



MEMORANDUM

To: Atlanta Regional Commission

From: Brent Walker, Parks and Recreation Manager

Date: March 1, 2011

Subject Measure 7—Government Energy Audits

In June of 2010, the City of Dunwoody was awarded an Energy Efficiency and Conservation Block Grant in partnership with the Cities of Chamblee and Decatur. The grant provided total funding of \$500,000 to perform retrofits on public buildings through the recommendations of energy audits, performed fall 2010. At the end of 2010, the City began the process by sending the building and code officials to training concerning energy efficiency and conservation at the Southface Eco-office .

The audits were performed on all of government-owned buildings. Attached, you will find the City's retrofit plan and coordinating funding.

I would be happy to answer any questions you have regarding this measure. You can reach me directly by phone at (678) 382-6857 or by e-mail at brent.walker@dunwoodyga.gov.

**STATE OF GEORGIA
CITY OF DUNWOODY**

RESOLUTION 2011-02-06

**A RESOLUTION TO APPROVE AND AUTHORIZE AN INTERGOVERNMENTAL
AGREEMENT BETWEEN THE CITY OF DUNWOODY AND THE CITY OF
DECATUR**

- WHEREAS,** Dunwoody is a municipality created by the 2008 Georgia General Assembly pursuant to Ga. L. 2008, p. 3526; and
- WHEREAS,** Decatur is a municipality created by the Georgia General Assembly; and
- WHEREAS,** the City of Decatur, City of Dunwoody, and City of Chamblee have jointly been awarded a grant from the Georgia Environmental Finance Authority (GEFA) in the amount of \$500,000 from the Energy Efficiency and Conservation Block Grant program (EECBG); and
- WHEREAS,** the majority of funds will be used to complete energy saving retrofits in city-owned and maintained facilities; and
- WHEREAS,** Decatur accepted the role of lead applicant for contract and reporting purposes; and
- WHEREAS,** these requirements are a critical component to measuring the success of the EECBG program; and
- WHEREAS,** Dunwoody has reviewed the Contract and familiarized itself with such requirements; and
- WHEREAS,** Dunwoody shall be held responsible for meeting these requirements for all expenditures related to this grant and providing information to Decatur in a timely fashion for reporting and invoicing purposes.

NOW THEREFORE, BE IT RESOLVED, by the Mayor and City Council of the City of Dunwoody and it is resolved by the authority of said City Council, that by passage of this Resolution the City of Dunwoody Mayor and City Council authorize an Intergovernmental Agreement (IGA) with the City of Decatur for the execution of the Energy Efficiency and Conservation Block Grant program. The City Manager is hereby authorized to transmit the duly executed Agreement to the City of Decatur.

SO RESOVLED AND EFFECTIVE this 28th day of February, 2011.

Approved:

Ken Wright, Mayor

Attest:

Sharon Lowery, City Clerk

Seal

CONTRACT FOR SERVICES

State of Georgia

County of DeKalb

THIS AGREEMENT, made and entered into as of the _____ day of _____, 2010 by and between the CITY OF DECATUR, GEORGIA, a municipal corporation created by an Act of the Legislature of the State of Georgia, hereinafter referred to as "Decatur," and the City of Dunwoody, hereinafter referred to as "Dunwoody," a municipal corporation created by an Act of the Legislature of the State of Georgia,

WHEREAS, the City of Decatur, City of Dunwoody, and City of Chamblee have jointly been awarded a grant from the Georgia Environmental Finance Authority (GEFA) in the amount of \$500,000 from the Energy Efficiency and Conservation Block Grant program (EECBG); and,

WHEREAS, the majority of funds will be used to complete energy saving retrofits in city-owned and maintained facilities; and,

WHEREAS, Decatur accepted the role of lead applicant for contract and reporting purposes; and,

WHEREAS, the Intergovernmental Agreement entered into between Decatur and GEFA dated June 16, 2010 (the "Contract") outlines strict administrative and reporting requirements associated with the grant; and,

WHEREAS, these requirements are a critical component to measuring the success of the EECBG program; and,

WHEREAS, Dunwoody has reviewed the Contract and familiarized itself with such requirements; and

WHEREAS, Dunwoody shall be held responsible for meeting these requirements for all expenditures related to this grant and providing information to Decatur in a timely fashion for reporting and invoicing purposes.

THEREFORE, Decatur hereby agrees to act as the lead applicant, and provide coordination of grant activities including reporting and invoicing for Dunwoody for the duration of this grant.

