



Administrative Directive

Title: Energy Management for Municipal Operations		Index Number: 3.27
Date of Adoption:	Date of Revision: 10/5/2016	Page 1 of 4

1.0 **Purpose and Need**

Each year the City of Virginia Beach utilizes significant quantities of electricity, natural gas, propane, and gasoline and diesel fuel in the operation of municipal facilities, utility systems, vehicles and equipment. Annual expenditures for energy exceed \$20M per year. Efficient management of these sources of energy enables the cost-effective delivery of City services to the public. Responsible use of energy by all City employees will help minimize negative environmental impacts.

In order to efficiently manage energy programs, the City has identified specific, standing organizations that are responsible for energy management and the periodic publication of City policies regarding energy utilization in:

- Municipal Buildings;
- Municipal Utility Systems;
- Municipal Transportation and Traffic Management Systems;
- Municipal Power Generation Equipment; and,
- Municipal Motor Vehicles and Equipment.

2.0 **Administrative Directive**

The City's energy management program ensures a balanced approach to:

Energy Monitoring and Analysis. Of primary importance is the City's ability to measure and analyze energy consumption. Only with a detailed understanding of the sources of energy being utilized, the nature of consumption, the timing of consumption and the ability to alter that consumption can City energy management staff and City leadership make responsible decisions regarding energy procurement and consumption reduction programs.

Energy Consumption Reduction. Continuous improvement of the energy performance of City buildings, utility systems, transportation and traffic management systems, power generation equipment, motor vehicles and equipment is integral to the City's culture. Physical changes to reduce energy consumption are often costly. Calculation and evaluation of the Return-On-Investment (ROI) of all physical improvements for energy consumption reduction is required.

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Energy Awareness. Through ongoing training and publicity, the City ensures that all City employees are aware of published energy goals and policies and understand the impact that their personal work behaviors have on City energy consumption. All City employees must remain committed to be responsible stewards of the City's resources.

Renewable Energy and Green Buildings Programs. The City is supportive of the exploration of alternative and renewable energy sources for City facilities and vehicles. Likewise, the City values green building certification programs such as Leadership in Energy and Environmental Design (LEED) for the design of new buildings and for the continued operation and maintenance of existing buildings. The City will pursue the use of alternative and renewable energy sources and green building certification when such use can be demonstrated as cost effective, or when City leadership determines that an environmental benefit is worthy of any added expense.

Energy Recognition. The City highlights and promotes success in the City's analysis, consumption reduction, awareness, renewable energy and green building programs in order to enhance the City's public image and to attract energy-conscious organizations, businesses and people to Virginia Beach.

3.0 Procedure to Accomplish Administrative Directive

The Joint Energy Committee (JEC)

This City of Virginia Beach JEC is the governing body for energy management for municipal operations. The JEC is chaired by a Deputy City Manager appointed by the City Manager. Membership in the JEC includes:

- City Department Directors, or a designated Department representative;
- Representative(s) from City of Virginia Beach Public Schools;
- Representative(s) from Virginia Natural Gas; and
- Representatives(s) from Dominion Virginia Power.

The Energy Management Office

The Energy Management Office is the staff organization responsible for the daily administration of energy management for municipal operations in municipal buildings, utility systems, transportation and traffic management systems. The Energy Management Office is a Division within the Department of Public Works, Facilities Management Group.

Fleet Management

Fleet Management is the organization responsible for the daily administration of energy management for municipal operations pertaining to municipal power generation equipment and municipal motor vehicles and equipment. Fleet Management is a Group maintained within the Department of Public Works.

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4.0 Responsibility and Authority

The Joint Energy Committee (JEC)

As the governing body for energy management for municipal operations, the JEC shall:

- Convene meetings of the JEC a minimum of eight (8) times each year;
- Establish and promulgate annual municipal energy goals;
- Establish and promulgate municipal energy policies;
- Facilitate the presentation and discussion of alternative energy and energy reduction technologies and ideas;
- Facilitate the discussion of municipal energy consumption; and,
- Monitor progress against the published annual municipal energy goals.

