

FY2017-2018

# Energy and Waste Reduction Update



Prepared by:  
David Ingram, Sustainability Manager  
City of Wilmington  
Public Services Department

## Executive Summary

In the time since the last presented an Energy and Waste Reduction Update (FY2015) was presented, the Public Services department has worked diligently to implement the programs and initiatives previously highlighted, as well as to enhance and develop new opportunities to improve energy and waste reduction strategies. The summary of actions and accomplishments in this report align with the Public Services department mission, goals, and strategies as stated in the departments 3-Year Strategic Plan. The FY2017 Energy and Waste Update highlights the many sustainability efforts of staff across numerous departments, and actions to minimize negative environmental impacts.

### Mission:

The Public Services department will provide safe, sustainable, and reliable infrastructure and services for our community in a responsible, efficient, and innovative manner.

### Energy Reduction

The Public Services department has taken a number of actions to reduce utility usage (electricity, natural gas, and water) and control costs. As the old adage states: *"You can't manage what you don't measure."*, and a new utility management software program has allowed more detailed tracking and management of the City's utilities. Also, projects to convert interior and exterior lighting to energy efficient light-emitting diode (LED) technology has contributed to significant energy and cost reductions. Examples of new initiatives include working closely with Duke Energy Progress on their Smart Saver Rebate Program...and their no-cost energy consulting and design services for new construction.

### Waste Reduction

The Solid Waste department continues to see an upward trend in annual recycling tonnage. A number of programs and outreach efforts have led to this success, including ongoing education of solid waste customers of the what, when, and why of recycling, continuing to expand recycling infrastructure across the City through the NC Community Waste Reduction Grants, the Recycle & Win program sponsorship, and the opening of the New Hanover County Material Recovery Facility (MRF).

### Purchasing

New initiatives have been implemented to establish a baseline of the City's purchasing habits. In FY17, a baseline spending percentage was established of the City's office products that met established sustainability criteria. The initiative will highlight the City's commitments to promoting environmental stewardship when purchasing goods, and serve as a baseline in establishing a more robust program and policy.

### Fuel

The Fleet Services department has strategically implemented vehicle and equipment replacement to models which are more fuel efficient and have lower emissions. These efforts combined with implementing Fuel Conservation Directive strategies, installation of GPS technology on numerous department vehicles, and refined service routes have led to significant fuel use reduction and cost savings.

This Energy and Waste Reduction update provides a record of the Public Services department sustainability actions and initiatives to date, and acknowledges opportunities for consideration as we face energy and waste reduction efforts in the future.

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## Introduction

*The Energy and Waste Reduction Update presents the City of Wilmington’s sustainability story to date and informs a strategic path forward.*

This report includes a timeline of major environmental milestones, key indicators, and accomplishments across City departments. Taken together, these components tell a story of how Wilmington is becoming a better, more sustainable community for its citizens and future generations.

In addition to highlighting Wilmington’s historical accomplishments, the information in this report informs of the recent work performed towards the goals put forth in the City of Wilmington Strategic Plan FY17-FY20. In particular, the report supports the Strategic Plan Focus Area: *Provide Sustainability and Adaptability*:

*“The City will protect and preserve our natural resources with quality design for the built environment. The City will make strategic decisions focused on the long-term financial, physical and social health of the entire City to enhance our ability to respond to changing economic and demographic conditions. Our actions will be based on a shared commitment to inclusiveness, equity and continuous improvement.”*

Energy and resource efficiency across all City operations is a top priority and the Public Services department continually seeks ways to manage these components in a strategic and effective manner. From planning energy efficiency early into the design phase of new construction projects, to outreach & education opportunities with City staff on plug load awareness, the city searches for ways to improve operations and minimize costs.

Solid waste has several negative environmental impacts including air pollution from trash collection and hauling, as well as methane creation from waste decomposition. With those impacts in mind, the Solid Waste department strives to minimize the environmental degradation in our city and region, to reduce disposal costs, and to provide an outstanding service to its customers. The department has implemented a number of successful programs that have led to increased landfill diversion rates, increased recycling infrastructure throughout the city and parks, and recruitment new customers for the curbside recycling program.

The Public Services department is pleased to share this information with City leadership, staff, and citizens to document the City’s efforts on an annual basis.

## Sustainability

What is Sustainability? ***Sustainability is defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs.***

The City's Sustainability Committee, first formed in 2013, focuses on internal organizational opportunities to raise awareness on a variety of sustainability topics through an annual management plan. The committee, which meets on a regular monthly basis, consist of representatives from multiple City departments that provide diverse ideas, information and feedback on a range of sustainability strategies. The group's value statement is:

*'The Sustainability Committee works to ensure an environmentally responsible, resilient and quality organization by raising awareness around sustainability best practice, committing to conserving resources and reducing the organizational carbon footprint'.*

In 2017-2018 the committee's focus area is energy efficiency. The committee will focus efforts on opportunities around energy reduction at City facilities. A number of these efforts have already been implemented and their details are highlighted within this report.

