Memorandum

Date: June 22, 2009

To: Honorable Dennis C. Moss and Members,
Board of County Commissioners

From: George M. Burgess
County Manager

Subject: Report on Efforts to Develop Plan for Achieving 20 percent Reduction in County Electricity Consumption by 2014

On March 3, 2009, the Board of County Commissioners adopted Resolution No. R-228-09 directing the Mayor to develop a plan to reduce electricity consumption in County governmental operations by 20 percent from 2007 County usage consumption levels not later than 2014. This report provides an update on plan development, including a summary of actions already taken to reduce consumption, future strategies planned and/or under consideration for implementation, and a discussion of significant challenges the County will face in meeting the 20 percent goal.

OVERVIEW

The County's electricity consumption – not expenditures, but kilowatt hour usage – has grown on the average by two percent a year over the past five years. The County currently has over 4,500 separately metered electrical accounts; in 2007, these comprised 68 percent of County's overall Greenhouse Gas Emissions (GGE). It is especially important to note that some 90 percent of the County's total electrical usage is concentrated in less than 10 percent of these 4,500-plus accounts. The largest among these include a number of Miami-Dade Water and Sewer Department (WASD) water treatment and waste water treatment plants; terminal and garage buildings at Miami International Airport; General Services Administration's (GSA) Downtown Government Center utility plant, Regional Data Processing & Communications Center, and other large multi-purpose and Court buildings; Turner Guilford Knight and other County correctional facilities; and district cooling plants operated by Aviation and GSA.

Certain basic assumptions need to be kept in mind in order to develop a sound plan and determine realistic expectations for that plan:

- Staff must identify and incorporate into the reduction plan (a) electrical energy consumption since 2007, and (b) projected future consumption from capital projects planned for development between now and 2014. Achieving the legislated 20 percent goal will require that any growth since 2007 and from future capital projects be absorbed without any increase to the 2007 baseline.

- Wherever feasible, conservation and consumption reduction programs should target the highest consuming assets or accounts first, in order to maximize investments or "bang for the buck."

- An effective strategic plan will have to be broad-based and flexible, in order to accommodate:
    - differing types of energy end-uses or assets (e.g. buildings, industrial processes/facilities, lighting, HVAC, electrified rail lines, electronic equipment, etc.),
    - the relative share that these uses make up of the total electricity footprint, and
    - the differing approaches to conservation, e.g. operating and maintenance practices, behavioral education, procurement policy, incremental vs. lifecycle budgeting decisions, technology enhancements, "retrofit vs. replace," etc.

- Rather than relying solely on total electricity consumption, it is recommended that "per capita" type of energy use indices be considered in evaluating ongoing energy performance. Examples of measures are listed below. By doing so, we fold energy use into the suite of key performance

indicators monitored through the County's existing Active Strategies Enterprise (ASE) program, and create departmental accountability for energy management.

- Kilowatt-hour usage per square foot in office environments
- Kilowatt hours or BTUs per gallon of drinking water produced
- Kilowatt-hour usage per Metrorail passenger

ENHANCED ENERGY MANAGEMENT & COORDINATION

The following initiatives are being undertaken to enhance and effectively coordinate the efforts of this government toward our various energy and climate change mitigation targets:

1. Give a strategic focus to the management of the County's fuel and electric energy. Staff is integrating departmental and countywide performance indicators into ASE for fuel, electricity, paper, and other resource consumption activities, including procurement of certified "green" products. The ability to measure, monitor and, where applicable, actively manage resource efficiency is particularly key to avoiding and/or reducing the use of fossil-fuels.

2. Improve Energy Management Planning. The combination of a Countywide Energy Management Plan with centralized energy management and coordination is crucial to the achievement of the 20 percent mandate by 2014. The planning effort itself will commence as part of the implementation of the American Recovery and Reinvestment Act (ARRA) funded energy project that is expected to be awarded this summer. The plan will include senior management commitment, centralized energy coordination, organization-wide representative energy committees (steering and technical), energy usage reporting and monitoring, and ongoing training.

3. Utilize formula-based Energy Efficiency Conservation Block Grants (EECBG) to implement:
   - Enterprise-wide and facility-based Energy Management System upgrades, including metering/sub-metering of assets, systems integration, enhanced utility accounting software, energy management/coordination functionality, and relevant training
   - The development and implementation of an Energy Management Plan
   - An internal energy-efficiency campaign for employees
   - Demonstration and pilot projects for energy efficiency and renewable energy
   - An energy efficiency/sustainable construction evaluation of our capital improvement process including the development of guidelines and procedures for capital departments, from the pre-design through construction, to ensure maximization of energy efficiency

4. Provide Certified Energy Manager (CEM) based training support to energy managerial and technical staff, e.g. CEM training, web-based energy management training through established organizations like the Association of Energy Engineers.

