, Dover's wastewater treatment plant (WTTP) exhibits excellent nitrogen removal efficiency during standard operations. On average, the facility handles 2.5 million gallons (MG) of wastewater. The nitrogen content in the influent stream is generally 40 milligrams per L (mg/L). After a series of nitrogen removal steps, the content in the effluent stream discharged to the Piscataqua River is 8 mg/L or less, which equates to an 80% removal efficiency. The national average in the United States is around 50%, and the limit of current technology does not allow for efficiencies above 90%. However, when storm surges take

place, the volume of the influent stream can reach approximately 10 MG per day due to the present of illicit connections to and undetected infiltration into the sewer system. During these events, the plant cannot maintain the levels of nitrogen removal present during normal operations, highlighting the importance of improving the City's storm water management and sewer infrastructure.

- ***Carbon Footprint:*** In 2016 there were 9,896 MTs of CO2e emitted, versus the 9,560 MTs of CO2e in 2017, yielding a 3.4% reduction. The two sectors resulting in the highest contributions in both years were purchased electricity and stationary fuel consumption. (accounting for 71% of the GHG emissions in 2016 and 68% in 2017). The next two largest contributors in both years were employee commuting and the municipal fleet. Based on the carbon data, Dover can have the greatest impact on lowering its LGO carbon footprint in the following ways: reduce the purchased electricity sector through the installment of more solar arrays, provide incentives for employees to carpool or take public transportation to work, increase the number of electric vehicles (EVs) in the municipal fleet, and upgrade older facilities to improve insulation and install remotely monitored HVAC systems.
- ***Nitrogen Footprint:*** In 2016. 40 MTs of nitrogen were emitted, versus 42.3 MTs of nitrogen in 2017, a 5.4% increase. Wastewater was the largest contributor in both years, making up 86% of the reactive nitrogen released in 2016 and 82% in 2017. Recognizing that a handful of sectors lead to the largest nitrogen contributions, it is suggested that Dover can have the greatest impact on reducing its LGO nitrogen footprint in the following ways: continue to separate stormwater drainage from the sewer system so that the wastewater facility can more consistently maintain its 80% nitrogen removal efficiency throughout the year; reduce the number of diesel vehicles in the fleet, as diesel engines operate at higher temperatures and pressures than unleaded gas engines, favoring the formation of nitrous oxides, reduce the purchased electricity sector through more solar array installations.

Key Initiatives

- ***LED Lighting***: In November of 2017, the City completed the retrofitting of 1,781 streetlights with LED fixtures.
- ***Solar:*** As the result of a power purchase agreement with Revision Energy, the newly constructed Dover High School supports a 912 kW roof-mounted solar array. This array should produce an estimated 1,055,330 kWh of electricity per year, covering 40% of the new building's projected annual electrical usage. The other site receiving rooftop solar panels is the Children's Museum of New Hampshire along with Dover's Indoor Pool. The City has also signed an agreement with the solar company Gaia Energy, LLC to exclusively develop proposals to finance, construct, own, and operate solar facilities via a feasibility study. Four sites have been identified as potential candidates: the Dover Ice Arena, the wastewater treatment facility, the Varney Brook Pump Station and the Transportation Center. Based upon both the available land areas, roof top spaces, and in the case of the Transportation Center, carport potential, the combination of these sites could generate a total of over 5,500,000 kWh annually.

