FAIRFAX COUNTY OPERATIONS ENERGY STRATEGY

Goals, Targets, and Actions

November 2017
DRAFT

Introduction

In adopting its updated Environmental Vision (June 20, 2017), the Board of Supervisors approved objectives in the areas of energy efficiency, conservation and renewable energy intended to reduce both the county's operational use of energy from fossil fuel sources and the greenhouse gas (GHG) emissions associated with that energy use. These objectives include: (1) ensuring that cost-effective energy efficiency is an integral part of county operations, capital improvement and capital renovation projects; (2) seeking opportunities to incorporate cost-effective renewable energy generation at county facilities; (3) considering life-cycle energy costs when making procurement decisions; and (4) educating employees on the importance of energy efficiency and conservation.[1]

This Fairfax County Operations Energy Strategy is intended to further the Board's objectives by providing goals, targets, and actions in each of the following ten focus areas:

- Energy Use and Efficiency
- Water Use and Efficiency
- Green Building and Sustainability
- Goods and Services
- Awareness and Engagement
- Utility Cost Management
- Waste Management
- Transportation
- Innovative Energy Solutions
- Reporting and Collaboration

No focus area is the responsibility of one department or agency alone. Fairfax County Government leadership, management, and employees will need to work together to successfully implement this ambitious energy strategy. Detailed action plans and increased inter-agency coordination and cooperation will be crucial. In some cases, leadership and management may need to expressly empower staff to act in furtherance of the goals, targets and actions in this strategy. Periodic reviews and updates will help ensure it remains vital despite expected advances in technology and legislative and regulatory change.

Achieving the strategy's goals and targets requires financial commitments from the Board, departments and agencies. Initial capital outlays, adequate staffing and resources, and dedicated funding are essential both to undertake the energy and cost-saving actions in this strategy and to realize their benefits. Investing in efficiency improvements and other actions to reduce energy and water consumption will generate returns for decades, well beyond initial payback periods.

[1] The cost-effectiveness of energy efficiency and renewable energy should not be confused with "value engineering," which is embedded in county policy regarding capital improvement and/or renewal projects that exceed a specified cost threshold. Cost-effectiveness should consider direct electricity cost avoidance due to efficiency as well as other tangible or quantifiable benefits, including reduced maintenance costs associated with equipment specifications, regulated emissions avoidance and the value of stable energy prices.

Goals, Targets, and Actions

<table>
<tr><th colspan="2">Focus Area: Energy Use and Efficiency</th></tr>
<tr><th>Goal</th><th>Actions</th></tr>
<tr><td>Reduce electricity and natural gas use in existing county facilities and operations</td><td rowspan="3">1. Monitor and analyze energy use and facility performance
• Use EnergyCap or similar energy software to track, report and analyze energy data
• Review utility bills and other available data to identify areas of opportunity
2. Routinely audit and assess existing building stock for energy efficiency opportunities
• Incorporate natural landscaping to maximize shading and minimize irrigation where appropriate
3. Engage in practices to optimize facility and equipment performance
• Utilize a systematic preventative maintenance system to maintain energy efficiency in existing equipment
• Implement a commissioning program for ongoing performance improvements
4. Identify and implement cost-effective energy efficiency projects
• Exceed Virginia code requirements when replacing equipment and fixtures
5. Install energy management systems and automation controls and ensure appropriate programming and maintenance
6. Include a facility’s energy efficiency and costs as considerations in leasing decisions
7. Routinely evaluate new technologies that can reduce energy use
8. Ensure appropriate training for staff</td></tr>
<tr><th>Target</th></tr>
<tr><td>10% reduction in kBtu per square foot from 2018 to 2028, equivalent to a reduction of about 1% per year over the 10-year period</td></tr>
</table>

<table>
<tr><th colspan="2">Focus Area: Water Use and Efficiency</th></tr>
<tr><th>Goal</th><th>Actions</th></tr>
<tr><td>Reduce water use in existing county facilities and operations</td><td rowspan="3">1. Monitor and analyze water use and equipment performance
Use EnergyCap or similar energy software to track, report and analyze water data
Review utility bills and other available data to identify areas of opportunity
2. Routinely audit and assess existing building stock for water efficiency opportunities
Incorporate natural landscaping to minimize irrigation and maximize shading where appropriate
3. Engage in commissioning, preventative maintenance, and other practices to optimize cooling tower and other equipment performance
4. Identify and implement cost-effective water efficiency projects, including water-conserving fixtures and systems
Exceed Virginia code requirements when replacing equipment and fixtures
5. Expand use of control systems to maximize water efficiency and ensure appropriate programming and maintenance
Install leak detection sensors in facilities at higher risk of water loss or damage
Install web-based irrigation control systems
6. Routinely evaluate new technologies that can reduce water consumption
7. Ensure appropriate training for staff</td></tr>
<tr><th>Target</th></tr>
<tr><td>10% reduction in gallons per square foot from 2018 to 2028, equivalent to a reduction of about 1% per year over the 10-year period</td></tr>
</table>