The Energy Management Office

The Energy Management Office shall:

- Provide daily management of the energy management program;
- Develop draft goals and policies regarding electric, natural gas and propane for JEC discussion, review and approval;
- Communicate JEC approved goals and policies to City employees and provide energy specific training to reinforce specific policies;
- Prepare updates as needed to this administrative directive;
- Provide program management for the City's energy billing software;
- Develop annual energy Capital Improvement Program (CIP) funding requirements for consideration by City leadership for incorporation into the City budget.
- Manage funding provided in designated energy CIPs.
- Provide program management for Energy Conservation Investment Programs (ECIP);
- Provide program management for Energy Performance Contracting (EPC) programs;
- Provide expertise to City Departments regarding energy procurement/purchasing;
- Participate in external energy programs to include the Environmental Protection Agency's Energy Star program and the Virginia Energy Purchasing Governmental Association.

Fleet Management

Fleet Management shall:

- Develop draft goals and policies regarding gasoline and diesel fuel for JEC discussion, review and approval; and,
- Provide program management for the City's gasoline and diesel fuel programs.

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City Department Directors

City Department Directors shall:

- Ensure departmental compliance with JEC approved policies;
- Work with the Energy Management Office and Fleet Management to achieve JEC approved annual energy goals;
- Review their respective Energy Consumption by Building Reports annually, at the request of the Director of Public Works, and bring inconsistencies and concerns to the attention of the Energy Management Administrator for resolution; and,
- Create a culture of energy responsibility.

5.0 Specific Requirements

1. JEC approved City of Virginia Beach Municipal Energy Goals are incorporated into this administrative directive as attachment (1).
2. JEC approved City of Virginia Beach Energy Policies are incorporated into this administrative directive as attachment (2).

Effective and efficient utilization of energy requires a collective effort by all City Employees. The JEC with assistance from the Energy Management Office and Fleet Management ensure that the City has clear objectives and policies, and a forum for discussion of a broad range of energy topics. It is incumbent upon the City Departments, Division Directors, subordinate supervisors and employees to embrace the City's culture of energy responsibility.

Approved:	<u>Phillip A. Davenport</u> Director of Public Works	<u>10/6/16</u> Date
Approved:	<u>Thomas M Leahy</u> Deputy City Manager	<u>10/7/16</u> Date
Approved:	<u>[Signature]</u> City Attorney's Office	<u>10/7/16</u> Date
Approved:	<u>[Signature]</u> David L. Hansen, City Manager	<u>10-10-16</u> Date

Attachment 1

2017

City of Virginia Beach Municipal Energy Goals



Joint Energy Committee

City of Virginia Beach

12/4/2017

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Energy Overview

Joint Energy Committee

The City of Virginia Beach's Joint Energy Committee (JEC) was created in the spring of 2007 in response to the City's rising energy costs. The JEC includes representatives from various City departments, the Virginia Beach City Public schools, as well as our utility providers.



The Joint Energy Committee is jointly chaired by Tom Leahy, Deputy City Manager, and the Assistant Superintendent of Virginia Beach City Public Schools. The JEC meets on the first Thursday of the month and agendas include vendor presentations, study reports, consumption updates, and cutting-edge energy technology.

The Joint Energy Committee recognizes that energy efficiency may be the cheapest, most abundant, and most underutilized resource. A key part of green building is energy efficiency, which lowers operating costs and reduces greenhouse gas emissions.

The committee also recognizes the value of properly managing energy for municipal operations. Excluding fuel, the City pays \$15.1 million dollars in energy costs a year while maintaining approximately 3.5 million square feet of building space year round. Virginia Beach City Public Schools pays over \$15.8 million in energy costs for approximately 11 million square feet of building space. In addition, the City has more than 3,500 vehicles fueled and on the road.

Focusing on energy efficiency and conservation initiatives in municipal operations saves the taxpayer money and demonstrates our commitment to the environment. A commitment to green buildings also adds great value as these buildings provide safe, affordable and healthy environments for residents, students, and workers.

The JEC is the team that currently sets energy goals for municipal operations. In 2008, they set the electric reduction goal on City buildings at 10% in five years. The City conquered that goal – by achieving 15%. The Joint Energy Committee still exists and has adopted a number of new goals.

City of Virginia Beach Energy Office

Based on the energy management need identified by the Joint Energy Committee, the energy office was created in July 2010 and provides:

- A full-time Energy Management Office;
- The administration of the city-wide energy software program (EnergyCap);
- Management of energy Capital Improvement Projects (CIP);
- Administrative support to the Joint Energy Committee;

- And representation on various task forces, boards and committees including the Virginia Energy Purchasing Governmental Association and the Federal Bureau of Ocean Energy Management.