This commitment is expressly conditioned upon the following promises:

Dunwoody will not use the Grant Funds for any purpose other than towards those outlined in the Contract. All administrative and reporting requirements will be met according to schedule outlined in the Contract. If administrative and reporting requirements are not met, GEFA may not refund expenditures. Dunwoody acknowledges and agrees that Decatur is not financially responsible for reimbursements to Dunwoody under any circumstances.

IN WITNESS WHEREOF, the parties have executed this Agreement by causing the same to be signed by their respective authorized officers, their respective seals to be hereunto affixed, and these presents delivered in duplicate copies as of the day and year above written.

Signed, sealed and delivered by

CITY OF DECATUR, GEORGIA

BY: _____

In the presence of:

Signed, sealed and delivered by

CITY OF DUNWOODY, GEORGIA

BY: _____

In the presence of:

CONTRACT FOR SERVICES- SUPPLEMENTAL MATERIALS

These supplemental materials are provided to assist the City of Dunwoody in meeting the requirements of the grant funding. Should you have any questions please do not hesitate to contact either the City of Decatur or the Georgia Environmental Finance Authority.

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Contacts

- a. **Lena Stevens**
 Resource Conservation Coordinator, City of Decatur
 Phone: 404-370-4102
 Email: lena.stevens@decaturga.com

- b. **Andrea Schroer**
 State Energy Project Manager
 Georgia Environmental Finance Authority (GEFA)
 Phone: 404.584.1137
 Email: andrea@gefa.ga.gov

Resources

GEFA has provided links to documents that explain the various grant requirements. These documents can be helpful to you, as well as to the contractors that you hire. Visit this website for more information- www.gefa.org/Index.aspx?page=520

Reporting Schedule

Requirement	Due to GEFA	Due to City of Decatur	Action Required
Davis Bacon Reporting	Weekly	Processed online by contractor while work is ongoing.	ONLY if the Davis Bacon rules apply to your project do you have to report weekly.
1512 OMB Reporting	Due the 1-5 th of January, April, July, and October. Reports cover the previous quarter.	Due the Friday before the 1 st of January, April, July, and October. December 17 th , 2011 March 25 th , 2011 June 24 th , 2011 September 23 rd , 2011	Data regarding hours worked by each vendor and a list of individual payments made that quarter.
Quarterly Progress Reporting	Due the 15 th of January, April, July, and October. Reports cover the previous quarter.	Due the Friday before the 1 st of January, April, July, and October. December 17 th , 2011 March 25 th , 2011 June 24 th , 2011 September 23 rd , 2011	Various data related to the projects. Program coordinator will contact you regarding report.
Submitting Invoices	Due by the 15 th of each month;	Due by the 10 th of the month in order to provide time for organizing and submitting.	Copy of general ledger for the project code designated for this grant. Copies of invoices stamped "Paid."

Administrative Requirements

Requirement	Timeline	Action Required
Acquire DUNS	Immediately	Send DUNS to Lena Stevens
Take Governor’s Energy Challenge	Register and pledge your scope of work before completing retrofits	You will need to pledge energy saving activities for each of your buildings in your scope of work. Visit: http://www.governorseenergychallenge.org/
Develop an internal financing mechanism to produce ongoing benefits from funding	Immediately	Discuss options with Lena Stevens, and determine what would work best for your City.
Follow appropriate purchasing policies for your City when choosing vendors.	Immediately	Send copy of purchasing policy to Lena Stevens. Develop a memo each time a vendor is selected which outlines how the purchasing policy was followed.
Create a project code for this grant to separate expenditures.	Immediately	Work with administrative services in your City to create a unique project code for expenditures relating to this grant.
Ensure that solid waste guidelines are followed during all renovation projects.	Ongoing	Review policy and verify that it is followed during all projects. May want to make several site visits to ensure compliance. Policy will be sent to each partner city.
Establish a “Lights Out/Power Down” policy	Immediately	Provide copy to Lena Stevens.
Obtain energy audits of any facility that is to be retrofitted	October 15, 2010	Provide copies to Lena Stevens. Use audits to develop a retrofit plan and expected budget.

NOTE:

1. All retrofit projects are limited to the installation of insulation; installation of efficient lighting; heating, venting, and air conditioning (HVAC) and high-efficiency shower/faucet upgrades; weather sealing; the purchase and installation of Energy Star appliances; installation of solar powered appliances with improved efficiency
2. The use products manufactured in Georgia will be mandatory unless a suitable product is not available, or if the cost exceeds the next available option by 15%. If Georgia products are not available, other products produced in the U.S. can be considered.



