

# **Miami-Dade County**

## **Energy Efficiency & Conservation Block Grant (EECBG) Program**

### **Project & Descriptions**

#### **No. 1 - Enterprise-wide and Facility-based Energy Management Systems**

##### **Upgrade & Coordination**

The energy management framework for this project will include, to the maximum extent possible, all of the County's electricity accounts. Within this framework, the County will target a minimum annual 5% reduction in energy consumption of energy intensive electricity accounts that represent 18.5% or more (to be determined based on actual cost of equipment and technical services) of the County's overall electricity consumption. The targeted assets include office, administrative and justice buildings, data centers, corrections facilities, jails, and industrial processes such as those employed in our Water and Sewer Department plants. We will also use our Energy Star scores for facilities where applicable to further discriminate which facilities we choose to target initially.

We will put in place the accounting and energy management software and equipment (meters/sub-meters), real-time building dashboard interfaces, process and control strategies as well as the centralized energy management functionality to better manage and reduce energy consumption of energy intensive facilities and industrial processes within the County. The County would like to be able to analyze energy consumption across electric accounts and within specific facilities (asset level). This activity will complement and improve upon our existing GHG emissions tracking activity. We expect this activity to continue to sustain itself through further investment and leverage from the Utility's plans for smart meter installations in Miami-Dade County. Our existing fuel consumption tracking should also be able to be tied into this overall energy management system.

#### **No. 2 - MDC Community-wide Energy Efficiency Campaign**

Comprehensive community-wide three-year Energy Education Initiative education program that leverages and expands existing community communication, marketing, and education programs to provide information, educational programming, and incentives for the public related to energy conservation. In collaboration with Community Partners (schools, private, and non profit agencies) and County Departments, the new program will engage residents in programs and activities in order to galvanize support for energy conservation, renewable energy, recycling, and waste reduction and serve as a catalyst for long-term behavior changes that result in reduced energy usage. The objectives are to:

- To educate the public on energy conservation, demand reduction, benefits of renewable energy, and environmental stewardship
- To engage the public through personal contact, social networks, interactive forums, and online tools
- To track awareness and behavior change related to the campaign such as reduced energy consumption and increased recycling
- To develop and promote a county-wide umbrella campaign accessible to municipalities and other organizations for their own energy reduction related programs

#### **No. 3 - Re-Granting Project to Community & Faith-Based Organizations**

The County is implementing this project to provide competitive sub-grants to 501 (c)(3) community and faith-based organizations in Miami-Dade County for 1) energy audits; 2) retrofits to existing facilities to improve energy efficiency; 3) replacement of old or inefficient cooling and heating systems; 4)

replacement or upgrades to interior and/or exterior lighting systems; 5) the purchase of generators; 6) installation of solar panels, and 7) including but not limited to the purchase and installation of energy saving devices and products, including insulation, timers, programmable thermostats, occupancy sensors, and commercial ceiling fans.

A competitive solicitation will be issued for Energy Efficiency and Conservation (EEC) Sub-grants to Community and Faith-Based Organizations, and an instructive grant writing workshop will be convened prior to the release of the Request for Proposal (RFP) to acquaint organizations with the process of responding to a competitive solicitation. Following the training, the RFP will be advertised and issued. A Pre-Proposal meeting will be held to review EEC eligibility requirements, and to discuss the RFP. Proposers will have 20 days to prepare and submit their EEC project proposal. A pre-appointed County Review and Selection Committee will review submitted proposals and make recommendations for funding to the County Manager.

#### **No. 4 - Development of Sustainable Capital Improvement Procedures & Guidelines**

This project includes the creation of procedures, guidelines, and an accompanying training program for capital departments to ensure that the County's capital improvement process maximizes the energy conservation and use of renewable energy for new construction, major/minor renovation, and where applicable miscellaneous capital improvement services that involve energy consuming commodities. There are specific procedures that have to be followed during pre-design, design, construction, and operation of "green" buildings to enable the acquisition of credits/points and to ensure that environmental, energy, and climate performance are maximized and can be verified. Sustainable building design and construction, for example, benefits from cost, environmental, and social perspectives when "integrated design" procedures are followed, and the building owner has conveyed the appropriate performance requirements to the building commissioning agent. The County's existing sustainable design and construction facilitation provided by the Office of Sustainability, Office of Capital Improvements and General Services Administration will represent the leveraged resources for this project. Findings from the related "Energy-Efficiency and Sustainable Buildings Evaluation of Building Codes of Permitting Processes" will be factored into this activity as the County strives to exceed the minimum requirement of local building codes.