KEY FINDINGS

Stewardship of Resources Master Plan Chapter- 2016

- Dover should undertake city-wide education programs to inform Dover citizens about the importance of protecting and managing the community's resources. This will serve as a way of engaging the public in the process of active stewardship. ***What role can Dover's facilities and utilities play in this?***
- 2023 Vision:
  - Municipal government and schools are run effectively and efficiently with full transparency, resulting in high quality services, ***well maintained buildings and infrastructure***, a great recreation system and a competitive property tax burden.
  - ***Enhanced environmental quality and sustainability*** are actively pursued and inherent in all the city's activities.
- ***Be good stewards of Dover's natural resources.*** They directly impact the resilience and the character of the community and opportunities to meet residents' needs locally. Look for opportunities to protect and regenerate natural resources and the ecosystem services they deliver while enabling continued development, including new uses for existing structures.
- There are also opportunities for the community to lead by example by creating an ***"urban tree plan"*** that provides tree planting and removal guidelines. Such a plan should also include requirements to keep trees in the more developed areas of Dover and restrictions on removing trees during development.
- Many community facilities provide ***space and services that support cultural events*** in the community. These spaces help build social capital. Attention to ***social capital*** should ensure the creation of crucial community gathering places and public meeting rooms when a new library, school, or civic structure is built.
- The City of Dover has been ***collecting energy use data*** for City-owned buildings and operations since 2006. Sophisticated software is now available for collecting and monitoring energy use; it could make data analysis and reporting easier but would require an investment in training by the Commission and City Staff.
- Goals to ***increase energy efficiency and renewable energy use,*** Dover is working to assess the energy efficiency of municipal buildings and the possibilities for future energy conservation and production initiatives.
- ***Status of this?*** The City entered into a ***performance contract*** with Johnson Controls. Through the last reporting period (11/14 – 10/15) the community had saved $354,849 through Facility Improvement Measures (FIMs) to 14 city-owned buildings and facilities. This includes LED light conversions and many other projects.
- Dover can continue to ***identify opportunities for increased energy conservation and efficiencies*** in City-owned structures, operations, and fleets. Establishing a renewable energy infrastructure to help power City-owned facilities and fleets should also be explored.
- Currently, several ***market-driven initiatives*** are underway in Dover; they include looking at LED conversion of streetlights and installing solar electric panels on City-owned buildings.
- Adopting ***purchasing policies*** that encourage the use of local suppliers and purchasing alternative energy will minimize fuel costs and pollution while promoting local job creation.
- Increasing ***community resiliency*** will require forward-thinking land use and development policies. Reducing human-induced stress on vital natural resources will be an important strategy in hazard

mitigation as well as the quality of everyday life in Dover.

- Conservation land, buildings and infrastructure, and social capital all contribute to the community's ***hazard preparedness and resiliency.***
- Dover is ***increasing impervious cover,*** and reducing porous land surfaces at a rate faster than neighboring communities. At greater than 20% impervious surface cover, the community can anticipate impaired water quality and the threatened loss of aquatic species. Dover has been working hard as a community to reverse this trend and has now adopted stormwater management regulations that will apply to future development and redevelopment efforts. These regulations ***require infiltration and treatment of stormwater*** to protect surface waters. The use of porous pavement is one technique, but other approaches that make use of green infrastructure (bioswales, rain gardens, tree box filters, etc. are also effective at treating stormwater.
- ***Prioritizing and protecting riparian buffers, flood storage areas, and groundwater resources*** for their functions related to stormwater management, flood control, and other critical ecosystem services is a near-term priority.
- ***Implementation Actions:***
  - Implement the use of tools that improve analysis and reporting of data gathered from energy audits and assessments for all municipal buildings, operations, and vehicles.
  - Identify and adopt a carbon limit and specific reduction strategies for City buildings and vehicles. Encourage similar actions by residents and businesses.
  - Promote opportunities for public, public/private and intergovernmental renewable energy generation.
  - Investigate the creation of a Stormwater Utility to fund the retrofitting of existing properties with low-impact development strategies that will address stormwater and flooding related issues.
  - Maintain an accurate inventory of City trees and develop an "urban tree plan" that provides tree planting and removal guidelines.
  - Promote sustainable municipal operations and development practices through the implementation of strategies that support energy efficiency and the use of recycled or sustainable materials and products.
  - Update the vehicle replacement program to include strategies for a city vehicle fleet powered by alternative energy sources and considers public/private partnerships for develop of fueling/ support facilities.
  - Investigate the use of off-grid or hybrid renewable energy systems for safety service agencies and emergency shelter locations.
  - Review the City's culvert sizing and clearing policies to assure that they account for anticipated climate change related impacts.
  - Incorporate sea level rise predictions and other climate change related impacts when planning infrastructure investments in Dover's Capital Improvement Program.
  - Continue efforts to identify new drinking water sources and to protect both existing and potential sources.
  - Revisit Dover's non-metered water usage by residents/businesses and the possibility of creating a fee associated with this water usage that could be placed in a capital reserve for addressing stormwater management concerns.