<table>
<tr><th colspan="2">Focus Area: Green Building and Sustainability</th></tr>
<tr><th>Goal</th><th>Actions</th></tr>
<tr><td>Ensure that new construction and major renovations of county facilities are energy- and water-efficient</td><td rowspan="2">1. Coordinate among agencies to ensure that a facility's lifetime energy and water use are minimized by design, including incorporation of cost-effective systems, fixtures and equipment that use resources efficiently
• Incorporate highly-efficient mechanical and lighting systems
• Incorporate highly-efficient water systems and fixtures
• Incorporate building automation and controls
• Design the building envelope for energy efficiency
• Integrate water recycling or reuse where possible to reduce water use for non-potable needs
• Incorporate natural landscaping to minimize irrigation needs and maximize shading
2. Attain high-efficiency building certifications
• Design for LEED Gold, where appropriate
• Where appropriate, pursue the Designed to Earn ENERGY STAR® certification
3. Exceed Virginia code requirements
• Use design concepts that exceed Virginia code requirements and conform with industry best practices for energy and water efficiency
• Use building materials and components that exceed Virginia code requirements for energy and water efficiency
4. Explore the feasibility of incorporating renewable energy systems
5. Deploy infrastructure needed to support alternative-fueled vehicles, including electric vehicles (EVs)
• Encourage provision of or readiness for charging stations and related infrastructure for EVs
• Explore the feasibility of providing EV charging stations for public use</td></tr>
<tr><th>Target</th></tr>
<tr><td>Achieve LEED Silver and consider Designed to Earn ENERGY STAR on all new construction projects</td></tr>
</table>

Focus Area: Goods and Services	
Goal	**Actions**
Encourage and increase the purchase of environmentally preferable products and services. Consider environmental impact when disposing of property.	1. Purchase and use products and services that reduce negative environmental effects on employees, the community, and the environment. 2. Require contractors to use environmentally preferable products and practices in performing services for Fairfax County Government, where practical. 3. Purchase products that include recycled content or are made of materials that can be recycled, are durable, conserve energy and resources and have the fewest toxic compounds. 4. Purchase from suppliers that reuse, take back and/or recycle the product purchased. 5. Use best value principles in purchasing decisions by balancing required product performance, price, and the environmental benefit of the product. 6. Establish a funding mechanism to offset cost premiums associated with energy- or water-efficient products and products with recycled content 7. Create a process by which new contracts and small purchases must be evaluated against criteria established for Environmentally Preferable Goods and Services
Target	
By 2050, 50% of goods procured have recycled content and 50% are ENERGY STAR-certified	

<table>
<tr><th colspan="2">Focus Area: Awareness and Engagement</th></tr>
<tr><th>Goal</th><th>Actions</th></tr>
<tr><td>Foster a culture of efficiency and conservation in the county workplace</td><td rowspan="3">1. Publicize efficiency and conservation actions in the workplace
Provide content on a regular basis to communications channels like NewsLink, Fairfax County Energy News, department newsletters, and the Fairfax Employees for Environmental Excellence (FEEE) blog
2. Conduct regular training to enhance employee awareness and to encourage action
Educate staff responsible for purchasing decisions on the benefits of energy- and water-efficient goods and services
Sponsor lunch-and-learns on a range of efficiency and conservation topics
3. Establish reward and recognition programs to motivate behavior change
4. Designate champions within departments or facilities who will foster communication and encourage efficiency and conservation
4. Increase employee awareness of opportunities for source reduction, reuse and recycling
Encourage zero-waste events at county facilities
5. Publicize county policies and procedural memoranda that pertain to energy or water use in the work environment</td></tr>
<tr><th>Target</th></tr>
<tr><td>FEEE to hold at least four employee events per year</td></tr>
</table>