Each year, the committee will choose a new focus area ranging from energy efficiency in buildings, vehicle fleet & fuel usage, environmentally preferred purchasing, transportation choices or water conservation.

## Energy Efficiency & Electricity Consumption

Reducing energy use is important for the City to reduce greenhouse gas emissions, lower utility bills, and meet the City's goal of reducing energy consumption by 2% annually (per heated square foot of city-owned buildings). Across City

departments, staff have implemented numerous projects to reduce consumption and to achieve these goals.

**Streetlights & Park Lights** - Streetlights and park lights make up a significant portion of the City's electricity use. To reduce the impact of this necessary lighting, the City and Duke Energy Progress have been converting all of the streetlights to light-emitting diode (LED) lighting which are up to **80% more efficient** than traditional lighting. In addition, the LED's have a longer life span, require less maintenance, and are priced lower than traditional lights under current Duke Energy Progress leased lighting rates. As of September 2017:

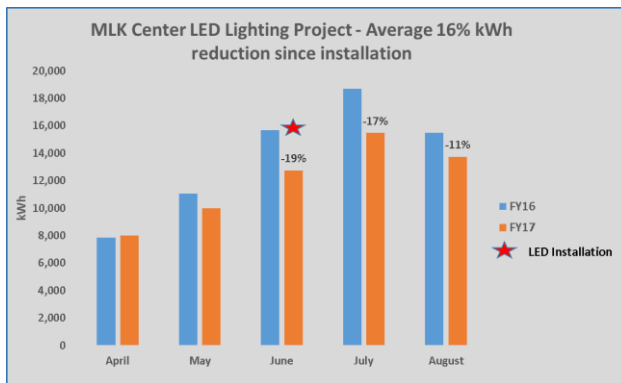
- ✓ 5,614 of the 8,269 leased streetlights (**68%**) have been converted to LED
- ✓ 324 of the 956 park & area lights (**34%**) have been converted to LED

**Building LED lighting Upgrades** - The Buildings Division continues to identify energy efficiency projects within City facilities, such as replacing older fluorescent fixtures with highly efficient LED lighting. Some recent projects of note include:

- ✓ MLK Center – In June 2017 the Buildings division began replacement of 56 office and common area fluorescent lights with LED lighting, and replacement of 24 gymnasium high bay fluorescent lights with LED lighting. The new LED lighting not only improves lighting quality, reduces energy usage and costs, but also greatly reduces maintenance costs, particularly in the gymnasium which requires two staff and a man-lift to be transported to the site in order to change out lighting. Since the installation, the MLK Center has had significant reduction in monthly energy usage. As noted in the graph below, the Center has seen an average 16% kilowatt hour (kWh) per month reduction since the project start in June. The energy

reduction has resulted in nearly \$400/month in savings, and with a purchase cost of \$13,054, the return on investment (ROI) for the project is projected at just under three (3) years.

- ✓ Maides Park – similar to the MLK center, 49 office and common area fluorescent lights were replaced with LED lighting
- ✓ Police HQ Sally Port – 22 fluorescent lights were replaced with LED lighting



**Plug Loads & Personal Electronics** - The Public Services department worked with Duke University’s Behavioral Economics for Local Government Team on a project to reduce energy usage by addressing building plug-loads and use of personal electronics (heaters, fans, and personal refrigerators) within city facilities. This effort is directly correlated to the City’s FY17-FY20 Strategic Plan (Focus Area: Provide Sustainability and Adaptability, Strategy 2). Through the project, staff across 21 different city buildings were provided information about plug loads of commonly used items, their annual energy impact, and the importance of energy efficiency as it relates to the City’s Strategic Plan. Each employee was also provided an energy commitment pledge which asked to identify or list voluntary ways to reduce their energy usage in the workplace. On review of the returned energy commitment pledges, Public Services

learned many City staff were willing to commit to a number of energy saving actions, including:

- Removing personal heaters
- Maintaining thermostats at seasonal ranges
- Shutting off computers (not sleep mode) at end of day
- Turning off office lights when away for more than a few minutes
- Turning off common area lights (break rooms, conference rooms, storage) when not in use
- Unplugging chargers and other devices when not in use

The Public Services department will utilize these responses to identify the levels of staff energy awareness, drive energy efficiency efforts, and as an aid in developing a policy on personal appliances in city owned buildings/offices.