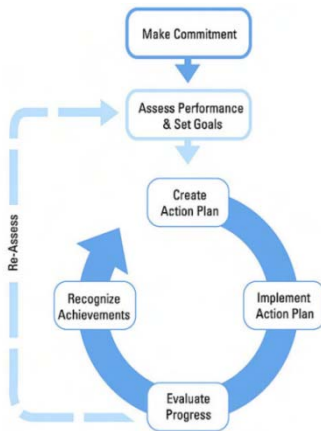
Since its creation, the office has led the way on a number of initiatives.

Energy Star Partnership

In April 2011, the City joined the Environmental Protection Agency’s Energy Star partnership program. As a result, the City committed to:



- Measure and track the energy performance of facilities;
- Develop and implement a plan consistent with the Energy Star guidelines to save energy; and
- Spread the word about the importance of energy efficiency to our staff and the community.



Energy Star Model

Virginia Beach City Public Schools has achieved 45 Energy Star rated buildings and the City has achieved 6. This means that these buildings perform in the top 25 percent of similar facilities nationwide for energy efficiency, and that these buildings meet energy efficiency performance levels as set by the U.S. Environmental Protection Agency.

In 2017, the region (Virginia Beach MSA) was ranked 2 among mid-sized cities for the number of buildings in the EPA’s Energy Star program which demonstrates the Hampton Roads’ commitment to the program.

Leadership in Energy and Environmental Design (LEED®) Buildings

In addition to the Energy Star program, the City of Virginia Beach has embraced LEED, or Leadership in Energy and Environmental Design, which is an internationally-recognized green building certification system.



LEED certification provides independent, third-party verification that a building or community was designed and built using strategies aimed at achieving high performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. With more under construction, the City currently has six LEED certified buildings and the schools has eight.

LEED-certified buildings are designed to:

- ✓ Lower operating costs and increase asset value
- ✓ Conserve energy and water
- ✓ Be healthier and safer for occupants
- ✓ Reduce harmful greenhouse gas emissions

Energy Software

In 2012, the City launched a comprehensive energy management software program called EnergyCap. As a result, we have increased tracking of electric, natural gas, water, sewer and fuel consumption. Reports provide a comprehensive view of the city's energy costs and consumption, which helps staff identify specific areas where they can eliminate waste and conserve energy.



Virginia Beach is one of the leading cities to implement this energy bill process that currently includes electronic invoicing with Dominion Energy and Virginia Natural Gas. EnergyCap provides an interface to the City's Accounts Payable system to pay the bills and an interface to Energy Star to compare City buildings' energy usage nationally.

As a result of this project, the City has reduced the keying of 1,000 paper bills and provides over 90 energy reports per quarter. Energy usage reports are uploaded to the City's intranet where staff can review their department's usage of electric, natural gas, fuel, water, and sewer.

With electronic invoicing and integration into the City's accounts payable system, the Government Finance Officers Association recognized the City's energy management system. The City of Virginia Beach (CVB) received the Louisville Award for Innovation in Government from the Government Finance Officers Association (GFOA). The GFOA recognized this initiative as a contribution to the practice of government finance that exemplifies outstanding management. The City of Virginia Beach was also featured in the U.S. Department of Energy's webinar entitled "Best Practices in Energy Data Collection and Tracking in the Public Sector."

Utility Bill Audit

Starting in 2012, the Energy Office, has partnered with the City Auditor's Office and other departments to audit energy bills. These audits have utilized a third party bill auditor that completed the work at no cost and earned 25-30% of the identified savings. Additional audits have been conducted by City staff.



Combined we have:

- Identified billing errors and discrepancies and sought retroactive credit/refunds in accordance with the State's Statute of Limitations; and,
- Identified possible future cost reduction opportunities.

Since 2014, almost \$200,000 in City funds has been recovered.

Energy Champion Training Program

The Energy Office recognized City employees as a driving factor in energy conservation and pursued an approach to engage employees in its energy reduction efforts. In 2013, the City launched an energy training program designed to teach members the City's energy policies. Once members complete the course material and take a test, they are certified as "Energy Champions". They then return to the work environment and assist with making

operations more energy efficient.