#### **No. 5 - Methane Sequestration from Landfill and Digesters to Power Operations of Facilities**

This project consists of the construction of an integrated cogeneration system at the County's south waste water treatment plant. The facility will include two 1.2 MW (minimum) cogeneration units, associated gas scrubbers, and other equipment to generate electricity from digester gases (biogas) produced at the County's waste water treatment plant and landfill gases generated at the nearby solid waste landfill. These power generation units will be connected by a pipeline from the solid waste landfill to transport landfill gas to the units. The piping will include associated gas blowers, compressors, condensate traps, and metering stations.

The objective is to trap and consume both landfill gas and digester gases respectively from the County's landfill and the waste water treatment plant to increase the amount of self-generated electricity in order to reduce the County's consumption of electricity generated from crude oil and other petroleum-based fuel. It will generate an additional 33,500 KW of electricity per year from gases that would normally be wasted while reducing consumption of crude oil that would have been used to generate the same amount of electricity.

## **No. 6 - Energy Efficiency & Sustainable Buildings Evaluation of Building Codes & Permitting Processes**

Evaluation of existing Miami-Dade County and State code and building permitting processes to (1) identify obstacles to energy-efficient and climate change friendly land use and development and (2) generate a list of suggested code and permitting process updates for the County and State to consider.

This evaluation process would include but would not be limited to:

- assessment of the permitting processes and a review of existing high energy performing green certified buildings that either have been newly constructed or have undergone an existing building upgrade/renovation from around the Country(e.g. Gold and Platinum LEED certified or alternative certification; Energy Star score > 90).
- a national review of permitting incentive programs for new construction, major/minor renovations, and re-zonings that provide incentives or encourage improved energy-efficiency, installation of renewable energy systems, or other energy conserving measures and provide a list of suggested policies that enable Miami-Dade County to enhance its own ability to assist the larger community to improve energy efficiency of the built environment

## **No. 7 - Urban Wind Energy Harvesting Demonstration and Pilot Project**

Conduct a real-world evaluation of "Small Wind" Urban Wind Turbines (UWT) to determine technology's potential for increased use of renewable energy sources in/on County Facilities. The installed renewable energy systems will be integrated into specific government buildings and provide energy to those buildings. Objectives include:

- Testing of several alternative vertical and horizontal UWT designs
- Assessment of limitations, such as noise, vibration, corrosion, structural reinforcement requirements, hazards, compliance with building codes, visual impact, cost constraints from a long term payback, and potential unintended environmental impacts e.g. wildlife
- Demonstration of renewable energy efficiency gain from using local generation (e.g. on rooftops) rather than renewable energy generated at a distance
- Institutionalize energy self-generation as a symbol of sustainability, independence from external supplies and preparedness for natural disruptive events (e.g. hurricanes)
- Obtaining sponsorship from manufacturers
- Support Miami-Dade County's aggressive energy conservation, climate change, and sustainability goals

## **No. 8 - MDC Libraries Cool Roof Retrofit Demonstration Project**

Replace existing roofing with a high-reflective Cool Roof System in accordance with Cool Roof Rating Council standards for two separate Miami-Dade County libraries: North Dade Regional Library & Homestead Library. The objectives include:

- A Cool Roof System reduces the Heat Island Effect that minimizes the impact on micro-climates and on human and wildlife habitats. It also maximizes the energy savings associated with cooling and HVAC equipment, and minimizes the exacerbation of the air pollution.
- The savings in energy, maintenance, and air conditioning creates significant life cycle cost

## **No. 9 - MDC Libraries Daylight Harvesting Demonstration Project**

This project will design, install, and test at the Naranja and Kendale Lakes Libraries a new cost-effective Daylight Harvesting System designed to operate with different lighting levels, programming the lighting controls, and any day lighting control aspects of the lighting system to be commissioned for optimal

performance. The objective of the project is to reduce around 5% of the Library energy consumption and Greenhouse Gas Emissions.

#### **No. 10 - Pilot Desktop Virtualization Project (Thin Clients)**

Replace up to 55% of Miami-Dade County's 18,000 Personal Computer (PC) workstations with more energy efficient and environmentally sound virtual desktops utilizing thin client technologies to reduce both power consumption and environmental waste.

