



# HENRICO COUNTY ENERGY MANAGEMENT PLAN

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## 1. Purpose

This Energy Management Plan establishes the mission, activities, responsible parties, and goals of the Henrico County Energy Management Program.

## 2. Program Overview

The Henrico County Energy Management program strives to reduce energy use and cost in county government, public schools, and public utilities operations. Since 2003, the program mission has been to develop Henrico County as a leader in sustainable energy use and to promote the importance of good energy management for the economic and environmental well-being of the county's residents and employees. The county is committed to energy conservation and efficiency, energy security, and environmental sustainability through sound energy management technologies and practices.

Key activities include:

- A. Tracking and optimizing energy use and cost in all county facilities;
- B. Maintaining an up-to-date record of county buildings and facilities and their associated energy use and cost;
- C. Setting energy reduction goals;
- D. Identifying, planning, and implementing efficiency projects that provide at least a five-year simple return on investment (project cost over anticipated annual savings);
- E. Implementing renewable energy projects to transition to more sustainable energy sources;
- F. Supporting green building design and construction for eligible capital projects;
- G. Emphasizing energy conservation and efficiency in the decision-making process for all county building and facility improvements;
- H. Managing energy utility account records and rates;
- I. Establishing relationships with department personnel and regularly communicating regarding energy performance and projects within their department;
- J. Pursuing available grants and rebates;
- K. Applying for local, state, and national awards and recognition opportunities;
- L. Public outreach to educate Henrico employees, businesses, and residents on energy and sustainability;

- M. Partnering with regional and local organizations to increase our effectiveness, recognize our successes, and learn from our peers;
- N. Serving as a resource for county Environmental and Sustainability Management System (ESMS) teams for setting and meeting energy reduction goals;
- O. Supporting environmental and sustainability programs in other county departments.

### 3. Terminology

- A. Building energy consumption is energy used by building systems such as for heating, air-conditioning, and ventilation (HVAC), lighting, hot water, appliances and electronics, cooking, etc. will be considered. Whole building energy use will be measured in British Thermal Units (BTU) which accounts for all energy commodities such as electricity, natural gas, renewable energy, and propane.
- B. Carbon Footprint is the total greenhouse gas emissions produced by an individual, event, organization, service, or product, expressed as carbon dioxide (CO<sub>2</sub>) equivalent. For the purpose of this plan, the county's carbon footprint is the emissions resulting from the generation and transmission of the energy used in county buildings. Carbon footprint is measured by the county's energy management software and reported in metric tons of CO<sub>2</sub>.
- C. County buildings are any individual building or structure, including the associated energy support systems, which is constructed, renovated, or purchased in whole or part for use by the County of Henrico and which consumes energy. County buildings shall also include any building leased in whole or in part for use by the County of Henrico. Categories of buildings in the county's real property inventory include but are not limited to:
  - Communications structures such as radio towers;
  - Fire Stations;
  - Fueling Stations;
  - Libraries;
  - Maintenance and service buildings;
  - Office buildings;
  - Public order and safety buildings;
  - Recreation facilities;
  - Schools;
  - Storage facilities;
  - Utility buildings such as water treatment/reclamation buildings and pump stations.

- D. County facilities are any buildings or groups of buildings or structures, including the county-owned site on which the facility is located, as well as any associated infrastructure which is owned by the County of Henrico.
- E. Design standards in all county new construction and renovations will conform to energy management guidelines. As they relate to energy management, the design standards are intended to ensure that county buildings are designed and constructed to be as energy efficient as possible.
- F. Energy conservation is using less energy with the same systems by simply reducing usage. Examples of energy conservation are turning off lights and equipment that are not in use, or altering building setpoints or schedules to use less heating or cooling.
- G. Energy efficiency is using less energy by upgrading building systems. Examples of energy efficiency are changing lights from fluorescent to light-emitting diode (LED), or replacing an old HVAC system with a newer more efficient model.
- H. Energy cost intensity (ECI) is measured in dollars per square foot per year and is a metric for comparing energy costs for buildings of different sizes with similar functions, or for comparing energy cost over time. This metric breaks total energy cost down to a per square foot basis to normalize energy cost for building size.
- I. Energy use intensity (EUI) is measured in thousands of BTUs (kBTU) per square foot per year and is a metric for comparing buildings of different sizes with similar functions, or for comparing energy use over time. This metric breaks total energy use down to a per square foot basis to normalize energy use for building size.
- J. Greenhouse gas (GHG) is a gas in the Earth's atmosphere that absorbs and emits radiant energy. The primary greenhouse gases in Earth's atmosphere are water vapor, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and ozone (O<sub>3</sub>). CO<sub>2</sub> is typically used as a marker to measure and monitor GHG emissions. As it relates to energy, GHGs are produced by burning fossil fuels to generate energy and to heat buildings. GHGs cause air pollution and raise atmospheric temperatures causing climate change.
- K. Renewable energy is obtained from sources that are inexhaustible or rapidly renewable, unlike fossil fuels. Renewable energy sources include conventional hydroelectric, biomass, geothermal, wind, solar photovoltaic, and solar thermal energy.