As of October 2017, the Energy Office has completed training for over 725 City Energy Champions (since the program's inception).

Current Energy Information

Our current energy usage summary is below:

Commodity	FY2015	FY2017
Electric	129,294,196 kWh	130,135,040 kWh
Natural Gas	1,758,238 Therms	1,563,658 Therms
Propane	10,822 Gal	7,821 Gal

The Joint Energy Committee adopted a number of goals to include a consumption reduction of 5% over 5 years on electric, natural gas and propane (using FY15 as a baseline). The City just completed its second year of a five-year energy conservation program which began in 2015. We are happy to report a gross consumption decrease of 2.7% on electric, natural gas and propane, as well as a decrease in consumption of 4.16% per square foot (on buildings with more than 5,000 of square feet). The mild winter, coupled with our conservation efforts, assisted with this reduction.

While overall energy usage is down, the City experienced a slight increase in these costs compared to the benchmark year. Please see the summary below:

Commodity	FY2015	FY2017
Electric	\$13,988,006	\$14,295,545
Natural Gas	\$1,067,962	\$830,546
Propane	\$32,688	\$26,180
Gasoline and Diesel	\$3,454,081	\$3,720,386
TOTAL	\$18,542,737	\$18,872,657

With regard to our fleet, we currently have 3,790 vehicles on the road so monitoring our fuel usage is paramount as well. With regard to our fuel usage, the long term fuel goal has been to keep usage level. While fuel usage is highly dependent on calls for service. What aids our fuel conservation efforts is the City’s no idle policy (Administrative Directive 5.10), ongoing efforts to down-size and right-size our fleet, and more effective route planning and carpooling.

Energy Consumption Reduction Goals

To reduce energy consumption, the City will do the following:

1. Reduce the overall consumption of electric, natural gas and propane for the next five years by 5% (using FY15 as a baseline). Our current energy goal is to reduce to 587,201 MMBTU's by June 30, 2020 on natural gas, electric and propane. This goal is across the organization – including newly added facilities:

Fiscal Year	Total Annual Reduction	Cumulative Goal	MMBTU*
FY2015	*** BENCHMARK YEAR ***		618,106
FY2016	1%	1%	611,925
FY2017	1%	2%	605,744
FY2018	1%	3%	599,593
FY2019	1%	4%	593,382
FY2020	1%	5%	587,201

*Based on all of electric, natural gas and propane tracked in EnergyCap

For year two of this goal, we achieved a gross consumption decrease of 2.7% on electric, natural gas and propane.

Improve energy efficiency consumption per square feet in our facilities over the next five years by 1% per square ft. (using 2015 as a baseline). For year two of this goal, we reported to council a 4.16% decrease in consumption per square foot (on buildings with more than 5,000 square feet). This goal is across the organization – including newly added facilities:

Fiscal Year	KBTU/Sq.Ft.*	Cumulative Goal	Use per Sq. ft.
FY2015	*** BENCHMARK YEAR ***		122
FY2016	1%	1%	120.78
FY2017	1%	2%	119.56
FY2018	1%	3%	118.34
FY2019	1%	4%	117.12
FY2020	1%	5%	115.90

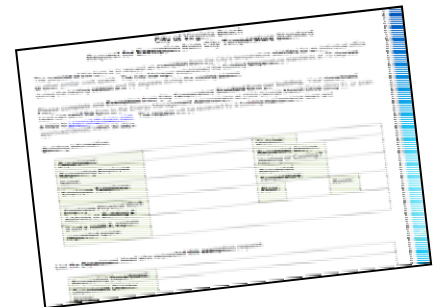
* Based on all facilities with more than 5,000 square ft and holding 122 from the benchmark year.

2. By July 2018, the Department of Finance’s Purchasing Division will amend Administrative Directive 6.02 on Sustainable Procurement to ensure we require Energy Star equipment and appliances in our facilities.
3. By July 2018, amend Administrative Directive 3.22 on Green Buildings to include the requirement to “Design to Energy Star” when the building is less than 10,000 square feet.



4. Annually replace 50 existing thermostats with the new BacNet programmable thermostats throughout the City and connect to DDC software controls for those buildings with more than 3 thermostats that have a data closet.