EECBG funds will partially fund replacement of traditional workstations with energy efficient "thin clients" also known as "virtual desktops" or "VDs" for networked computers. The County will purchase thin client devices, some VD software, the shared servers, and associated memory for deployment of the first 2,000 PCs.

Miami-Dade County's standard PC configuration consumes approximately 237 kilowatt-hours (kWh) of power per year, while a VD and its proportionate share of the energy used by the host server consume approximately 176 kWh of power annually. When multiplied over 2,000 workstations, the thin clients are expected to generate a reduction of 122,789 kWh per year. Actual savings will depend on the specific thin client solution deployed and the intensity of use.

#### **No. 11 - Energy Efficient Lighting on "Green Roadway" Demonstration Project**

Funding to develop Sustainable/Green Roadways on two of the County's major roadway corridors. The two corridors selected will each be approximately one mile in length, and will include major street lighting conversion projects to high-efficiency lighting, in addition to other sustainable improvements e.g. bike ways connections, pedestrian friendly access, and carbon sequestration.

This project will significantly enhance the County's desire to develop a more carbon-friendly transportation infrastructure by: (1) reducing energy consumption, (2) eliminating light pollution (uplight) within the demonstration project areas, and (3) improve overall air quality while still maintaining County's commitment to designing and developing attractive, safe, and accessible roadways.

For the selected corridors, the County will install new high-efficiency streetlights where no streetlights exist in lieu of installing the traditional streetlight. Where traditional lighting exists within the corridors, the County will retrofit and/or replace these street lamps with high-efficiency lighting. The specific type(s) of "high-efficiency" lighting to be utilized in the demonstration project have yet been to be determined and may differ between the two corridors (as a part of the evaluation approach), but is generally expected to include LED, Induction, or high-efficiency exterior fluorescent fixtures.

#### **No. 12 - Solar Power Systems Demonstration for Powering of Three County Park Buildings**

Installation of a total of 49 kilowatts of photovoltaic panels on the roofs of three existing buildings in three separate Miami-Dade County parks. All three buildings have southern or western facing roof slopes to maximize solar power generation. The power generated by the solar systems will minimize demand from the electricity power grid over the design life of the systems, typically 20 years. The schedule for implementing the project is 12 to 15 months. The installed renewable energy systems will be integrated into specific government buildings and provide energy to those buildings.

The program is projected to reduce carbon emissions on account of the reduced demand and dependence on the electricity grid. The projects will also be used as a public demonstration project and in addition to being used as part of the county-wide public education and awareness program, it will

also provide operating experience for installing such systems and help to influence/determine the mix of energy technologies to be used by the County in the future.

### **No. 13 - MDC Targeted Industry Energy-Efficiency Revolving Loan Fund (SFPRC)**

The County will offer a competitive Revolving Loan Fund (RLF) for key economic sectors (ex. hotel/resort industry) in our community that represent a significant share of electric energy consumption relative to other sectors/industries and demonstrate the capacity to increase energy efficiency through the use of loan funds. This program represents a partnership with the South Florida Regional Planning Council (SFPRC) for the development and administration of the RLF. Loan Development Plan is as follows:

- Convene a technical review committee to determine the program's overall goals and objectives. This group will monitor the initial program creation and serve as the technical review committee to the Loan Administration Board.
- Develop Program details: Loan terms including start dates and close dates, Minimum and Maximum Loan Amounts, Interest Rates, Eligibility Criteria, Technical Review Committee guidelines, Application and Approval Process, Payment terms, Technical assistance, Loan Administration Board Guidelines, Borrower Reporting Requirements, which should include documentation of energy savings and job creation/retention (NEPA requirements will be addressed for each loan application).
- The SFPRC will manage the RLF under the review of the Technical Committee and its Loan Administration Board through a fee for service to Miami-Dade County and the interest gained on the principal investment.
- The fund will sustain itself through the interest and fees for the duration of the program.
- The fund will work toward the goal of a 2:1 leverage of private investments.

### **No. 14 - Sustainable Technologies Demonstration Program**

Develop and implement a demonstration program for the ongoing testing and application of sustainable building products, systems, and processes. Project outcomes will assist administrators and policy makers to set policies and standards for the use of sustainable products in County facilities.

The emphasis is to identify equipment, technologies, products, and services that enhance building sustainability and that are already in production/use, and to test their applicability and reliability for the South Florida climate. The key criteria for product selection would include the availability of the product or service in commercial quantities, its ability to be supplied in accord with commercial time scales, and competitive pricing (according to whole life cycle costing principles).