**Utility Management Software** - In FY17 the Public Services department made a change to Energy Manager, a more robust energy management software program. Energy Manager is a web-based energy information system designed to support all aspects of a sustainable, high-performance energy management program. It allows for the collection, tracking and interpretation of the City’s utility data quickly and easily, all within the same program, which will greatly streamline the energy accounting and utility management. Some of the key attributes:

- ✓ Full featured 100% web-based utility accounting program accessible from any browser or mobile device – Note the previous system was PC based only.
- ✓ Includes *unlimited* user licenses – the previous system only includes 5 licenses
- ✓ Ability to share online access to reports and graphs to City managers and personnel
- ✓ Direct link to the EPA’s ENERGY STAR Program

- ✓ Tracking of capital improvement projects
- ✓ Assessment of buildings by comparison of Energy Use Intensity (EUI)

## Renewable Energy

The City's solar photovoltaic (PV) systems continue to be a valuable renewable energy resource to help offset electricity usage. The systems include:

- ✓ A 74 kW array at the Fleet Services Building
- ✓ A 27 kW array at the Engineering Department Building
- ✓ A 10 kW array at Olsen Park
- ✓ A an array at the net-zero Street Sweeper Complex



All of the systems are tied into the grid and set-up under a net metering rate, meaning when the system is producing energy, any energy that is not utilized on-site is fed back into the grid. In FY17 the systems produced nearly 150,000 kilowatts hours (kWh) of electricity...that's equivalent to offsetting the GHG emissions from **11.1 homes for one year!**

## Built Environment

As new facilities are being designed and constructed, the Public Services and Engineering departments have begun collaborating with Duke Energy Progress and utilizing their Smart Saver Rebate Program. The program encourages

the installation of high-efficiency lighting, HVAC systems, and other building mechanical equipment. The Smart Saver program also offers energy consulting and analysis at no costs, and will provide project design assistance, whole building energy modeling, support for project sustainability goals, and potential savings calculations.

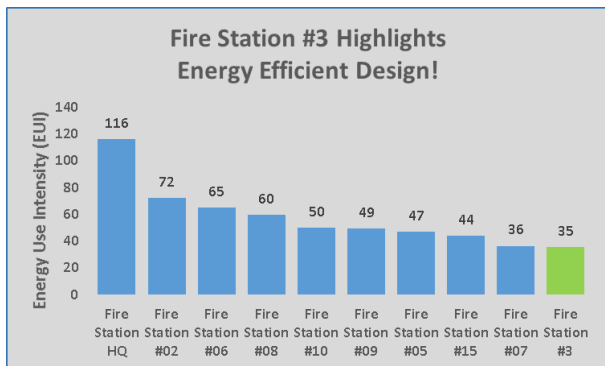
The Smart Saver energy consulting services have already been utilized on several new construction and energy efficiency projects including:

- ✓ the new Police / Fire Department Training Facility (in design phase)
- ✓ the new Fire Station #5 (under construction)
- ✓ the MLK Center LED lighting project
- ✓ the Maides Park Community Center LED lighting project.

Since the last Energy and Waste Reduction Update report in 2015 the City's first Leadership in Energy and Environmental Design (LEED) certified Fire Station has opened and is operational. Fire Station #3 on Cinema Drive was designed and constructed to be environmentally responsible with a number of energy and water efficient features, including high efficiency HVAC systems and temperature controls, high performance building envelope and insulation, use of solar energy for heating water for showers and radiant floor, and undergoing a commissioning process to ensure all systems were installed and operating as designed. As a result of these design and construction choices, Fire Station #3 has proven to have the lowest energy use intensity (EUI), **a key benchmark when measuring a buildings energy efficiency.** Essentially, the EUI expresses a building's energy use as a function of its size, and is expressed as energy per square foot per year. It's calculated by dividing the total energy consumed by the building in one year (measured in kBtu) by the total gross floor area of the building.



With EUI as the measure, Fire Station #3 highlights the benefits of the City investing in energy efficient and green design when considering the operational and lifetime costs of a new building. Consider Fire Station #3 which as the second largest at 14,586 SF, has the lowest EUI in comparison to other City Fire Stations which average less than half the size at approximately 6,511 SF (other than Fire HQ at 31,794 SF). The design decisions incorporated

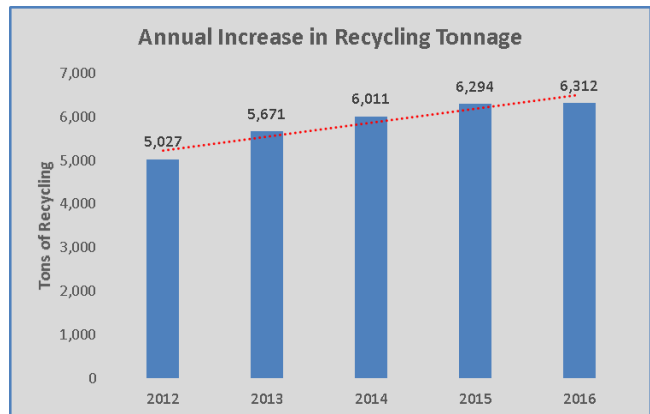


into Fire Station #3 will continue to provide benefits to the City through lower operational and utility costs over the lifetime of the facility.