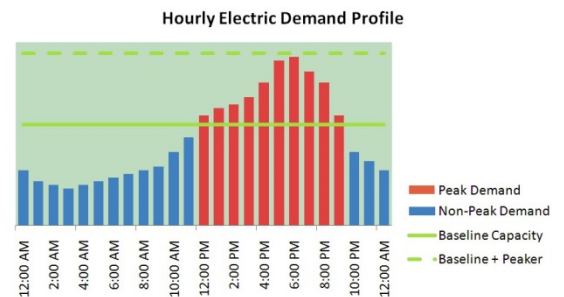
5. Formally document all exemptions to the City Temperature standard (and correct buildings that are not in compliance) by July 2018.
6. By July 2019, develop and implement a plan to power down computers and peripherals during non-working hours.
7. By July 2018, install Energy Misers in place on the cold vending machines City-wide.



Increased Energy Analysis Goals

Increased energy analysis goals are as follows:

1. Expand both the internal and external audit program on all energy bills. Audit results will be presented annually to the Joint Energy Committee.
2. Expand DDC integration and hire a dedicated “building automation specialist” so building maintenance will be able to track and respond to peak demand costs by June 30, 2019.
3. Begin with our top five facilities and add a new building each year thereafter:
 - a. Central Utility Plant
 - b. Correctional Center
 - c. Convention Center
 - d. Aquarium
 - e. Judicial Center



4. Expand participation in a demand response and resiliency program for all appropriate locations with generators (such as the Aquarium and Central Utility Plant) to leverage these investments so as to assure sustainability.
5. Map the utilities meters to GIS based on addresses located in EnergyCap or geocodes.
6. Complete the Departmental verification of natural gas and electric bills/meters annually.
7. Coordinate a team to document space usage and square footage in City buildings and correct the space allocations in EnergyCap.

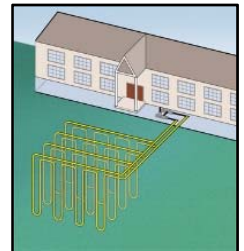
Energy Awareness Goals

In order to increase energy awareness and change behaviors, the City will:

1. Increase Energy Champions throughout the organization – starting in 2018, train 100 employees per year as new energy champions.
 - a. Traditional Classroom (quarterly)
 - b. Special sessions held in Department Spaces by request
 - c. Implement an e-learning option
2. Have an annual energy award program to recognize energy saving efforts by City employees and teams.

Renewable Energy & Green Building Goals

Green building is an approach toward building design, construction, operation, and removal that seeks to reduce human impact on the environment while fostering healthy and comfortable communities.

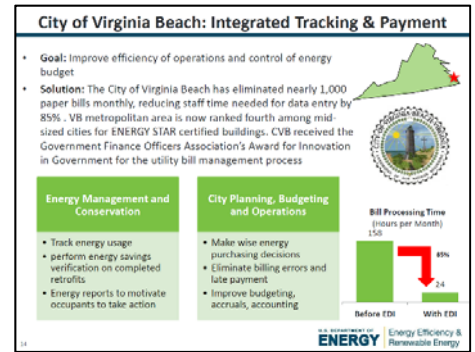


1. In order to foster green building practices, the City will continue to assess the viability of including renewable energy features in the design of all new facilities, and will include renewable energy features in those situations where such features are cost effective.
2. For all new facilities exceeding 10,000 square feet, design each facility to meet LEED Silver (at a minimum) and Energy Star requirements.

Energy Recognition & Community Goals

Taxpayers and other stake holders need to know about our efforts. In order to promote and receive support for our energy programs, recognition is key. As a result, the City will:

1. Have a LEED/Energy Star wall demonstrating our efforts located in City Hall close to Council’s Chambers with professional photographs of each facility with date completed.
2. Document publications and conferences that highlight Virginia Beach for their efforts in LEED/Energy (value to tourism, economic development, etc.).
3. Use the American Council for an Energy-Efficient Economy’s scorecard to identify opportunities to improve our energy programs.
4. Share our annual report to City Council with the community via our webpage.
5. Use this Energy Awareness month to raise energy awareness for the community.



Closing Remarks and Contacts

A special thank you to Joint Energy Committee's leadership and the departmental members for their support of this program.