*In Partnership with
Dunwoody Parks and Recreation*

2010 Business Energy Evaluation

Prepared by: Johnny Walden

August 27, 2007

This report was prepared for:

Dunwoody Parks and Recreation

Executive Summary

On August 5, 2010 Johnny Walden of Georgia Power met with Brent Walker the Recreation Manager for Dunwoody Parks and Recreation. The purpose of this visit was to conduct walk-through energy surveys on the buildings listed in the following report. We looked for ways to help reduce energy consumption at these locations.

- ***Donaldson Banister House***

Assumptions

- **Energy costs based on Georgia Powers Residential rate, historical average cost for this building is \$0.1129 per kWh.**

Recommendations

- Lighting

Replace incandescent lamps with compact fluorescent (CF) lamps.

- HVAC

The HVAC systems at this location appeared to be in good working order. The condensing coils need to be cleaned every year and the evaporator coils cleaned every 4 or 5 years. The main change that you need to make to the HVAC systems is upgrading your old thermostats. Have your contractor install new proprietary thermostats. An advantage you gain with this type is when the buildings are unoccupied the temperature goes to a predefined setback temperature. Make sure they have a lockout feature in the program this also prevents employees from “slamming” the thermostat to the lowest or highest setting. It is critical that you take control of all thermostats. As you replace old condensing units go with a minimum of a 13 SEER. The higher the SEER rating the higher the cost of the unit but the lower the operating cost.

- Insulation

The attic has minimal insulation we recommend R-30 for residential houses. There is probably no insulation in the walls considering the age of the house. It is not cost effective to add wall insulation unless you are doing a restoration project where you could gain access to the stud bays in the exterior walls.

- Historical Buildings

In the past historic building have been “off limits” for many energy conservation improvements because of historic perseveration concerns. The following website covers efficiency in historic buildings. It offers great recommendations for both passive measures and preservation retrofitting.

<http://www.nps.gov/history/hps/tps/briefs/brief03.htm>

- *Brook Run Theater*

Assumptions

- Energy costs based on Georgia Powers PLM-C rate, average historical cost for this building is \$0.1474 per kWh.

Recommendations

- Lighting

Replace incandescent lamps with compact fluorescent (CF) lamps. Fixtures using magnetic ballasts and T-12 fluorescent lamps can be replaced with fixtures using electronic ballasts and T-8 fluorescent lamps. Incandescent and fluorescent exit signs can be replaced with LED exit signs. Another effective way to save lighting energy is to make sure that lights are off in unoccupied areas. Occupancy sensors are designed to perform that task automatically. They can save 10% in office areas and up to 50% in conference rooms and restrooms.

We recommend that you have a theatrical lighting company evaluate the current lighting in the theater area. LED lighting is much more energy efficient but it is also very expensive.

Lighting calculations below based on 20 operating hours per week.

Location	N/R	Type Removed	Watts	Qty	Replacement Type	Watts	Qty	kW removed	Hours/ Yr	kWh Saved	Energy Savings	Retrofit Cost	*Payback
Theater	R	2' U tube T12 Mag 2 lamp troffer	96	60	2' U tube T8 Electronic 2 lamp troffer	58	60	2.28	1040	2,371	\$349.51	\$3,378	9.7
	R	4' F 34 T12 CW Mag 2 lamp wrap	79	11	4' F 32 T8 CW Electronic 2 lamp wrap	62	11	0.187	1040	194	\$28.67	\$583	20.3
	R	4' F 34 T12 CW Mag 4 lamp troffer	158	2	4' F 32 T8 CW Electronic 2 lamp troffer	62	2	0.192	1040	200	\$29.43	\$106	3.6
	R	4' F 34 T12 CW Mag 1 lamp wrap	41	6	4' F 32 T8 CW Electronic 1 lamp wrap	31	6	0.06	1040	62	\$9.20	\$300	32.6
					Total			2.719		2,828	\$416.81	\$4,367	

- HVAC

Thermostat settings influence your energy cost greatly. For every degree change (higher in the summer, lower in the winter), you can save up to:

- 3% of your cooling costs.
- 2% of your heating costs.

