



North Carolina Department of Administration

Michael F. Easley, Governor
Britt Cobb, Secretary

Larry E. Shirley, Director
State Energy Office

February 22, 2008

To: Senator Marc Basnight, Co-Chair
Representative Joe Hackney
Members of the Joint Legislative Commission on Governmental Operations

From: Larry Shirley

Re: Report on Energy Efficiency Implementation Activities re SL2007-546

Session Law 2007-546, Section 2.1 (a) to (d) requires the Department of Administration (DOA) to prepare for implementation of energy conservation measures in existing state, university, and community college buildings. Specific energy areas are noted in this legislation and also in the funding provision [SL2007-323, Section 19.3(b)]. DOA's State Construction Office (SCO) and State Energy Office (SEO) developed project selection criteria and a needs assessment form which were sent to eligible entities in December. (See Attachment A1 and Attachment A2).

Thirty-four (34) state agencies, universities, and community colleges responded. Estimated cost of these projects totaled \$18M, far exceeding the \$5M Energy Efficiency Reserve funding.

There were twenty-one (21) Needs Assessment Form responses which requested specific products. These will be purchased from Energy Efficiency Reserve funds by SEO and delivered to the participants for installation. Installation must be completed by agency in-house staff by December of 2008.

LED Exit Signs	3,000
CFL Lamps (60w, 75w and 100w)	7,700
Sink Aerators (0.5 gpm)	4,500
Shower Flow Restrictors (1.5gpm)	1,600

Funding requests for 200 energy efficiency projects were received. These are categorized as follows:

Mailing Address:
1340 Mail Service Center
Raleigh, NC 27699-1340

Telephone (919) 733-2230
Fax (919) 733-2953
www.energync.net

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Location:
1830A Tillery Place
Raleigh, North Carolina 27604



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Retro-Commissioning	40
Lighting Systems	72
Boilers and Steam Traps	16
Water Conservation	10
HVAC	18
Other (i.e., motors, motor drives, windows, insulation)	44

SEO/SCO will evaluate submitted project proposals based on cost, payback time, and diversity of geographical location and agencies until the Energy Efficiency Reserve funds are depleted. Contracts for these projects will be executed by DOA and overseen by SEO/SCO. Monitoring and Verification (M&V) of project savings will be included as a component of larger projects. The SEO's Utility Savings Initiative funds will be used to contract for separate M&V of smaller projects.

Supporting Activities through Utility Savings Initiative Funding

Also, through the SEO's Utility Savings Initiative funding, several additional energy efficiency programs are underway. These services are available to personnel in state agencies, universities, community colleges, local governments, and K-12 public schools and include:

- Basic energy surveys for approximately 150 buildings (with preference given to community colleges) to identify and recommend energy conservation measures in public buildings;
- Technical workshops on energy modeling, energy code, commissioning, and energy auditing—4 topics x 1 day-long class each at 2 locations = 8 workshops;
- Energy Management Diploma classes—a series of 14 days of cumulative training on topics including bill analysis, equipment operation and troubleshooting, geared to facility operators and managers;
- Strategic Energy Planning workshops—one-day class to help energy managers, facility operators, and other staff formulate a plan to reduce energy consumption, track results, and encourage behavioral changes;
- Advanced Technology Seminars such as the one-day water conservation conference held December 14, explaining new technologies now available;
- Training in ASHRAE criteria at various levels of detail for capital project coordinators, designers (architects and mechanical engineers), facility managers, and chief financial officers involved in development of new State-funded buildings; and
- Detailed operational assessments of specific systems (such as HVAC, chillers, boilers, etc.) and monitoring and verification of efficiency measures that have been installed.

Performance Contracting Support

In addition, the Utility Savings Initiative umbrella of services includes technical assistance for public agencies which are interested in performance contracting projects. Information is provided for development of requests for proposals, assessment of subsequent responses, points to include in contracts, measurement and verification, and other aspects of energy efficiency and conservation.

