



ENERGY MANAGEMENT PLAN

Effective Date: 2/17/04

1. **Purpose.** This document establishes the County of Henrico Energy Management Plan and establishes the foundation for setting goals and integrating Energy Management into the County's culture and operations.
2. **Guiding Principles.** To reduce the costs and use of energy in the operation of the County of Henrico, the County is committed to supporting and adding emphasis to Energy Management, conservation, energy security, energy sustainability, and protecting the environment through the use of sound energy technologies and practices. These factors and budgetary constraints call for the County of Henrico to establish policies to use energy efficiently. The County will take an active role to:
 - A. Set Energy reduction goals each year of the program, eliminate waste, and conserve energy resources by using energy-efficient and cost-effective technology. During subsequent years, the goal is to systematically reduce energy use and costs on a normalized basis.
 - B. Emphasize energy efficiency in the decision-making process during the design and acquisition of buildings, facilities and transportation systems; considering and using, where cost effective, renewable energy sources; increasing the county's average fuel efficiency (CAFE) of fleet vehicles; and increase energy efficiency through cost effective investment of capital and improved operations through programs such as LEEDS and Energy Star.
 - C. Establish partnerships with government and non-government organizations to provide technical assistance and no/low-cost participation in energy conserving initiatives.
 - D. Recognize and promote individual and organizational achievements in conserving energy, advancing Federal, State and Departmental energy policies, and obtaining monetary savings.
 - E. Evaluate project applications through consideration of life cycle costing vs. initial cost analysis.
3. **Responsibilities and Authorities.**
 - A. The Henrico County Manager is the senior policy-making official, responsible for the County's energy management plan and is the County's final approval authority on matters relating to energy. Sets both short and long-term Energy Efficiency goals for the County of Henrico.
 - B. The Director of General Services provides policies and direction to the staff and personnel in general services on matters relating to energy and energy conservation. In the areas of Energy Management, the Director will ensure preparation, presentation, and implementation of both capital and operating budgets for his department. The Director also is responsible for the composition, guidance, and review of his department's Energy Management Steering and Operational Committees. The EMSC and EMOC will work directly with the County's Energy Manager as Chair of these committees to effect positive change in matters of Energy Management. The Director will, set short and long-range goals for General Services in compliance with those of the County of Henrico.
 - C. The Director of Public Utilities provides policies and direction to the staff and personnel in that department on matters relating to energy and energy conservation. In the areas of Energy Management, the Director will ensure preparation, presentation, and implementation of both capital and operating budgets for his department. The Director also is responsible for the composition, guidance, and review of his department's Energy Management Steering and Operational Committees. The EMSC and EMOC will work directly with the County's Energy Manager as Chair of these

committees to effect positive change in matters of Energy Management. The Director will set short and long-range goals for Public Utilities in compliance with those of the County of Henrico.

D. The Schools Superintendent will designate a subordinate to provide policies and direction to the staff and personnel in the school system on matters relating to energy and energy conservation. In the areas of Energy Management, the Superintendent will ensure preparation, presentation, and implementation of both capital and operating budgets for his department. The Superintendent also is responsible for the composition, guidance, and review of the School's Energy Management Steering and Operational Committees. The EMSC and EMOC will work directly with the County's Energy Manager as Chair of the committees to effect positive change in matters of Energy Management. The Superintendent will set short and long-range goals for Public Schools in compliance with those of the County of Henrico.

E. Energy Manager, County of Henrico, has a special obligation to be a leader in energy management concepts and conservation initiatives and to provide guidance, technical resources, and Energy Management expertise to all County of Henrico departments. The Energy Manager will lead the Energy Management Operational Committees of each major County division and implement energy optimization projects in cooperation with same. Additionally, the Energy Manager will chair meetings of the Energy Management Steering Committee (EMSC) composed of all major departmental heads. Using Energy Management principles and techniques, he will aid in the identification of Energy Management Opportunities (EMOs) throughout the County of Henrico. The Energy Manager will serve as the focal point for all of the County of Henrico's Energy Management Operational Committees, and provide communications to the Directors, the Superintendent of Schools, and the County Manager or their designated representative on all activities related to Energy Management. He 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 the County's membership in organizations such as "Rebuild America". He will also make available energy-training materials to all levels of personnel and students in the County of Henrico.

F. The Departmental Engineer or Assigned Project Manager in each department will be responsible for the implementation of all approved projects. It will be this person's responsibility to ensure timely performance and compliance with all design requirements and codes for new construction and for refurbishments.

G. Agency Representatives (Libraries, Police, Fire, Recreation and Parks, etc) will, on occasion, be called into the Energy Management Operational Committee for planned projects that effect their operation. With the completion of any specific task, these individuals will depart the EMOC.