## Recycling & Waste Reduction

With the residential recycling program maintaining a healthy participation rate of over 80%, the Solid Waste department continues to implement successful efforts to increase landfill diversion rates and expand recycling opportunities for the citizens throughout Wilmington. Over the last 5 years, the curbside recycling efforts have led to an average of over **5,800 tons per year** of recycled material diverted from the landfill, and a **6%** average increase in recycling tonnage each year.

These recycling program efforts and new developments include:



- ✓ **Opening of the New Hanover County Material Recovery Facility (MRF)** – the opening of the nearby MRF, located about 2 miles north of the city, has provided an economical and less environmentally impactful recycling resource. The MRF has allowed the Solid Waste department to provide recycling services more cost effectively. Prior to the MRF opening the department was facing tippage fees in the range of \$30-\$40 per ton. With the MRF open and fully operational, the average tippage fee in FY17 was \$6.56 per ton. Additionally, the opening of the MRF locally has benefitted the region as a whole by increasing the overall rate of recycling in the area, encouraging more sustainable solid waste practices, and extending the life of the regions landfill.
- ✓ **Recycle & Win Program** - The Solid Waste office participated in the Recycle and Win recycling incentive program, sponsored by Coke Consolidated. The program intent was to increase recycling participation and raise awareness on items appropriate to recycle. The program consisted of a six-month marketing campaign supported by both Coke and Harris Teeter. The program partnered with the city to provide educational material to city trash customers, as well as offer a \$50 Harris Teeter gift card

to winning recycling program participants. The program had success partnering with other southeastern cities resulting in increased recycling cart requests during the campaign time period. The program included mailing flyers/stickers to the city's customer list, a media/PR event with a Coke vehicle, a television advertising campaign, and a prize patrol car choosing winners of a \$50 Harris Teeter gift card.



- ✓ **FY16 Community Waste Reduction and Recycling Grant** – this NC Department of Environmental Quality (NCDEQ) outreach grant provided funding to expand the away from home recycling infrastructure in the Central Business

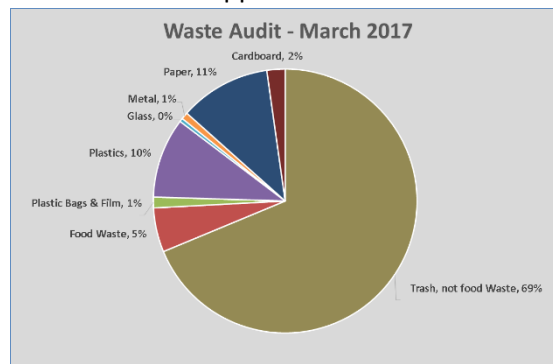


District and Northern Riverwalk. The funding allowed the Solid Waste office to purchase 23 recycling bins which were installed along the Northern Riverwalk and the end of Market Street.

- ✓ **FY17 Community Waste Reduction and Recycling Grant** – the Solid Waste office's application for FY17 grant funding through NCDEQ was also recently awarded. The grant will target expanding the away from home recycling opportunities in City parks and recreation areas. Funds from the grant have allowed the purchase of thirty-five recycling/trash stations which will be installed in nine city parks.



- ✓ **Annual Internal Waste Audit** - The Sustainability Committee conducted the 4th annual Internal Waste Audit on March 15, 2017. Trash carts from various city offices and facilities were delivered to the Engineering warehouse at the Operations Center and were manually sorted to determine the amount of recyclable material that was being thrown away. For this year's audit the methodology was changed from previous year's audit, the material weights were used as opposed to the material



volume. The results of the audit showed approximately **26%** of the contents (by weight) of the trash carts consisted of recyclable material...and while the audit methodology was different, the results

showed a positive trend and an improvement from the 2015 audit of 45% recyclable material (by volume) in the waste stream.

- ✓ **Plastic Bag and Film Recycling** – Public Services staff and representatives from surrounding county governments, NC Department of Environment and Natural Resources, and local environmental groups have been meeting and planning outreach efforts to address plastic bag & film recycling from a regional perspective. Plastic bags and film are technically recyclable, however they are a major problem if they are placed in curbside recycling bins and end up at the



Materials Recycling Facility (MRF). At the MRF plastic bags and film wrap around the sorting equipment which gets clogged to the point of having to shut down the equipment to clear the plastic materials. The result of this is a slowing of the sorting process, increased costs, contamination of the recycling stream, and problems with the quality of materials the MRF sells to be reborn into new products. The goal of the campaign is to raise awareness of the proper way to recycle plastic bags and film, provide feedstock for local industries utilizing the material, reduce plastic film from entering into our landfills, and reducing the impact on our environment.