Five contracts have been executed or are in process:

Museum of Art	\$4,966,763	
DOA Downtown Complex	\$18,863,659	
Downtown Amendment (LOB/LB)	\$2,572,348	
UNC Greensboro	\$5,808,994	
DOC	<u>\$14,136,827</u>	(estimated)
Total	\$46,348,591	

Additionally, 11 universities and 3 agencies have expressed interest in beginning the Performance Contracting process. The current \$100M debt ceiling will likely be reached before many of these projects get to the Request for Proposal stage.

These Utility Savings Initiative projects and programs provide tools and targeted funding to help agencies to achieve the energy efficiency objectives of SL2007-546.

Please contact me at 733-1889 or Len Hoey at 733-1891 if there are questions.

cc: Speros Fleggas
Len Hoey
Michael Hughes

Notice of Funding Availability for Energy Efficiency Projects

Governor Easley recently signed into law SB 668, which requires state agencies and universities to reduce energy consumption 20 percent by 2010 and 30 percent by 2015. As one element of meeting that goal, SB 668 requires energy conservation measures in designated areas, including lighting, water use, HVAC systems and minor equipment, to be fully implemented in all state buildings by December 31, 2009.

To assist with meeting this mandate, Governor Easley has established a \$5 million Energy Efficiency Reserve Fund. Funds will be made available in two categories: a small building program focused on single story buildings with relatively simple energy systems and a large building program focused on buildings greater than 20,000 gross square feet (GSF) with more complex energy systems.

Selection Criteria and Project Schedule

To initiate projects for funding from the Energy Efficiency Reserve Fund, participants should submit a request for funding by Form OC-25 no later than **December 31, 2007**. OC-25 forms should be submitted to Michael Hughes, State Construction Office, at Michael.Hughes@ncmail.net. Projects will be selected by January 31, 2008.

Contracts for these projects will be executed by the Department of Administration and overseen through a collaborative effort of the State Energy Office and the State Construction Office.

On receipt of the proposals submitted with Form OC-25, the State Energy Office will work jointly with the State Construction Office to select projects for funding. Several criteria will be used for selection:

- The project must be feasible, with a strong, demonstrated economic return on investment.
- The applicant must have submitted a current Strategic Energy Plan to the State Energy Office. The goals identified in the plan should include the energy conservation items requested under this proposal. Training and on-site technical assistance in the preparation of a plan is available from the State Energy Office.
- The applicant must provide a statement confirming that the systems upgraded under this program will be operated to prevent reversion to the condition of energy waste. Key maintenance staff must receive appropriate training to maintain the systems installed or upgraded.
- Applicants that commit to use in-house labor without reimbursement for implementing the energy conservation measures will be given preference.

The OC-25 form submitted for this project should show one-year duration for the project, with completion no later than December 2008. All projects must be submitted with an OC-25 form, including those that fall below the usual minimum \$100,000 threshold. Instead of OC-25

worksheets, participants should attach a narrative scope of work, as well as the following information about each building included in the application:

- Building asset number (as assigned by the State Property Office)
- Building gross square footage (GSF)
- Building original year of construction
- Dates of any major renovations to the building
- Energy Management System manufacturer and date of installation (if applicable)
- Energy Management System local representative contact (if applicable)
- Boiler and chiller capacity, manufacturer, and installation year (if applicable)
- Metering capability to measure energy use
- A statement of the economic return for the energy efficiency investment (e.g. 3-year payback) and back up calculation/analysis to support this statement.

Description of Funding Categories

Support from the Energy Efficiency Reserve Fund will be available in two categories, the large building program and the small building program.

The **Large Building Program** supports large scale energy efficiency initiatives in buildings greater than 20,000 GSF. Funding in this category is expected to range widely, but is capped at \$150,000 per project.

