

APPLICATION FORM

All applications must include the following information. Separate applications must be submitted for each eligible program. **Deadline: June 1, 2016.** Please include this application form with electronic entry.

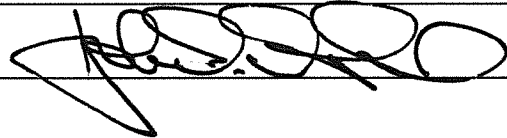
PROGRAM INFORMATION

County: Henrico County
Program Title: Energy Saving Projects Initiative (Continuous Funding)
Program Category: Environmental

CONTACT INFORMATION

Name: Cristol Klevinsky
Title: Management Specialist
Department: County Manager's Office
Complete Mailing Address: 4301 E. Parham Rd., Henrico, VA 23228
Telephone: 804-501-4370 Website: henrico.us
Email: kle@henrico.us

SIGNATURE OF COUNTY ADMINISTRATOR OR CHIEF ADMINISTRATIVE OFFICER

Name: John A. Vithoukas
Title: County Manager
Signature: 

Short Overview: The need for energy improvements exists throughout a built infrastructure. Unfortunately, these improvements are not made due to lack of funds. Henrico's Departments of General Services and Finance realized that budget restrictions curtail funding for energy infrastructure improvements. To find an on-going and renewable means to pay for energy related facilities improvements, Finance and General Services looked inward for funding sources. Their ultimate goal was to establish a fund for the Energy and Sustainability Program that would re-fund itself through savings generated. The major roadblock to success was the initial funding. It was here that teaming allowed the discovery of a solution. By capturing funds allocated, but not spent on assigned projects, Finance aggregated \$271,763.19 and made it available to Energy and Sustainability on October 1, 2014. These funds were designated for energy improvement projects that had a better than four year "Return on Investment". By doing so, the savings would be used for additional energy projects.

Problem/Challenge/Situation: In addition to the continuing strain on budgets by increased cost of services and goods, municipal governments are seeing decreased funding from state and federal sources. As the loss of these revenue sources continue to negatively impact our ability to meet the operational needs of Henrico County residents, prioritization of infrastructure improvements becomes a balancing act. By capturing capital funds from completed projects we are able to pave roads and replace roofs and upgrade outdated building automation equipment and lighting. Budgeting changes could have been an alternative for this shortfall, however we decided to end the balancing act by looking internally for funds. In doing so, the program would not be subject to external issues impacting budget allocations. It did not eliminate the issue with internal funding restrictions however, until senior management

committed to making the funds originally committed to the program renewable from the confirmed savings.

How the Program Was Carried Out: Teamwork between Energy, General Services Management and Buildings and Grounds Operations allowed for the identification of energy conservation projects using on-site audits by the Energy Manager. These audits were then reviewed by key team members, including the General Services Director and Assistant Director, the Deputy Finance Director, and the Deputy County Manager for Administration (The Team). Vendors who would provide the materials and service associated with the energy projects aided in providing budgetary quotations and expert input on best solutions for each project. The Energy Manager then provided a complete analysis of each project with a simple Return on Investment calculation (Cost of Project/Savings per Year), the need for the project, and potential issues that could arise from not implementing the improvement. From these meetings, and evaluations a prioritized list was developed that gave the team a “game plan” to follow in applying the assigned monies to specific projects. A record of all project savings was then calculated and maintained in a data file to “true-up” the funds at the end of each year. These trued up funds were reinvested in the Energy Saving Project Initiative and made available to future projects

The identified energy saving projects included HVAC controls upgrades, lighting retrofits, and a major natural gas pipeline to our Eastern Jail, allowing for the elimination of fuel oil at the site and creating additional energy savings. Additionally, the widely disparate collection of facilities (schools, jails, fire houses, libraries, health clinics, office space, road ways, water plants and

waste reclamation facilities) called for demonstration projects to encourage each department to invest their own funds in improvements. These improvements would increase efficiency and save additional energy funds in each department. In looking at what has happened since the program was initiated, it is easy to see that the message was well taken. Departments began using their funds to carry on individually identified projects to take savings and energy use reductions to even higher levels; our schools have replaced over 70 gymnasium lighting systems with more efficient LED and High Bay Fluorescent lights, the Department of Public Works has replaced all incandescent traffic lights with efficient LED lighting, the Department of Public Utilities, in cooperation with a third party, has developed a methane capture facility at our landfill to generate electricity, and General Services continues to upgrade Chillers, Air handling Units, Cooling Towers, Fans and Coils, all making their HVAC operations more efficient and energy cost effective.