<table>
<tr><th colspan="2">Focus Area: Utility Cost Management</th></tr>
<tr><th>Goal</th><th>Actions</th></tr>
<tr><td>Manage electric and other utility service and load to achieve cost savings</td><td rowspan="3">1. Coordinate among agencies to ensure that utility electrical facilities are appropriately sized
• Agencies should coordinate on the preparation of utility load letters and letter supplements to ensure that the electrical facilities that will be used to provide service are appropriately sized
2. Coordinate among agencies to ensure appropriate metering and rate-schedule selections
• Agencies should coordinate on metering issues including functionality, type, number and opportunities for sub-metering
3. For accounts with demand charges, implement programs to minimize peak charges
• Manage electricity use to minimize peak demand charges and reset billing ratchets, where possible
• Use the facility's demand profile to help develop a strategy for reducing peak use
4. Periodically review utility bills for possible cost savings
• Use rate comparisons, bill audits and other tools such as EnergyCap to evaluate the cost of service under alternate rate schedules
• Renegotiate contract demand and/or contract dollar minimum with the electric utility in the event of a permanent load reduction
• Consider interruptible natural gas service where appropriate.
5. Install meters for sewer credit on cooling towers and irrigation systems if appropriate.</td></tr>
<tr><th>Target</th></tr>
<tr><td>Due to fluctuations in energy price, this strategy is not prescribing a target for cost savings</td></tr>
</table>

<table>
<tr><th colspan="2">Focus Area: Waste Management</th></tr>
<tr><th>Goal</th><th>Actions</th></tr>
<tr><td>Optimize resource conservation through recovery and reuse</td><td rowspan="3">1. Capture gas generated by closed landfills
Convert captured landfill gas into natural gas and electricity for county use or sale
Use captured landfill gas for incineration and other processes
2. Reclaim treated wastewater and sewage sludge
Use reclaimed wastewater for process cooling and irrigation
Use sewage sludge for fertilizer application
3. Generate energy from waste
Support waste-to-energy initiatives
Support energy production using bio-solids combustion
4. Use renewable energy in support of waste process applications
5. Promote and expand “reduce, reuse, recycle” initiatives that encourage source reduction and recycling by county employees</td></tr>
<tr><th>Target</th></tr>
<tr><td>Build on the county’s 2016 recycling rate of 50% by diverting at least 5% more waste every 10 years</td></tr>
<tr><th colspan="2">Focus Area: Transportation</th></tr>
<tr><th>Goal</th><th>Actions</th></tr>
<tr><td>Minimize energy used in the transportation of county staff and goods and the delivery of services</td><td rowspan="3">1. Reduce reliance on petroleum-based fuels by acquiring highly-efficient and alternative-fueled vehicles
2. Deploy infrastructure needed to support alternative-fueled vehicles, including electric vehicles
3. Where feasible, implement scheduling and routing practices that reduce vehicle travel time
4. Implement video conferencing solutions that reduce the need for vehicle travel</td></tr>
<tr><th>Target</th></tr>
<tr><td>By 2030, 10% of government passenger vehicle purchases are electric or plug-in hybrid and one or more level 2 charging stations are installed at each major government facility</td></tr>
</table>

<table>
<tr><th colspan="2">Focus Area: Innovative Energy Solutions</th></tr>
<tr><th>Goal</th><th>Actions</th></tr>
<tr><td>Reduce fossil fuel consumption through the application of innovative concepts and technologies</td><td rowspan="3">1. Explore opportunities to recover waste heat and energy from county facilities and processes
2. Explore the feasibility of installing renewable energy systems at county facilities
3. Research emerging uses for county waste and wastewater, including organic waste
4. Consider the feasibility of low/net-zero approaches for new county facilities
5. Participate in joint initiatives with public- and/or private-sector partners that encourage energy-related innovation
• Develop demonstration projects that can be viewed by the public and presented to the Board
6. Encourage staff interest in technological developments that save energy and reduce greenhouse gas emissions</td></tr>
<tr><th>Target</th></tr>
<tr><td>By 2030, renewable energy generated or procured by the county is equivalent to 2% of government building electricity use</td></tr>
<tr><th colspan="2">Focus Area: Reporting and Collaboration</th></tr>
<tr><th>Goal</th><th>Actions</th></tr>
<tr><td>Communicate the county’s progress to the community and wider audiences</td><td rowspan="3">1. Periodically update the Board and public on progress made in implementing the Energy Strategy for county operations
2. Maintain and update county webpages highlighting accomplishments in energy efficiency and conservation
3. Work with agency staff to develop energy plans tailored to specific activities or functions
4. Continue to seek opportunities to collaborate regionally on energy and water challenges and to promote resulting achievements
• Participate in regional task forces and workshops
5. Participate in educational conferences and other public events</td></tr>
<tr><th>Target</th></tr>
<tr><td>Report progress annually in the Sustainability Initiatives document</td></tr>
</table>