- ✓ **Electronics Recycling** – The Solid Waste office also provides electronics recycling to City of Wilmington customers. The service provides a valuable service to customers due to the North Carolina state legislation ban of TVs and computers from NC landfills. Electronics recycling includes computers, monitors, TVs and cell phones, and other items that can be plugged in. The electronic material is picked up from City customers and consolidated at the Operations Center, where it is then collected by a certified electronics recycler, Powerhouse Recycling from Salisbury NC, who break down and separate the electronics to commodity levels (i.e. plastics, metal, circuit boards, etc.). These base materials are then refined, smelted, or recycled into clean commodities to be reused...a full circle process. The amount of electronic waste diverted from the landfill since the program was started by the Solid Waste office is:
  - ✓ In FY16 – 203,330 pounds
  - ✓ In FY17 – 210,114 pounds
  - ✓ To date in 2018 – 28,205 pounds

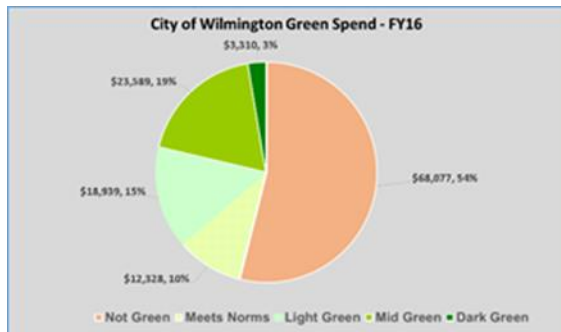
On average, 230 City of Wilmington solid waste customers take advantage of this valuable service every month.

## Environmentally Preferred Purchasing

Environmentally Proffered Purchasing (EPP) or Green Purchasing refers to the procurement of products and services that have a lesser effect on human health and the environment when compared to competing products or services that serve the same purpose. The comparison considers a number of factors such as raw materials, acquisition, production, manufacturing, distribution, and life cycle. The

program serves to highlight the City's commitments to promoting environmental stewardship and reducing GHG emissions when purchasing goods, materials, services, and capital improvements.

Public Services established a Green Purchasing baseline of the office supply portion of the City's



purchasing. The Sustainability Manager, in collaboration with the City's office supply vendor, prepared a report of the City's spending history and highlighted the portion of the spending that met various Green Purchasing criteria (i.e. % of recycled content, Forest Stewardship Council certified, Energy Star). The percentages that met the criteria for FY16 and FY17 was **36%** and **32%**, respectively. These will serve as a baseline for the City as we strive to increase the percentage of products that meet established sustainability criteria and to develop a more robust program across all City departments.

## Fleet Fuel Usage

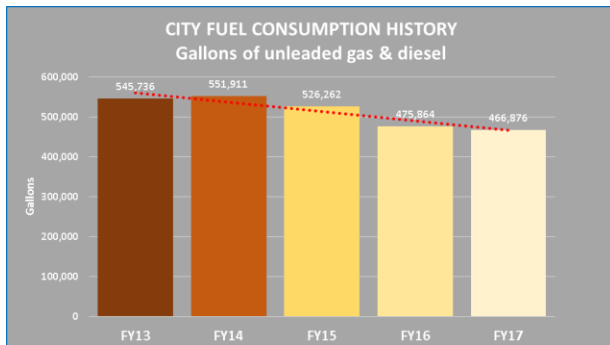
The Fleet department manages approximately 552 vehicles and equipment utilized across the City's departments. Fleet has implemented numerous strategies in collaboration with city departments to drive down fuel usage and costs, including:

- ✓ Installation of GPS technology into Solid Waste, Streets, Stormwater, and Traffic division vehicles
- ✓ Implementing a Fuel Conservation Directive to address idling, route planning, and safe driving behavior
- ✓ Inclusion of hybrid vehicles into the fleet
- ✓ Replaced aging vehicles with new, more fuel efficient vehicles
  - New Police Dodge Chargers average **13 mpg** versus 8 mpg for the old Crown Victorias
  - New Solid Waste Freightliner Garbage Trucks average **9 mpg** versus 3 mpg for the older models

Fleet continues to purchase fuel efficient hybrid vehicles, with the total number now up to 18 hybrids. In collaboration with the Police department, Fleet has been updating patrol vehicles to more modern and efficient models as noted above. In addition to fuel efficiency, the new Police Dodge Chargers have a Multi Displacement System (MDS), which allows the engine to shut down four of the eight cylinders while idling or cruising at constant speed.

The Solid Waste division also realized fuel and costs savings from the replacement of aging vehicles with the purchase of 18 new trucks in the 2014-2015 budget year. Solid Waste also continues to refine their collection routes and service schedules to improve efficiencies.

Collectively, these actions and initiatives have led to a significant reduction trend of fuel usage and costs.