5. Expand implementation of Energy Star Portfolio Manager, which is Environmental Protection Agency's facility energy performance benchmarking tool. To date, the data for 34 pilot facilities have been uploaded and scored (where applicable) against national averages for similar facilities.

6. Expand use of Commissioning Contractor Pools. To aid the successful design, construction and operation of certified "green" County buildings, the Office of Capital Improvements has created a pool of contractors within its Equitable Distribution Pool program for Architecture/Engineering firms with sustainable construction expertise, as well as a separate pool for commissioning and

sustainable building project oversight and management. A third pool for new, retro and re-commissioning of buildings is under consideration. These pools facilitate the energy performance of both new construction and existing buildings over the "business as usual" baseline.

7. Human Resources, GSA and other participating departments have assessed the potential for, and are piloting alternative work week schedules and strategies.

8. Staff is also developing a sustainable procurement policy that will address the purchase of Energy Star and other third-party certified energy-efficient and sustainable goods and services.

9. Staff is reaching out to community stakeholders such as the Building Owners Management Association to share and coordinate knowledge, training and energy consumption reduction strategies.

ON-GOING ELECTRICAL ENERGY REDUCTION ACTIVITIES

There are existing energy conservation best practices that will be expanded through a concerted energy management and coordination effort.

- Energy Performance-based Contracting has reduced electricity consumption on the average by 11 percent for the projects executed thus far. Under the new State Energy Performance Contract, the County can now consider projects payback periods up to twice that of the maximum allowed under the old contract and there are 10 companies in the new contract versus three in the previous one. As such, there should be the potential to shift the overall average reduction above 11 percent, and to implement more types of projects in more County facilities and operations.

- From an operations and maintenance perspective, the combination of staff knowledge and expertise with enhanced Building Management software can result in improved efficiency through enabling more proactive rather than reactive energy management. Further training of building/facility management staff and upgrades to building/energy management systems should contribute to the maximization of operations and maintenance-based energy efficiency.

- Energy-intensive service delivery including the treatment and (re)distribution of potable and wastewater supplies benefits through decreased overall electricity consumption through aggressive water conservation outreach, education and policy. To this end, the County has adopted new water efficiency standards and launched a community-wide "Use Less" water conservation campaign as well as school-based educational programming.

CHALLENGES

Despite the opportunities available for improving energy efficiency, the expansion of County service delivery and square footage of owned, managed and operated facility space will in some cases double or triple electrical energy consumption especially for those County departments that have energy-intensive operations. For example, WASD is facing increasing regulatory requirements for water treatment that will require even more energy to achieve. There is also the new square footage of facility space coming on line through the implementation of the five year capital plan.

Budgetary pressures are leading to cost-cutting efforts to shift County operations from leased to owned locations. It is unlikely that either efficiency strategies alone or the piloting/demonstration of renewable energy projects will guarantee the mandated 20 percent decrease in electricity consumption in the wake of these trends. The County will have to look for more aggressive and innovative ways to avoid utility-based electricity consumption, including creative financing of large-scale renewable energy projects to

power key County operations/assets, and a focus on demand-side management and passive or zero energy technologies for both our own operations and energy-intensive service delivery.

CONCLUSION

The County's sustainability focus and efforts to raise the visibility and strategic importance of electrical energy management, along with other resource consumption issues (water, fuel, paper, etc.), is laying the foundation for a viable plan towards the 20 percent electricity reduction goal as well as other climate change mitigation and energy consumption reduction goals. The important steps the County is taking towards this end include:

- Improved electrical energy baseline and alternative scenario consumption analysis for the past, present and the future,
- The use of Federal Stimulus (ARRA and EECBG) monies to fund energy management planning and coordination, strategic energy-efficiency/renewable energy demonstration projects, retrofits and financing initiatives,
- A plan to expand and enhance the use of energy performance-based contracting to increase the number and energy savings of such projects, and
- The integration of energy performance into departmental service delivery and performance measures where applicable as well as organization wide strategic planning.

While these efforts will aid the County in maximizing energy-efficiency and identifying major challenges to reducing energy consumption, additional policy and program innovation and collaboration across departments and with external stakeholders will be necessary for moving the organization to decreasing overall fossil-fuel based electrical energy consumption.

The Board will be kept apprised of our on-going efforts to reduce our electrical consumption, as appropriate. If you have any questions, please call me directly at 305-375-1880.

cc: Honorable Carlos Alvarez, Mayor
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Assistant County Managers/Special Assistants
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