The thermostat tells the air handler to deliver more heating or cooling to the space. To operate properly the thermostat should sense the return air temperature. To do this it must have a sensor in the return air duct or be placed near a return air grill. An improperly placed thermostat will cause comfort complaints from the occupants and can waste energy.

A thermostat is an energy management system. Everyone that has access to one of your thermostats is an energy manager. The more energy managers you have adjusting the thermostat the less efficient the system will be. **We recommend that you use digital programmable thermostats and set the temperature back to 55° F during the unoccupied periods of the heating season. During the summer cooling season we recommend that you set up the temperature to 85° F during the unoccupied periods. Choose a thermostat that allows you to set temperature parameters this function prevents slamming the settings up and down. Some will allow you to program lockout codes to limit control to specific individuals.**



Maintaining your HVAC equipment is critical:

1. *Inspect and clean or change filters*

- Dirty filters can cause severe problems in the operation of heating and cooling systems. When filters aren't changed regularly they clog up and greatly restrict the amount of air flow that comes across the coils of the heating and cooling system. This makes the system more expensive to operate as well as reducing the life of the unit.

2. *Inspect and clean ALL coils*

- Debris that builds up on the coils of HVAC systems greatly effects the efficiency of these systems. Similar results will occur to systems with dirty filters as with dirty coils, shortening the life of the unit and increasing its operation cost. Cleaning the regularly can save you money on utility bills. Also make sure that refrigerant levels meet factory specifications.

- Insulation

We recommend R-19 insulation in the attic or above the drop ceiling in commercial buildings. The insulation helps keep the heat out in the summer and helps hold the heat in the winter months.

- ***Brook Run Maintenance Bldg.***

Assumptions

- Energy costs based on Georgia Powers PLS-C rate, average historical cost for this building is \$0.1059 per kWh.

Recommendations

- Lighting

Replace incandescent lamps with compact fluorescent (CF) lamps. Fixtures using magnetic ballasts and T-12 fluorescent lamps can be replaced with fixtures using electronic ballasts and T-8 fluorescent lamps. Incandescent and fluorescent exit signs can be replaced with LED exit signs. Another effective way to save lighting energy is to make sure that lights are off in unoccupied areas. Occupancy sensors are designed to perform that task automatically. They can save 10% in office areas and up to 50% in conference rooms and restrooms.

Lighting calculations below based on 40 operating hours per week.

Location	N/R	Type Removed	Watts	Qty	Replacement Type	Watts	Qty	kW removed	Hours Yr	kWh Saved	Energy Savings	Retrofit Cost	*Payback
Supply Area	R	4' F 34 T12 CW EE Mag 2 lamp wrap	70	62	4' F 32 T8 CW Electronic 2 lamp wrap	62	62	0.496	2080	1,032	\$109.25	\$3,286	30.1

- HVAC

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- 3% of your cooling costs.
- 2% of your heating costs.

The thermostat tells the air handler to deliver more heating or cooling to the space. To operate properly the thermostat should sense the return air temperature. To do this it must have a sensor in the return air duct or be placed near a return air grill. An improperly placed thermostat will cause comfort complaints from the occupants and can waste energy.

A thermostat is an energy management system. Everyone that has access to one of your thermostats is an energy manager. The more energy managers you have adjusting the thermostat the less efficient the system will be. **We recommend that you use digital programmable thermostats and set the temperature back to 55° F during the unoccupied periods of the heating season. During the summer cooling season we recommend that you set up the temperature to 85° F during the unoccupied periods. Choose a thermostat that allows you to set temperature parameters this function prevents slamming the settings up and down. Some will allow you to program lockout codes to limit control to specific individuals.**



Maintaining your HVAC equipment is critical: (The condensing unit for the office is covered with vegetation)

3. *Inspect and clean or change filters*

- Dirty filters can cause severe problems in the operation of heating and cooling systems. When filters aren't changed regularly they clog up and greatly restrict the amount of air flow that comes across the coils of the heating and cooling system. This makes the system more expensive to operate as well as reducing the life of the unit.

4. *Inspect and clean ALL coils*

- Debris that builds up on the coils of HVAC systems greatly effects the efficiency of these systems. Similar results will occur to systems with dirty filters as with dirty coils, shortening the life of the unit and increasing its operation cost. Cleaning the regularly can save you money on utility bills. Also make sure that refrigerant levels meet factory specifications.

- Insulation

We recommend R-19 insulation in the attic or above the drop ceiling in commercial buildings. The insulation helps keep the heat out in the summer and helps hold the heat in the winter months.