4. Interdepartmental Coordination. (See Organizational Chart)

A. The County of Henrico will empower a County Energy Management Steering Committee comprised of key managers or department heads from each of the sponsoring departments (General Services, Schools, and Utilities) focused on Energy Management County-wide, to plan the overall County Energy Management strategy and communicate its activities to their respective departments. This Team will be chaired by the Energy Manager, County of Henrico. This County EMSC will: 1) provide long-range planning; 2) develop guidance for energy management programs and initiatives; 3) make recommendations on policy and procedural issues to the County; 4) monitor energy management efforts; 5) serve as conduits for information to their respective departments; 6) provide feedback from their departments on energy management initiatives, issues, and concerns, 7) set goals for energy savings in their respective departments and propose operating budgets and funding to meet these goals and, 8) endorse candidate projects proposed for capital funding. A meeting of the County EMSC will be held on an annual basis to review Energy management Initiatives.

B. The Departmental Energy Management Steering Committees will consist of key departmental personnel focused on energy management Department-wide. The exact composition will be at the discretion of the Departmental Director or Superintendent with input from the Energy Manager and their participation will vary as needs dictate. Meetings of each Departmental EMSC will be held quarterly.

C. The Departmental Energy Operational Committees (EMOC) will advise the Energy Manager on the operation of the Energy Management Program, and provide assistance on specific tasks as needed. This committee is responsible for the identification of Energy Management Opportunities and recommendation to their respective departments on projects to address these EMOs. Each Energy Management Operational Committee will: 1) conduct energy audits; 2) develop projects for energy management programs and initiatives including capital budgets; 3) make recommendations on policy and procedural issues to their departments; 4) monitor internal energy management efforts; 5) serve as conduits for information to their respective departments; and 6) provide feedback from their departments on energy management initiatives, issues, and concerns to their

respective EMSC. Meetings for the Departmental EMOC will be scheduled as frequently as needed to perform the duties required, but not less than once each calendar quarter.

5. Planning and Reporting Requirements.

- A. Each major department will establish their own Energy Management Plan to support the County's Energy use and cost reduction goals. Resources for implementing the County's Energy Management Plan and individual departmental plans shall be identified in either CIPs, grants, or from savings realized in the existing Energy Management Plan. Departmental Plans are due as directed by the County Manager. All Energy Management Plan progress will be reported annually to the County Supervisors and as required, to our Energy Partner, Rebuild America. The County Energy Manager will require periodic reports from each Department's EMOC on their energy management initiatives. This program will be subject to annual reviews by the EMSC and the results of the program should be reported as directed by the County Manager.
- B. Amendments or modifications to this plan may be initiated at any time by the County Manager or by consensus from any Departmental EMSC. These amendments or modifications will be incorporated into the Energy Management Plan when adopted by the County EMSC.

6. Terms.

- A. **County Buildings** mean any individual building, structure, or part thereof, 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:
 - Fire Stations
 - Fueling Stations
 - Jails
 - Office buildings
 - Other categories such as: cultural facilities, libraries, historic structures
 - Recreational facilities
 - Schools
 - Service facilities, such as: water and water reclamation plants, pumping stations
 - Storage facilities

Real property inventories will be maintained and updated to provide accurate data, including GSF (gross square feet), on all energy using space.

- B. **County Facility** means any building or collection of buildings, grounds, or structures, as well as any fixture or part thereof, which is owned by the County of Henrico.
- C. **Building Energy Consumption** is defined as British Thermal Units (Btu) of energy per gross square foot of heated or cooled space, and is energy directly related to heating, cooling, and lighting in buildings. Additionally, all building process energy (potable hot water, cooking, etc.) will be considered
- D. **Renewable Energy** is obtained from sources that are essentially inexhaustible (unlike fossil fuels). Renewable energy sources include conventional hydroelectric, wood, waste, geothermal, wind, photovoltaic, and solar thermal energy.
- E. **Alternative Fueled Vehicles** are vehicles designed and manufactured by an original equipment manufacturer or are gasoline or diesel powered vehicles converted to operate on an alternative fuel. They are designed to operate either as dual-fuel, flexible fuel, or dedicated modes using fuels other than gasoline and diesel. Alternative fuels include methanol, ethanol, mixtures containing 85 percent or more by volume of methanol or ethanol, other biofuels (such as biodiesel), compressed natural gas, liquefied natural gas, liquefied petroleum gas, electricity, hydrogen, and other fuels substantially not petroleum.
- F. **Oxygenated Gasolines** are blends of non-petroleum fuels and gasoline designed to increase octane and extend gasoline supplies. The commonly available components are ethanol, methyl tertiary butyl ether (MTBE), ethyl tertiary butyl ether (ETBE) and tertiary amyl methyl ether (TAME).

- G. Design Standards in all County new construction and refurbishments will conform to energy management guidelines. The main goal is to establish "Green Building" or "Energy Star Compliant" status in all occupied space.
- H. **Non-Occupied Energy Using Space** is defined as areas where lighting, pumping, heating, etc. is required without personnel occupancy, i.e. fuel stations, garages, parking lots, etc.