Note: Data acquired from Fleet fueling station and Fire reporting  
 Note: Data does not include Parks and golf course equipment fuel  
 Note: Data does not include City employee travel fuel card

## Opportunities

- ✓ Expanding the City’s **recycling** customer base by fully utilizing and analyzing the radio frequency identification (RFID) chip data that is associated with each curbside recycling bin.
- ✓ **Increased Recycling** – utilize outreach messaging, social media, community events, and citizen engagement opportunities to reach our Solid Waste department recycling goal of 600 tons per month. Reaching this goal would divert waste from our county landfill, decrease the the City’s tippage fees, and direct valuable materials to be used as feedstock for new products.
- ✓ Continue expansion of **away-from-home recycling** infrastructure through continuing to pursue the NC Community Waste Reduction and Recycling Grant each fiscal year
- ✓ Continue implementing **energy efficiency** initiatives. In particular, strategically target buildings and facilities with the highest EUI (energy use per square foot) to achieve the most cost savings per dollar spent.

- ✓ Utilize the Duke **Smart \$aver Rebate program**, as well as the no-cost energy consulting and analysis service, for all renovation and new construction projects. The program provides significant rebate opportunities to help off-set the cost of energy efficiency projects, and provides sound energy analysis to inform design decisions that will provide energy savings benefits for the entire life span of new facilities.

- ✓ Support of the Buildings & Facilities division **energy efficiency** efforts to implement building control and management systems which would allow monitoring and control of City facilities from a central location, or remotely. The Buildings division is seeking a standardized system to implement for existing facilities and new construction projects so that all systems are compatible and each buildings control system “speak the same language”. Implementing such a system would allow better control of building operating schedules, temperature settings, and mechanical equipment operation and maintenance.
- ✓ **Renewable Energy** – Explore opportunities to incorporate renewable energy when feasible into the design of new construction and/or major renovation projects. As North Carolina is now the #2 ranked state for solar energy capacity, the City may take steps to reduce the barriers to solar energy growth to make solar projects easier to implement for local businesses and residents.

## Appendix

### Sustainability Timeline 1990- present



### 2016

Material Recovery Facility (MRF) opens in New Hanover County to handle City's recycling material.

### 2016

Leased streetlights and park/area lights continue to be converted to LED across the city.

### 2016

Solid Waste Division participates in the Recycle & Win campaign to increase recycling participation.



### 2016

The Create Wilmington Comprehensive Plan is adopted May 2016 to help Wilmington realize appropriate change, growth and preservation.



### 2016

Solid Waste Division awarded the 2016 Community Waste Reduction and Recycling Grant enabling the expansion of recycling infrastructure along the northern Riverwalk.

### 2017

The 4th annual internal Waste Audit was performed in March to identify opportunities to improve recycling within City facilities.



### 2017

Solid Waste division began a cigarette butt recycling pilot project in collaboration with Keep New Hanover Beautiful.



### 2017

Solid Waste division awarded the 2017 Community Waste Reduction & Recycling Grant, enabling the continued expansion of recycling infrastructure into City parks and recreation areas.

### 2017

July, 18 - Mayor Saffo and City Council sign a resolution addressing climate change.

## 2015-2017

### 2015

Fire Station #3, Wilmington's First LEED certified Fire Station, opens in 2015.



### 2016

A Green Procurement baseline (36%) was established for office product purchases that meet established sustainability criteria.



### 2016

WMPO promotes participation in the Go Coast Commuter Challenge which encourages people to utilize a sustainable mode of transportation such as carpooling, biking, walking or riding the bus.

### 2016

Public Services implemented a new utility management software, Energy Manager, enabling improved tracking and analysis of the City's electricity, natural gas and water consumption.

### 2016

Public Services addressed energy efficiency in City facilities through the Plug Load & Personal Electronics project in collaboration with Duke University.

### 2017

Buildings & Facilities division, as part of FY17 energy reduction projects, installed high efficiency LED lighting in the MLK Center, Maides Park Community Center and Police HQ.

### 2017

Public Services utilized Duke Energy's Smart Saver Rebate Program to obtain available energy incentives and rebates for new construction and energy efficient projects.

## Appendix

### Sustainability Management Plan



## **Organizational Sustainability Management Plan**

**2017 - 2018**

### **Overview**

The City of Wilmington seeks to fully understand and manage energy, water and waste, cultivating a culture of environmental stewardship throughout city operations. The efficient use of energy and water and a commitment to waste reduction and recycling is a priority to city leadership in order to preserve quality of life, promote financial responsibility and encourage employee engagement. The city recognizes energy and waste as controllable costs and will continually seek ways to minimize risk while maximizing our economic and environmental resources.

### **Value Statement**

The City's Sustainability Committee works to ensure an environmentally responsible, resilient and quality organization by raising awareness around sustainability best practices, committing to conserving resources and reducing the organizational carbon footprint.