Points of Contact:

Facilities Engineer, Thomas Nicholas

Building Maintenance Administrator, William Gilbert

Engineer V, Kevin Jensen

Energy Management Administrator, Lori Herrick

Energy Specialist, Mark Podolinsky

Attachment 2

**CITY OF VIRGINIA BEACH
ENERGY MANAGEMENT POLICY**



Policy Dated 6/22/2016

CITY OF VIRGINIA BEACH
ENERGY MANAGEMENT POLICY

As indicated in the Administrative Directive on Energy Management, this is the City's policy on Energy Management. This policy extends to all City Departments and Agencies, as well as programs and other entities, funded by the City budget process that are subject to control or supervision by the City Manager or the City Council, with the exception of the Virginia Beach City Public Schools.

Heating and Air Conditioning

1. For City buildings, the following temperatures are to be used for occupied hours:

74°F for the Cooling Season
70°F for the Heating Season

During the building's scheduled unoccupied hours, space temperature is to be the following:

80°F in the Cooling Season
64°F in the Heating Season

2. Temperature controls are not to be tampered with by unauthorized City staff. Requests for exemptions from this policy must be submitted on the applicable form signed by the Department Director and approved by the Public Works' Facilities Engineer.

The use of space heaters is prohibited. These devices are banned because:

- a. They are a fire hazard,
- b. Their power demand causes problems with the electrical circuits which may lead to damage to computers and other equipment, and,
- c. They waste energy and work against building HVAC systems.

Personal Appliances

Personal-type appliances are not to be used in areas that are not considered as "common areas". "Common areas" are those reasonably designated by the Director/Department Head or Division Head as ones which serve a group of people in the building. Examples include conference rooms, break rooms, kitchens, work areas, and lounges.

Personal-type appliances that are affected, but not limited to, include:

- Coffee makers
- Refrigerators ("mini-fridges")
- Toaster ovens
- Microwaves

In addition, staff is to disconnect radios, chargers, and other "phantom" energy consumers when not in use.

Vending Machines

Effective July 1, 2017, all drink vending machines operated in the City buildings are required to have “Vending Miser” or equivalent technology. The only drink vending machines that should be exempt from this requirement are those operating in buildings that have 24/7 operations.

Lighting

1. Except for security lighting in off-hours, all lights are to be turned off in unoccupied rooms including individual office spaces. Workers who use offices outside of normal hours should minimize use of overhead lights and will be responsible for turning off all lights when they leave the building.
2. Lighting levels in buildings, public parking garages, on surface parking lots, and in outdoor areas will be kept as close as feasible to the acceptable minimum standards set by the Illuminating Engineers Society (IES).
3. All incandescent light bulbs in desk and other lamps are to be replaced with more energy efficient bulbs (such as CFL or LED).
4. To reduce lights needed at night, janitorial staff and contractors are to work daytime schedules when feasible.

Office Equipment

1. Office automation equipment should be Energy Star compliant unless the use of the equipment impacts city operations. ComIT’s Chief Technology Officer (CTO) should determine guidelines for employment of information technology power requirements.
2. Computer monitors should be powered off when not in use.
3. ComIT will work with Departments to reduce the use of stand-alone printers.

Last Person Out Program

Department Directors are to implement the “Last Person Out” program to ensure lights and equipment are off at the end of the day.

Motor Vehicles

1. As we provide essential City services for our community, fuel consumption is a large expense. Efforts to reduce our fleet size and “right size” our vehicles shall be supported at all levels of the organization.
2. In addition to the evaluation of crash rating and serviceability, the City shall select the most fuel-efficient vehicle possible in the class required for the job, provided it is not cost

prohibitive or that it will result in the purchase of a vehicle that has been proven to be unacceptable based on other criteria such as performance and ability to serve in the role selected.

3. As a reminder, the City of Virginia Beach has a **no idle policy** (AD 5.10).
4. Per A.D. 5.01, the operation of City fleet assets shall be strictly limited to the conduct of official City business.
5. Per A.D. 5.01, in addition, all employees, appointees, contracted staff, and State and Federal employees affiliated with the City of Virginia Beach operating City Licensed Fleet Assets are required to obey all traffic laws. In addition, speeding and rapid acceleration significantly impacts gas mileage. Employees are expected to drive vehicles with fuel economy in mind. For additional information, review A.D. 5.01.
6. Route planning shall be conducted by drivers of all City vehicles. Employees are expected to take the quickest and most direct route to conduct City business. Strategies to reduce left turns (which reduces wait/idling in left hand turn lanes) are also encouraged.