#### 4. Responsibilities and Authorities

- A. The County Manager is the senior policy-making official responsible for the county's environmental policy statement, and is the county's final approval authority on matters relating to energy.
- B. The Superintendent of Henrico County Public Schools (HCPS) oversees the school division leadership team. The Superintendent sets short and long-range goals for HCPS in coordination with the County of Henrico. The Superintendent ensures preparation, presentation, and implementation of both capital and operating budgets for HCPS. In the areas of Energy Management, the Superintendent will designate a primary contact to provide policies and direction to the staff and personnel in the school system on matters relating to energy. This designee is currently the Director of School Construction & Maintenance. The Superintendent's designee will work directly with the Energy Manager in matters of Energy Management.
- C. The Director of the Department of General Services (DGS) provides policies and direction to the staff and personnel in DGS on matters relating to energy and energy conservation. In the area of Energy Management, the Director will ensure preparation, presentation, and implementation of both capital and operating budgets for his department. The Director will set short and long-range goals for DGS in compliance with those of the County of Henrico. The Director of DGS has approval authority for decisions relating to county government facilities that are maintained by DGS.
- D. The Director of the Department of Public Utilities (DPU) provides policies and direction to the staff and personnel in that department on matters relating to energy and energy conservation. In the area of Energy Management, the Director will ensure preparation, presentation, and implementation of both capital and operating budgets for this department. The Director will set short and long-range goals for DPU in compliance with those of the County of Henrico. The Director of DPU has approval authority for decisions relating to DPU facilities.
- E. Agency Representatives (Libraries, Police, Fire, Recreation and Parks, etc.) will be points of contact for information sharing and planned projects within their departments. These may include directors and assistant directors, engineers, project managers, financial staff, or site managers.
- F. The Energy Manager has an obligation to be a leader in energy management, efficiency, and conservation initiatives and to provide guidance, technical resources, and expertise to all County of Henrico departments. The Energy Manager implements energy optimization projects

or provides guidance to departments implementing projects. The Energy Manager will provide communications to department Directors, the Superintendent of Schools, and the County Manager or their designated representative on all activities related to Energy Management. He or she will provide advice and technical expertise in the development of county and departmental Energy Management goals. The Energy Manager will serve as the county's point of contact for participation in local and regional energy organizations. He or she will be an education and training resource to all levels of personnel and students in Henrico.

## 5. Goals

- A. Reduce county-wide energy use intensity (EUI) on a year-over-year basis through energy conservation and efficiency projects. The overall goal is for energy usage for each fiscal year to be lower than the prior year, on a normalized basis to account for county growth. Specific percent reduction goals may be set for a given year depending on planned projects and opportunities.
- B. Reduce energy cost intensity (ECI) on a year-over-year basis by reducing energy use, identifying favorable utility rate changes, finding and correcting utility billing errors, earning available rebates, and applying for available grants. A record of cumulative cost savings will be maintained to quantify the success of the program. The overall goal is for the energy management program to be self-sustaining, and for the county's investment in energy management to be paid back in savings.
- C. Expand renewable energy within Henrico County to transition from grid electricity toward more sustainable sources, thereby reducing the county's carbon footprint over time. Transitioning to renewable energy reduces environmental impacts and the burden on the utility grid from the generation and transmission of non-renewable electricity.
- D. Seek alternative financing mechanisms for energy efficiency and renewable energy projects that can reduce capital costs while still providing savings.
- E. Ensure that green building standards are met in accordance with county policies that require Leadership in Energy and Environmental Design (LEED) Silver as a minimum certification level for eligible capital projects (major renovations and new construction).
- F. Recognize achievements of individuals, teams, and facilities that work to reduce energy use and cost and improve environmental sustainability within the county.

## **6. Reporting**

Individual project reports will be prepared for energy efficiency and renewable energy projects to document the actions taken, before and after conditions, economics, and results.

Department-specific reports will be prepared for department directors and controllers to summarize energy use and cost performance for buildings within their department, how the current year compares to the previous year, and highlight any unusual performance that may need further investigation to see if there is an issue causing unnecessary energy use.

An annual report will be prepared by the Energy Manager and provided to the County Manager, the Superintendent of Schools, and each of the authorities described in section 4. The report will include the previous fiscal year's accomplishments and highlight the coming year's goals. Program economics such as energy project costs, fiscal year savings, and program cumulative cost savings will be included in the annual report.