### **Purpose of the Plan**

The City of Wilmington will support the efficient use and conservation of energy and water resources at all of its facilities by creating, implementing and evaluating the Sustainability Management Plan. The city's goal is a reduction in energy consumption per gross square foot for all city-owned buildings and facilities of 2% annually, reaching a 30% by 2029-2030 fiscal year based on energy consumption for 2012 fiscal year. Additionally, a waste reduction goal is established through this plan including a reduction in the amount of recyclables in the waste stream by 5% annually, reaching zero recyclables in the waste stream in city offices and facilities in 20 years' time, FY 2034-2035. City staff will update the Sustainability Management Plan annually through a designated committee. The plan's success begins with support from leadership by way of endorsement by the Executive Management Team. It is a recommendation of this plan that authority to implement strategies and action items based on this plan as well as city-portfolio reduction goals be tasked to the city-wide Sustainability Committee.

There are numerous benefits to the implementation of the Sustainability Management Plan. Economic benefits include the responsible use of taxpayer dollars, maintaining an expected level of service to the citizenry and preparing for the rising cost of fuel, electricity, water and waste disposal. Environmental benefits include diversifying the city's energy portfolio with clean energy and energy efficiency, protecting indoor and outdoor air quality, reducing emissions and carbon footprint and reducing the city's resource consumption. Social benefits include maintaining employee and public thermal comfort, using the city's experience as a model for community education and outreach and reflecting the city's commitment to maintaining and strengthening quality of life efforts citizens and leaders value in our community.

The city is positioning itself as a leader in energy management and waste reduction by promoting the responsible use of resources. The Sustainability Management Plan can serve as a tool to offer education and outreach opportunities to more than 900 city employees who are informal ambassadors of the city's efforts. With the implementation and sharing of the plan, city accomplishments and challenges will serve as tools for community interaction and understanding of current energy management and waste reduction efforts.

**Key Elements of the Plan**

- This plan is meant to serve as a guide for consistent tracking and evaluation of internal energy and water consumption, waste reduction and recycling efforts within city operations.
- The designated committee is responsible for implementing the plan including assigning responsibility and tracking progress.
- Three toolkits have been developed to assist the Sustainability Committee with their efforts towards implementing the plan.
- An annual review by the designated committee will allow for updating, altering strategies and evaluation of success and challenges.

**Plan of Action**

- Creating, gaining support and publishing the plan for implementation, evaluation and annual review
- Develop and implement strategies centered on the chosen focus area. Focus areas will be chosen by the Sustainability Committee and identified through annual updated sustainability management plans.
- Utilizing the data management responsibilities of the Sustainability Project Manager position to measure and report on the goals and requirements of this plan.
- The plan and its efforts will serve as a resource and an example to the community, demonstrating the benefits of effective strategic energy and waste reduction management.

**Overall Goal:** The Committee has developed metrics to better understand internal sustainability efforts and results. The Sustainability Committee proposes the following internal organizational city-wide goals. These goals will be measured annually and noted in subsequent Sustainability Management plans.

- Energy and water use
  - 2% reduction per year; baseline FY2011-2012
  - Metrics
    - Electricity measured in kwh/gsf
    - Whole energy measured in btu/gsf
    - Water measured in kgallon/gsf
- Recyclables in the waste stream; baseline FY2011-2012
  - 5% reduction per year to get to zero recyclables in organizational trash in 20 years
  - Metrics
    - Measured through annual waste audit % of recyclables in waste stream

<b>Baseline Data</b>	
<b>FY2011-2012</b>	
<b>Qty</b>	<b>Utility</b>
64,817	Therms of Natural Gas
11,080	Gallons of Building Heating Oil/Generator Fuel
25,370	kGals of Water
572,040	Gallon of Vehicle Fuel (Gas & Diesel)
10,254,058	kWh of Electricity

<b>Legend</b>
gsf = gross square feet (City-owned buildings size)
Btu = British thermal unit (standard unit of energy)
kWh = kilowatt hour
kgal = thousands of gallons