- **Dunwoody Nature Center**

Assumptions

- Energy costs based on Georgia Powers GS-C rate, average historical cost for this building is \$0.1468 per kWh.

Recommendations

- Lighting

Replace incandescent lamps with compact fluorescent (CF) lamps. Fixtures using magnetic ballasts and T-12 fluorescent lamps can be replaced with fixtures using electronic ballasts and T-8 fluorescent lamps. Incandescent and fluorescent exit signs can be replaced with LED exit signs. Another effective way to save lighting energy is to make sure that lights are off in unoccupied areas. Occupancy sensors are designed to perform that task automatically. They can save 10% in office areas and up to 50% in conference rooms and restrooms.

Lighting calculations below based on 40 operating hours per week.

Location	N/R	Type Removed	Watts	Qty	Replacement Type	Watts	Qty	kW removed	Hours/ Yr	kWh Saved	Energy Savings	Retrofit Cost	*Payback
Nature Center	R	4' F 34 T12 CW Mag 2 lamp wrap	79	13	4' F 32 T8 CW Electronic 2 lamp wrap	62	13	0.221	2080	460	\$67.48	\$689	10.2
	R	4' F 34 T12 CW EE Mag 4 lamp wrap	140	1	4' F 32 T8 CW Electronic 4 lamp wrap	108	1	0.032	2080	67	\$9.77	\$69	6.0
					Total			0.253		526	\$77.25	\$748	

- HVAC

Thermostat settings influence your energy cost greatly. For every degree change (higher in the summer, lower in the winter), you can save up to:

- 3% of your cooling costs.
- 2% of your heating costs.

The thermostat tells the air handler to deliver more heating or cooling to the space. To operate properly the thermostat should sense the return air temperature. To do this it must have a sensor in the return air duct or be placed near a return air grill. An improperly placed thermostat will cause comfort complaints from the occupants and can waste energy.

A thermostat is an energy management system. Everyone that has access to one of your thermostats is an energy manager. The more energy managers you have adjusting the thermostat the less efficient the system will be. **We recommend that you use digital programmable thermostats and set the temperature back to 55° F during the unoccupied periods of the heating season. During the summer cooling season we recommend that you set up the temperature to 85° F during the unoccupied periods. Choose a thermostat that allows you to set temperature parameters this function prevents slamming the settings up and down. Some will allow you to program lockout codes to limit control to specific individuals.**



Maintaining your HVAC equipment is critical: (There is severe duct leakage in the crawl space at this location)

5. *Inspect and clean or change filters*

- Dirty filters can cause severe problems in the operation of heating and cooling systems. When filters aren't changed regularly they clog up and greatly restrict the amount of air flow that comes across the coils of the heating and cooling system. This makes the system more expensive to operate as well as reducing the life of the unit.

6. *Inspect and clean ALL coils*

- Debris that builds up on the coils of HVAC systems greatly effects the efficiency of these systems. Similar results will occur to systems with dirty filters as with dirty coils, shortening the life of the unit and increasing its operation cost. Cleaning the regularly can save you money on utility bills. Also make sure that refrigerant levels meet factory specifications.

- Insulation

We recommend R-19 insulation in the attic or above the drop ceiling in commercial buildings. There is no insulation in this building. The insulation helps keep the heat out in the summer and helps hold the heat in the winter months.

- *Olympic Training Bldg.*

Assumptions

- Energy costs based on Georgia Powers TOU-MB rate, average historical cost for this building is \$0.0868 per kWh.

Recommendations

- Lighting

Replace incandescent lamps with compact fluorescent (CF) lamps. Fixtures using magnetic ballasts and T-12 fluorescent lamps can be replaced with fixtures using electronic ballasts and T-8 fluorescent lamps. Incandescent and fluorescent exit signs can be replaced with LED exit signs. Another effective way to save lighting energy is to make sure that lights are off in unoccupied areas. Occupancy sensors are designed to perform that task automatically. They can save 10% in office areas and up to 50% in conference rooms and restrooms.

Lighting calculations below based on 40 operating hours per week. Lighting count was estimated because some areas of the building could not be accessed.