7. Energy Audits (Descriptions follow):

A. Audit Basics:

- 1. Length of time since the last audit
- 2. Availability of demand-side services from utilities to reduce the cost of the audit
- 3. Number of buildings to be audited
- 4. Availability of energy consumption data
- 5. Gross square footage of the building
- B. **Level 1** – Most basic type and may be conducted by any member of the Energy Operating Committees with assistance of the Energy Manager. The focus will be mainly verification of physical properties; lights, HVAC, windows, etc.
- C. **Level 2** – Involves everything in a Level 1 audit plus measurement of airflows, lighting levels, and temperatures.
- D. **Level 3** – (Detailed Technical Audit) Is an architectural and engineering audit and will involve options that can be identified in Levels 1 and 2 plus detailed assessments of energy use systems. This level of audit will include:
 - A review of the record drawings and specification plans for the HVAC system.
 - An on-site review of all major energy use equipment, including air handling equipment, piping distribution system and controls as well as the building envelope.
 - An efficiency check of the central boiler plant and its control system.
 - A review of written, verbal and actual operation procedures and practices.
 - An analysis of the air handling equipment and distribution system to ensure that they operate satisfactorily at the minimum operating pressures and horsepower requirements.
 - Preparation of written operating procedures for maximum energy conservation management effectiveness.
 - Preparation of annual energy savings and cost savings for each conservation opportunity, including the appropriate cost/benefit analysis.
 - All electrical wiring systems.
 - Analysis of all occupancy requirements.

After completion of audits and identification of specific energy conservation/retrofit projects, each department's EMOC shall develop cost effective recommendations to address each Energy Management Opportunity for presentation to their respective EMSC for approval and or endorsement. Each department should develop a priority list of the cost effective projects that consider trade-offs as short-term payback versus very large energy reductions with longer payback periods.

8. Initiatives. Energy Management Initiatives may include:

- A. Maximizing efficient petroleum usage in County facilities by switching to cost effective alternative energy sources.
- B. Identifying buildings and facilities that lend themselves to dual fuel capability and where practicable, provide such capability.
- C. Identifying candidate buildings for relighting (re-lamping).
- D. Removing any impediments to receiving, utilizing, and taking demand side management services, incentives and rebates offered by utilities and other

private sector energy providers. Utility company programs may include Curtailment Load Programs, New Building Design Programs, and Commercial Lighting Programs.

- E. Conducting physical inspections of mechanical equipment including:
 - 1. Water, steam, compressed air and oil lines for leakage and insulation;
 - 2. Settings and gauges for malfunctions or disconnects.
- F. Developing building specific operations and maintenance plans and procedures as well as personnel qualifications and training requirement. Developing building occupant awareness and educational programs.

9. Incentives.

The County Energy Management Steering Committees will initiate a County Energy Efficiency Award Program using criteria that encourages Departments and Employees to conserve energy use and reduce energy costs.

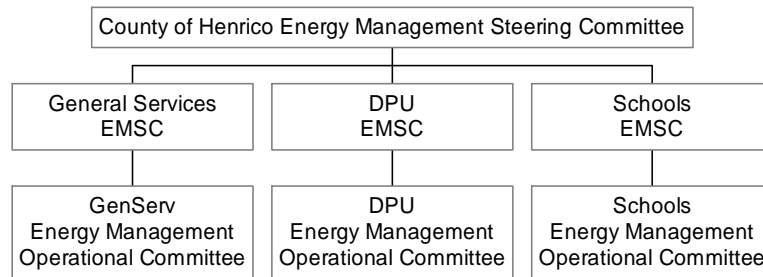
A. Criteria may include:

- 1. Direct responsibility for quantifiable energy saving efforts or achievements.
- 2. Providing outstanding and effective leadership in support of established energy conservation management measures.
- 3. Establishment, suggestion or modification of techniques or existing procedures that significantly impact a reduction of energy usage or expenditures.

B. Awards may include:

- 1. Special achievement awards for outstanding individual accomplishments.
- 2. Honorary awards to departments, sites, or facilities for improved performance suggestions, procedures, new concepts, effective training programs, or employee awareness programs.
- 3. Incentive awards.

Organizational Chart



County of Henrico Energy Management Steering Committee (Meet annually – Approval of Projects/Funding):

County Manager, Superintendent of Schools or their designee
Director of General Services
Director of Public Utilities
Superintendent of Schools
County Energy Manager (Chair)

Departmental Energy Management Steering Committees (Meet quarterly – Review Recommendations/Prioritize):

Director, Superintendent or designee
Deputy Director
Departmental EMOC Representative
Business Manager
Energy Manager (Chair)

Energy Management Operational Committees (Meet monthly as a Group – Conduct Audits/Training/Review Bills/ Establish Project Recommendations/Implement approved projects):

Energy Manager (Chair)
Departmental Engineer
Departmental Business Manager
Facilities Manager
Representatives of Agencies as Required
Project Managers as required