The initial funding for this program at the beginning of 2015 was \$271,763.19 made available on October 1, 2014. This allowed for identification of key projects and opportunities throughout the county that would generate enthusiasm from all county employees for increased energy savings throughout. The management of the projects and funds was the responsibility of the Energy Manager who reported to the Team all activities on a monthly basis, clearly showing the dollar savings and the energy reductions. To date, there has been over \$204,538.32 in recorded savings and over 3,408,720 kWh of energy related reductions. These funds are being reinvested to pay for additional projects currently identified in our Administration area, our Juvenile Courts area and at several Fire Houses.

The loss of Federal and State revenues and declining municipal revenues has forced all governments including Henrico County, into a tighter budget process. By looking for ways to improve, Henrico County can better position itself in the future in the event cost reductions become a priority once again.

The use of technology is a major part of the conduct of the Energy Savings Project Initiative. Although our County was fortunate in having access to a great variety of equipment, not all of it is necessary for success. Shown here are some tools we use:

- Email – The communication of plans, ideas, meeting dates, schedules, photographs, spreadsheets and reports were and are greatly enhanced by use of email.
- Computer Aided Design – For planning purposes and to obtain quotes from vendors on specific projects, AutoCAD files simplified the process.
- Spreadsheet Databases – The data gathering process is accomplished with strong organizational skills and filing. Collection of account information, energy usage history, and costs are a foundation for all of the work to follow.
- Digital Cameras – Aided all parties in “seeing” critical equipment and building related issues being considered for energy management opportunities.
- Light Meter – Provided clear measurements of levels of light in specific areas targeted for lighting retrofits.
- Electrical Multi-meters – Used before and after electrical measurements to verify savings obtained due to the projects.

- Ballast Sensor Equipment within a ceiling light fixture – Provides an easy means to determine if magnetic or electronic ballast, used to control the electricity in a fluorescent light fixture, is in place without opening the fixture. This saves hours of time in developing a profile of existing fluorescent ballasts.

Financing and Staffing Costs: Internal staff time was used along with the initial funding of \$271,763.17.

Program Results: (Refer to “Energy Savings Project”, attached). More efficient and cost effective lighting, along with a more secure outdoor environment are the early and obvious successes we have had. Reduced cost of electricity is a well-defined and measured value of the program. Our Building Automation System has been upgraded to allow for tighter control of our occupied spaces, providing comfort and reduced costs of energy through night setback programs and more efficient temperature control during occupied periods. The program has influenced other departments and divisions to find internal “tail end funds” and to proceed with projects that have been needed for some time but not otherwise funded. With all projects being measured by a four year Return on Investment, we insure that our program has a financial element that provides a responsible use of resources that result in replenishment of funds for new energy related cost reduction projects. On average, these Energy Saving Projects cost \$8,000 to \$10,000 each to implement and there have been over 25 such projects paid for by energy funds. The savings, as shown above, exceeded \$200,000 during the first two years. Many departments initiated their own projects, based on the success of the Energy Savings

Projects and realized even greater savings. By continuing this program in Henrico County it is reasonable to believe these savings could be in the \$300,000 - \$400,000 range each year.

Brief Summary: Internal cooperation, measured progress, and enlightened leadership throughout the organization and in each step of the process has led to an Energy Savings Project Initiative that could serve as a template for any municipal government contemplating a similar program. The beneficiaries of Henrico's Energy Savings Initiative extend beyond the County Government into the communities we serve. As we reduce and eliminate our dependence on a limited supply of resources to meet our obligations to County residents, we are making their environment a better place in which to live. We also position our County government to better meet future needs. By recognizing the County of Henrico for this award, other jurisdictions will be able to benefit from the successes realized by our energy/sustainability leadership and begin to find funding for their own Energy Project Initiatives.

SUPPLEMENTAL MATERIALS: See attached "Energy Savings Project Initiative" dated February 2, 2016.