Location	N/R	Type Removed	Watts	Qty	Replacement Type	Watts	Qty	kW removed	Hours/ Yr	kWh Saved	Energy Savings	Retrofit Cost	*Payback
Olympic Bldg	R	2' U tube T12 Mag 2 lamp troffer	96	123	2' U tube T8 Electronic 2 lamp troffer	58	123	4.674	2080	9,722	\$843.86	\$6,925	8.2
	R	4' F 34 T12 CW Mag 2 lamp wrap	79	50	4' F 32 T8 CW Electronic 2 lamp wrap	62	50	0.85	2080	1,768	\$153.46	\$2,660	17.3
								Total		11,490	\$997.33	\$9,575	

- HVAC

Thermostat settings influence your energy cost greatly. For every degree change (higher in the summer, lower in the winter), you can save up to:

- 3% of your cooling costs.
- 2% of your heating costs.

The thermostat tells the air handler to deliver more heating or cooling to the space. To operate properly the thermostat should sense the return air temperature. To do this it must have a sensor in the return air duct or be placed near a return air grill. An improperly placed thermostat will cause comfort complaints from the occupants and can waste energy.

A thermostat is an energy management system. Everyone that has access to one of your thermostats is an energy manager. The more energy managers you have adjusting the thermostat the less efficient the system will be. **We recommend that you use digital programmable thermostats and set the temperature back to 55° F during the unoccupied periods of the heating season. During the summer cooling season we recommend that you set up the temperature to 85° F during the unoccupied periods. Choose a thermostat that allows you to set temperature parameters this function prevents slamming the settings up and down. Some will allow you to program lockout codes to limit control to specific individuals.**



Maintaining your HVAC equipment is critical:

7. *Inspect and clean or change filters*

- Dirty filters can cause severe problems in the operation of heating and cooling systems. When filters aren't changed regularly they clog up and greatly restrict the amount of air flow that comes across the coils of the heating and cooling system. This makes the system more expensive to operate as well as reducing the life of the unit.

8. *Inspect and clean ALL coils*

- Debris that builds up on the coils of HVAC systems greatly effects the efficiency of these systems. Similar results will occur to systems with dirty filters as with dirty coils, shortening the life of the unit and increasing its operation cost. Cleaning the regularly can save you money on utility bills. Also make sure that refrigerant levels meet factory specifications.

- Insulation

We recommend R-19 insulation in the attic or above the drop ceiling in commercial buildings. The insulation helps keep the heat out in the summer and helps hold the heat in the winter months.

- Heating

You are heating this building with a hot water gas-fired boiler system. To improve the typically poor part-load performance of a gas boiler, you can use multiple boilers or a turndown boiler. An electric boiler may be the better option.

Another way to improve the efficiency of a gas-fired boiler is to minimize the excess oxygen in the combustion process. The installation of an oxygen trimmer on your boiler can add 2% to its efficiency.

Most large office buildings don't require much heating. Usually just the perimeter of the building will require heating. The most economical way to do this is with electric duct or electric baseboard heating.

If you are considering replacing your boiler you should consider the electric option. Often an electric boiler is more economical to own and operate than a gas boiler. Every case is unique. The availability of electric panel capacity in your building and associated wiring costs must be considered in making a final determination of the economics of an electric boiler.

- Cooling

This building has a York air cooled electric chiller. The unit appeared to be in good condition. Air conditioning is one of the largest energy users in a building. Air conditioning provides five basic functions for the space:

1. Cools the air
2. Deodorizes the air
3. Filters the air
4. Dehumidifies the air
5. Circulates the air

- **Variable Frequency Drives (VFD):**

You can get additional savings on your air conditioning by using variable frequency drives (VFD) on your cooling tower fan, water pumps, centrifugal chiller and air handling fans. The air handling fans and water pumps typically run more hours during the year than the chiller and cooling tower fan and therefore may be more attractive applications for the VFD technology.

When you replace motors that have high hours of use like air handlers and water pumps you should use "premium efficiency" motors. You can learn more about motor efficiency by visiting the following website: <http://www.oit.doe.gov/bestpractices/motors/>

- **Demand-Controlled Ventilation (DCV):**

Outside air is used to replace the "used" air in your building. This outside air is introduced through the air handling units. When occupancy declines there is less need for this outside air. Demand-Controlled Ventilation (DCV) allows an air handler to control the amount of outdoor air supplied to a space based on occupancy. It detects carbon dioxide (CO₂), an indicator of occupancy density, and adjusts the amount of outdoor air supplied to the space based on this CO₂ concentration. Benefits of DCV include:

- Identification of over-ventilated systems, and variable air volume (VAV) systems that under- and over-ventilate.
- Can use existing computer controls, motors, and actuators, thereby keeping costs to a minimum.
- The saving of significant amounts of electricity and heat with a short payback.
- Suitability for auditoriums, classrooms, libraries, gymnasiums, museums, and offices.
- Automatic optimization of indoor air quality (IAQ), with simultaneous documentation of compliance with ASHRAE, OSHA, and NIOSH with respect to IAQ. Considered a powerful legal defense feature if Sick Building Syndrome-type complaints arise.
- Improved control of space temperature and relative humidity for under-sized systems.
- Reduced risk of frozen coils in direct expansion systems due to the net increase in recirculated air.