**Annual Focus Areas**

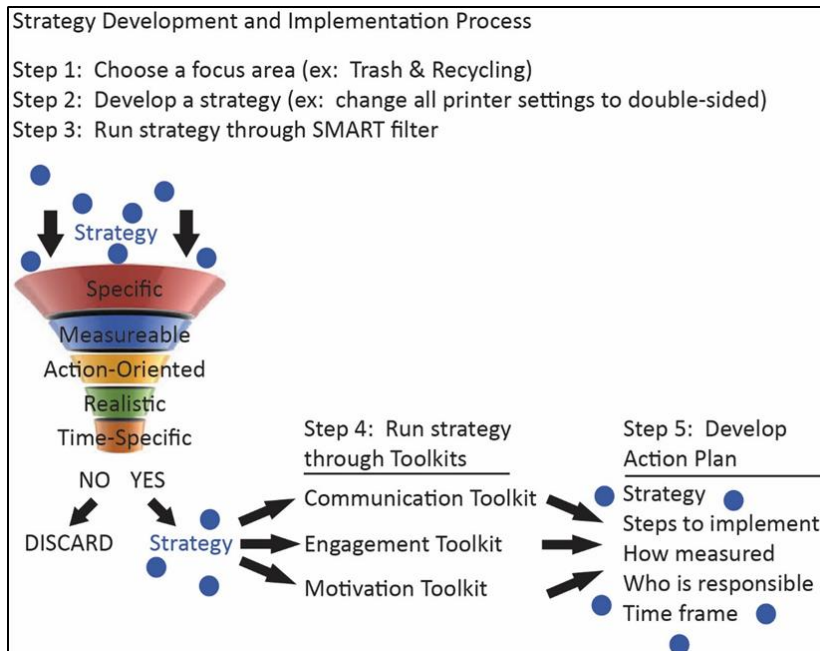
The Committee will focus on a chosen sustainability topic each year, develop strategies and implement action items. Each year, the Sustainability Committee will chose a focus area, identify it in the annual

sustainability management plan and develop strategies around the focus area. Potential focus areas include:

- Energy
- Vehicle Fuel
- Water
- Trash and Recycling
- Purchasing

**Strategy Development**

The Sustainability Committee has agreed upon a strategy filter and toolkits to utilize when developing strategies, ensuring effective strategy development. The Committee will evaluate each strategy using a SMART filter per the committee charter. The SMART Filter assists the committee in determining if the strategy is specific, measurable, action-oriented, and realistic and time specific. Communications, Engagement and Motivation toolkits have been developed as a part of plan development. The toolkits are available for use when developing strategies for implementation.



**Sustainability Management Plan 2017-2018 Focus Area**

**Energy Efficiency**

The Sustainability Committee agreed to focus on energy efficiency initiatives for the 2017-2018 sustainability management plan. Subsequent focus areas will be chosen at each May meeting.

**Energy Efficiency Initiatives**

Energy efficiency initiatives, as referenced in this plan, refer to the goal to reduce the amount of energy utilized by municipal buildings and operations to provide products and services. That energy is represented by the use of electricity, natural gas, fuel oil/diesel, and water. These energy types are tracked and measured

on an ongoing monthly basis by Public Services – Sustainability Project Manager. Improvements in energy efficiency are achieved by adopting a more efficient technology or by the application of a variety of methods to reduce energy losses.

Implementing energy efficiency initiatives and reducing energy usage can help the City achieve a variety of goals in line with the Comprehensive Plan including reduced energy costs, reduction of greenhouse gas emissions, and efficient use of budget funds.

### Measuring Progress

The utility management software, Energy Manager, will be utilized to track and measure the progress and energy use reduction of all initiatives which are implemented. The metric utilized for measuring progress will be each building's Energy Use Intensity (EUI) in kBtu/SqFt.

### FY 2017-2018 Energy Efficiency Projects

The Sustainability Committee developed key projects to address the FY 2017-2018 focus area, energy efficiency initiatives. The projects are included in table below. The Sustainability Committee will work with an implementation team to develop an action plan implement the projects.

Year	Site	Energy Efficiency Projects	Project type	Estimated Co	Status
2017-2018	Maides Park Community Center	LED light replacement	Electricity Use Reduction	\$ 7,446.00	Complete
2017-2018	MLK Recreation Center	LED light replacement	Electricity Use Reduction	\$ 17,598.00	Complete
2017-2018	Police HQ	Energy efficient Ice Machine LED light replacement	Electricity Use Reduction	\$ 5,320.00	Complete
2017-2018	302 Willard St. (Community Services office)	LED light replacement (4-strip ceiling mount)	Electricity Use Reduction	\$ 8,200.00	Pending
2017-2018	Fire Station HQ	LED light replacement	Electricity Use Reduction	TBD	Pending
2017-2018	City Hall, Downtown Municipal Bldg, and Fire HQ	HVAC, Building Envelope Assessment	mechanical system improvement/ replacement	TBD	Pending

### Plan Support

The Sustainability Committee approved the focus area plan for this year's projects. The committee members, who are listed in the table below, are representatives from multiple City departments that provide diverse ideas, information and feedback on sustainability topics and strategies.

Name	City Area
David Ingram	Operations Center – Public Services
Dave Mayes	Operations Center – Public Services
Adrienne Harrington	Downtown Offices - WMPO
John Fortuin	Operations Center - Fleet and Finance
Dennis Drury	Operations Center – Buildings & Facilities
Nicole Milliken	Downtown Offices - Communications
Tammy Skinner	Community Services
Margaret Le Senechal	Police
Frank Blackley	Fire
Ryan O' Reilly	Community Services