KEY FINDINGS

Land Use Analysis Master Plan Chapter - 2015

- **Dover Vision states:**
  - "Municipal government and schools are run effectively and efficiently with full transparency, resulting in high quality services, well maintained buildings and infrastructure, a great recreation system and a competitive property tax burden."
  - "Enhanced environmental quality and sustainability are actively pursued and inherent in all the city's activities."
- **Energy:**
  - In 2007, Dover created an Energy Committee and is working to assess the efficiency of municipal buildings, and the possibilities for future energy conservation and production initiatives. More specifically the city aims to: "**Secure, *safe, and reasonably priced energy supplies and services*** to Dover's commercial, industrial, transportation, and residential customers, reduce dependence on traditional fossil fuels within municipal operations, decrease electricity and natural gas consumption, use efficient and renewable resources to supplement the city's energy needs, proactively plan for a reduction in the demand for energy."
- **Site Design Considerations:**
  - While the city cannot adopt limitations on the amount of impervious surface without severe economic consequences, it does require that parking lots over three quarters of an acre consider ***installation of porous materials,*** and it requires the use of such materials when a parking lot exceeds an acre and a half.
  - In addition, the site review regulations require ***best management practices*** for more effective treatment of runoff from impervious surfaces. This technology could be utilized along with other low impact development strategies to decrease run-off while increasing opportunities for both wildlife habitat and food production. This approach has the ability to restore ecological services and improve the quality of Dover's natural resources while contributing to the overall resilience of the community.
- **Implementation Actions:**
  - Promote ***sustainable development*** through the city's use of recycled materials, Energy Star rated products, and sustainable building materials.
  - Encourage the use of ***local suppliers*** to minimize fuel costs and pollution and promote local job creation.
  - Encourage federal, state and regional efforts to ***increase infrastructure capacity*** for energy supply, including pipelines for natural gas.
  - Encourage use of ***alternate sources of energy,*** such as solar power

KEY FINDINGS

Climate Change Risk Assessment and Interviews - 2014

- Dover faces several climate-related risks, the most notable being the risk of ***increased flooding along the Bellamy and Cochecho Rivers*** stemming from more intense precipitation events and sea level rise. These two rivers gather runoff from a 170-square-mile watershed.
- Dover is also at risk from ***sea level rise.*** While the average elevation in Dover is 80 feet above sea level, a ***5 to 6 foot rise*** in the average sea level—which is projected to occur by the end of the century according to the high emissions scenario—would lead to higher tidal inundation and raised groundwater levels.
- This report outlines a number of ***climate change adaptation strategies*** related to flooding the City should consider including restored wetlands, floodwalls, hurricane barriers, pervious pavement, flood resilient buildings, and low impact development. These should be integrated into the Community Facilities and Utilities Master Plan chapter update.
- There are a number of recent or current efforts in the City aimed at ***improving infrastructure*** and increasing Dover's resilience to weather-related impacts like flooding. Solutions were also offered by stakeholders during interviews. These include:
  - Separate stormwater and sewer lines.
  - Efforts to keep debris out of the pipes by regularly cleaning catch basins have considerably helped prevent flooding in the city.
  - Dredging - to help mitigate flooding, the City has dredged the Cochecho and made significant improvements to Willand Pond.
- One stakeholder said Dover has done a great job with ***soil conservation***. When Watson Road was rebuilt, riprap was used in the foundation to avoid erosion.
- The City has also ***invested in a number of generators*** to mitigate impacts from power loss during storms or other emergencies. There are generators for all of the streetlights and two of the three high-rise public housing units. All but three pump stations have backup generators.