Eligible projects include, but are not be limited to:

- lighting retrofits, such as switching T-12 to T-8 or T-5
- building envelope retrofit including insulation and window replacement
- boiler tune up and repair
- steam trap survey and replacement
- retro-commissioning of HVAC equipment and energy management systems

Applicants are particularly encouraged to submit proposals for retro-commissioning. Studies have shown that incorrectly programmed HVAC controls and energy management systems can cause extreme energy waste. “Retro-commissioning” – or correction of these wasteful settings in such areas as schedule of operation, temperature and air flow, along with minor repairs – can be an excellent investment with a payback of between six and 18 months.

Applicants are not encouraged to submit proposals for buildings with major repair and renovation needs under this program, as funds required to complete these projects will be much greater and should be requested from the State Repair and Renovation Fund.

The **Small Building Program** supports smaller scale energy efficiency initiatives in buildings greater than 1,500 GSF and less than 20,000 GSF. Funding is capped at \$15,000 per project.

The focus of this initiative will be small building retrofits, with elements of the retrofit including, but not limited to:

- basic weatherization,
- heating and air conditioning analysis, optimization and repair, and
- lighting retrofits, such as switching T-12 to T-8 or T-5.

In both the large and small building programs, preference will be given to state-owned buildings supported by General Fund appropriations. Cost sharing by agencies and universities in these projects is strongly encouraged.

Applicants are free to submit more than one application for both the large and small building programs.

Guidelines for Retro-Commissioning Projects

A significant amount of energy can often be saved by correcting deficiencies in HVAC equipment and direct digital control systems in buildings and energy plants that are less than 15 years old. The process of restoring these systems to their intended, efficient operating conditions is known as retro-commissioning.

The scope of work for such retro-commission projects is complicated and requires a project designer (“commissioning agent”) and contractors. The commissioning agent will be responsible for directing and managing the work of the contractors. The primary contractor on each project is expected to be a controls vendor. Due to the proprietary nature of direct digital control energy management systems (EMS), the vendor representing the manufacturer of the EMS will typically be the only contractor fully qualified to modify and repair it. The Department of Administration intends to convene key control vendors operating in North Carolina to negotiate an appropriate hourly rate for qualified technicians that can apply for all commissioning projects.

Costs for retro-commissioning are expected to run from \$50,000 and \$150,000 per project – at a rate of between \$.50/ft² and \$.75/ft². This cost includes equipment and installation costs, as well as commissioning agent and contractor fees. Preference will be given to projects for which the facility owner agrees to use in-house controls technicians as labor for the retro-commissioning project. This preference will be stated on the request for proposals prepared by the Department of Administration.

The Department of Administration, in consultation with the agency or institution, will select a qualified commissioning agent. A percentage of the retro-commissioning project costs should be allocated for repair and replacement of defective devices and equipment. Once these deficiencies are identified by the commissioning agent in order of priority, an informal bid process should be initiated and the repairs completed by the mechanical contractor with the lowest informal bid.

Project Measurement and Verification by an independent third party should also be included in project cost. Upon completion of the retro-commissioning modifications, the commissioning agent will be responsible for issuing a measurement and verification report documenting the cost and savings of the project.

If the contractor refuses to follow the directions of the commissioning agent or otherwise fails to perform up to reasonable expectations, the Department of Administration, in consultation with the project applicant and commissioning agent, will stop work until the dispute is resolved and payment to the contractor may be withheld.

ENERGY EFFICIENT PRODUCT
NEEDS ASSESMENT FORM

Agency/University/Community College _____

(Please list below all included buildings)

(Please include below only the items that are in need of replacement)

Number of exit signs _____

Number of incandescent light bulbs:

60 watt _____

75 watt _____

100 watt _____

Number of sink faucets _____

Number of shower heads _____

Please list below locations and quantities where you feel occupancy or optical sensors should be utilized. Areas where occupancy sensors are most effective include: rest rooms, break rooms, kitchen areas and conference rooms. These areas have low occupancy with a high incidence of lights being left on when empty. *(Additional information for each location, including room type, number of lamps controlled and hours per day the room is used, would also be helpful.)*