Air side economizers are another feature you should consider for your large commercial buildings. Providing air-handling units with an economizer and enthalpy control, they will allow you to use "free cooling" when outside conditions are right.

- **Energy Management Systems**

Energy Management Systems (EMS) are special-purpose computerized control systems, programmed to operate building lighting and HVAC equipment such as chillers, fans, boilers, pumps, dampers, valves and motors. They can vary in complexity from a single function controller that performs the simple control of one piece of equipment - to a system with a distributed architecture, in which controllers throughout the building operate local control loops, supervised by a central or 'host' computer.

Energy conservation potential is related to the functions the EMS performs, such as programmed start and stop, optimal start and stop, duty cycling, economizer control, HVAC operation and demand limiting. In an EMS survey, the average building energy cost savings was about 15%.

- ***Ball Field & Concession Dunwoody Park***

Assumptions

- Energy costs based on Georgia Powers PLM-C rate, average historical cost for this building is \$0.1509 per kWh.

Recommendations

- Lighting

As incandescent lamps fail replace incandescent lamps with compact fluorescent (CF) lamps. As ballast fail replace magnetic ballasts and T-12 fluorescent lamps with electronic ballasts and T-8 fluorescent lamps. There is no energy efficient replacement for 1000 watt metal halides that light the fields.

- HVAC

Thermostat settings influence your energy cost greatly. For every degree change (higher in the summer, lower in the winter), you can save up to:

- 3% of your cooling costs.
- 2% of your heating costs.

The thermostat tells the air handler to deliver more heating or cooling to the space. To operate properly the thermostat should sense the return air temperature. To do this it must have a sensor in the return air duct or be placed near a return air grill. An improperly placed thermostat will cause comfort complaints from the occupants and can waste energy.

A thermostat is an energy management system. Everyone that has access to one of your thermostats is an energy manager. The more energy managers you have adjusting the thermostat the less efficient the system will be. **Turn the HVAC systems off when not in use.**

Maintaining your HVAC equipment is critical:

Inspect and clean or change filters

- Dirty filters can cause severe problems in the operation of heating and cooling systems. When filters aren't changed regularly they clog up and greatly restrict the amount of air flow that comes across the coils of the heating and cooling system. This makes the system more expensive to operate as well as reducing the life of the unit.

Inspect and clean ALL coils

- Debris that builds up on the coils of HVAC systems greatly effects the efficiency of these systems. Similar results will occur to systems with dirty filters as with dirty coils, shortening the life of the unit and increasing its operation cost. Cleaning the regularly can save you money on utility bills. Also make sure that refrigerant levels meet factory specifications.
- Insulation

We recommend R-19 insulation in the attic or above the drop ceiling in commercial buildings. The insulation helps keep the heat out in the summer and helps hold the heat in the winter months.

The following locations are energy efficient:

- ***Brook Run Skate Park***

Assumptions

- Energy costs based on Georgia Powers TOU-MB rate, average historical cost for this building is \$0.0930 per kWh.
- ***Spruill Art Center & Library***

Assumptions

- Energy costs based on Georgia Powers TOU-MB rate, average historical cost for this building is \$0.0899 per kWh.
 - These buildings have energy efficient T-8 fluorescent fixtures.
 - The T-8 system represents the latest in fluorescent technology. Using the T-8 lamp in conjunction with electronic ballast maximized the potential savings.
 - The T-8 lamp produces light of a much higher quality than standard fluorescent lamps.
 - The National Energy Policy Act will remove many standard fluorescent lamps in the near future. T-8 lamps meet the efficacy and color rendering requirements of the Act and therefore are exempt. T-8 lamps are the new standard in fluorescent lighting.

Things to remember:

As incandescent lamps fail replace them with compact fluorescent lamps. Compact fluorescent lamps are typically screw-in replacements for incandescent bulbs. They have a self-contained ballast in the neck of the bulb.