Project Name
Energy Saving Projects
February 2, 2016

Project Location: Henrico, VA - Various
Magisterial District: Multiple (Identified Below)

CONSTRUCTION:

Project Budget: \$271,763.19 (Made Available October 1, 2014)

Total Completed to Date: \$127,886.52

Total Encumbered to Date: \$99,999.99

Funds Remaining in Project Budget: \$43,876.68

Construction Projects completed to date (Funds Spent):

- Oct '14 Parking Deck LED Conversion – 2.5 year ROI (\$48,438.00) Brookland
- Oct '14 Parking Deck Stairwells – 3.5 year ROI (\$2,225.19) Brookland
- Nov '14 Fire Station 11 Bay Lights Upgrade – 1.8 year ROI (\$2,100.00) Fairfield
- Nov '14 Fire Station 14 Bay Lights Upgrade – 1.8 year ROI (\$2,200.00) Varina
- Oct '14 Ground Fault Instrument Plug for DM – No ROI (\$440.00) Brookland
- LED Parking Lights along Parham Road – 3.7 year ROI (\$35,000.00) Brookland
- Natural Gas Pipeline at Jail East – ROI w/Burner Upgrade is 1.2 years (\$168,110.00) New Kent
- LED Upgrade in Human Services Parking Lot – 5.4 year ROI (\$28,893.12) Brookland
- LED Parking Lights and Building Sconce Lights at Risk and Purchasing (\$5,651.39) New Lights no ROI calculated. Brookland District.

Projects Underway (Encumbered Funds):

- Burner Boiler Upgrade at Jail East – ROI is 1.2 years (\$99,999.99) New Kent

PROGRESS TO DATE / SCHEDULE

- IFB for Burner Upgrade to be Issued June 2015 w/ award in July 2015
- Contract awarded to Valley Boiler & Mechanical, Inc. for \$99,999.99.
- Work on Boilers to begin September 2015.
- No New Energy Projects begun until funds are available for use.
- With funds (~\$75,000) prioritization from B&G required.

FUNDING AS OF February 2, 2016

Projects	Funding	Current Encumbrances	Annual Savings	Remaining	ROI
Energy Funds Existing				\$48,947.84	
Initial Project Funds	\$0	\$0	\$0	\$271,763.19	N/A
Parking Deck P1	\$48,438.00	\$0	\$19,375.20	\$273,273.03	2.5
Parking Deck P2	\$2,225.00	\$0	\$890.07	\$270,048.03	2.5
Parking /Parham Rd	\$35,000.00	\$0	\$9,460.00	\$235,048.03	3.7
Fire Station 11	\$2,100.00	\$0	\$1,167.00	\$232,948.03	1.8
Fire Station 14	\$2,200.00	\$0	\$1,222.00	\$230,748.03	1.8
Ground Fault	\$440.00	\$0	\$0	\$230,308.03	N/A
Jail East Burners	\$0	\$99,999.99	\$64,167.00	\$130,308.04	1.6
Human Services Lot	\$28,893.12	\$0	\$5,399.00	\$101,414.92	5.4
Adapters for Lights at HS Lot	\$2,030.13	\$0	\$0	\$99,384.79	N/A
Fire Station Bay Lights	\$1,508.88	\$0	\$538.89	\$97,875.91	2.8
LED Parking for Risk and Purchasing	\$5,651.39	\$0	N/A	\$92,224.52	
TOTAL	\$122,235.13	\$77,000.00	\$102,219.16	\$92,224.52	1.9

Department Funded Projects with Energy Savings:

Schools:

1. Gymnasium Lighting Upgrades - Each School realizes less than 2 year ROI and significant lighting improvements. Savings to date (as of June 1) amount to \$24,788.00 of \$87,796.00 spent.

Department of Public Works:

1. Street Light Upgrades are being quoted in December 2014. Planned install to begin in January 2015
2. Traffic Light Upgrades are complete. Over \$80,000 in savings from reduced electricity use.

Department of Public Utilities:

1. Methane Use at WTF has been in place for over 9 years, saving the County nearly \$1 Million/year.
2. Use of landfill gas for electric generation. Revenue from the sale of gas to INGENCO is \$176,000/year.
3. Exploring a Combined Heat/Generating station using methane at WWTF.
4. Exploring Latent Heat use from waste stream.

General Services:

1. Annex Cooling Tower Replacement (Efficiency Improvement)
2. C-South Chiller Replacement (Efficiency Improvement)
3. Public Works – Woodman Road Chiller Replacement (Efficiency Improvement)
4. Jail West Chiller Change-out to Magnet Unit
5. Jail East Cooling Tower Replacement
6. Administration Replacement of Fans, Coils and Drives on AHUs 1, 2, 3, and 6 (Efficiency Improvements)
7. Court Chiller Replacement (Efficiency Improvements)