KEY FINDINGS

Vision Master Plan Chapter - 2012

- **Relevant Vision Statement Goals:**
  - Municipal government and schools are run ***effectively and efficiently with full transparency,*** resulting in high quality services, well maintained buildings and infrastructure, a great recreation system and a competitive property tax burden.
  - Enhanced ***environmental quality and sustainability*** are actively pursued and inherent in all the City's activities.
- **Dover is committed to:**
  - Providing ***excellent school infrastructure*** and infrastructure maintenance.
  - A ***new or renovated high school*** that meets the needs of the entire community.
  - Offering high quality and ***efficient municipal services with an affordable tax burden*** with responsive elected and appointed City officials who utilize public-private partnerships wherever practical.
  - Use of ***cost effective*** management practices for ***energy efficiency and sustainability.***
  - ***Flexible, well trained and equipped*** police and fire departments housed in appropriate facilities.
  - School buildings, parks, roads, sidewalks, bicycle lanes/routes, landscaping, street trees and all infrastructure are very ***well maintained and managed*** based on ***adopted improvement plans*** for each.
  - City and School buildings that generate a significant amount of their own ***energy.***
  - ***Private sector resources*** and services are used wherever they can be more effective and efficient.
  - ***Open space and recreation facilities*** and programs that are well located, well-maintained, pet friendly and serve the needs of the entire community.
  - Providing high quality, ***low impact growth and development*** that preserves the City's more rural areas and focuses commercial activity in and around the urban core.
  - Creating a Capital Improvement Program that ***guides the construction and maintenance*** of community services and infrastructure.
  - Installing ***underground utilities*** in new construction wherever it is feasible.
  - Developing ***renewable energy*** resources such as wind, solar, geothermal, hydropower and green roofs wherever practical and cost effective for governmental, residential and commercial users.
- **What People Like About Dover:**
  - ***Public Safety-*** Strong effective and responsive safety services with a low crime rate
  - ***Education -*** Quality education system
  - ***Municipal Services -*** Dedication to continued community involvement, City officials willing to listen and respond, Library system, "Big City" services, Innovative recycling program
- **Challenges Related to Municipal Services:**
  - Aging infrastructure such as drainage, roads, stormwater,
  - Maintaining long term service needs,
  - Maintaining service programs, efficiencies, consolidation and reorganization,
  - Reviewing the tax cap as a viable option for community growth,
  - High property taxes,
  - Sustainable program funding

KEY FINDINGS

Current Community Service Projects

The following projects were listed on the City's website as being current community infrastructure projects the City is engaged in. ***What is the status of these projects now?***

- Reconstruction of Belknap and Elm Street neighborhood which includes reconstruction of stormwater drainage system and water utilities on Belknap Street from Silver Street to Fisher Street, Elm Street, Summer Street, and Hamilton Street. (2019)
- Replacement of (1800s era) undersized granite box culvert with 84 inch drainage pipe under railroad near Red's Shoe Barn.
- Reconstruction of Cocheco Street sewer pump station.
- Study investigating the origin of high-water flows during rain events so the City can better reduce the amount of inflow and infiltration, which can overwhelm the wastewater treatment plant (firm will review 125 miles of gravity sewer main).
- Reconstruction of Roberts Road including improved drainage and drainage outfall at the Piscataqua River.
- Development of a water supply well at Shaw's Lane for irrigation of the athletic fields.
- Reconstruction of Spur Road to include water main improvements/replacements.
- Partnering with NHDES to build upon existing stormwater asset management program to allow the city to apply condition assessment and prioritization concepts to the city's subsurface stormwater system - data will be used to identify and fund CIP projects.
- Redesign of the Varney Brook Pump Station.