What to look for in a CFL:

- A CFL lamp that uses 1/3 the wattage of your current incandescent bulb
- A lamp that fits your shape, size and configuration requirements
- A Color Temperature which replicates your current lighting

- HVAC

Thermostat settings influence your energy cost greatly. For every degree change (higher in the summer, lower in the winter), you can save up to:

- 3% of your cooling costs.
- 2% of your heating costs.

Although the HVAC systems have been upgraded recently you must take control of all thermostats. A thermostat is an energy management system. Everyone that has access to one of your thermostats is an energy manager. The more energy managers you have adjusting the thermostat the less efficient the system will be.

Maintaining your HVAC equipment is critical:

Inspect and clean or change filters

- Dirty filters can cause severe problems in the operation of heating and cooling systems. When filters aren't changed regularly they clog up and greatly restrict the amount of air flow that comes across the coils of the heating and cooling system. This makes the system more expensive to operate as well as reducing the life of the unit.

Inspect and clean ALL coils

- Debris that builds up on the coils of HVAC systems greatly effects the efficiency of these systems. Similar results will occur to systems with dirty filters as with dirty coils, shortening the life of the unit and increasing its operation cost. Cleaning the regularly can save you money on utility bills. Also make sure that refrigerant levels meet factory specifications.

- Insulation

We recommend R-19 insulation in the attic or above the drop ceiling in commercial buildings. The insulation helps keep the heat out in the summer and helps hold the heat in the winter months.

- Air Infiltration

Replace worn thresholds and weather-stripping on doors. Also check caulk around windows and door frames annually.

- Summary

Brent it was a pleasure meeting with you, I hope you will find this information useful in your efforts to reduce energy consumption. Please feel free to give me a call if you have any questions. My phone # is 404-608-5782.

***Prepared By:
Johnny Walden
Georgia Power Company***

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Lighting Resources

Lamps including Compact Fluorescents on line

<http://www.envirolightusa.com>

<http://www.maxlite.com>

<http://www.1000bulbs.com>

<http://www.gelighting.com>

<http://www.sylvania.com>

<http://mygreenwave.com>

LED Lamps

<http://www.ledtronics.com>

<http://www.toolbase.org/Technology-Inventory/Electrical-Electronics/white-LED-lighting>

http://www.ecobusinesslinks.com/lighting_led_light_solar.htm

Lamps – Cycling

http://www.lightingdesignlab.com/articles/switching/switching_fluorescent.htm

Lamps – Disposal/Recycling old lamps and ballasts

<http://www.ehso.com/fluorecy.php>

Light Quality and Color

<http://www.sylvania.com/LearnLighting/LightAndColor/LightColorCharacteristic/>

<http://www.topbulb.com/find/cri.asp>

Fixture Manufacturers

Acuity Lighting

Website: www.acuitybrandslighting.com

Acuity: Lithonia Lighting

One Lithonia Way

Conyers, GA 30012

Tricia Foster, LC

Phone (770) 860-22049

Fax (770) 483-2635

Email: tricia.foster@lithonia.com

Cooper Lighting

1121 Highway 74 South
Peachtree City, GA 30269
Phone (770) 486-4800
Paul Isaacs, Southern Regional Sales Manager
Office (704) 896-3405
Cell (704) 649-2403
Email: paul.isaacs@cooperindustries.com

Harris Lighting

4035 Reynolds Blvd.
Green Cove Springs FL 32043
Greg Green, Regional Manager
Office: (904) 284-1220 X244
Cell: (904) 248-9125
Fax: (904) 284-1865

Westinghouse Lighting Solutions

12401 McNulty Road
Philadelphia, PA 19154-1029
Phone (800) 671-6799
Fax (215) 268-1088
Email: ajoseph@westinghouse-ls.com

Lighting Vendors**AEC Energy Products**

Tom James
1345 Capital Circle NW
Lawrenceville, GA 30043
Office 678-725-8088

Addison Parrish Lighting Sales

Todd Tomsik
Sales Manager
4888 South Old Peachtree Road
Norcross, GA 30071
Office 770-458-9911
Cell 678-488-0278
ttomsik@aplsales.com

Efficient Lighting Consultants

90F Glenda Trace #200

Newnan, GA 30265

Stephanie Piercy

Office 770-683-3606

Fax 203-270-8400

SPiercy@efficientlightingconsultants.com

Energy Lite

Ken Hurd

Sales Manager

Office 704-882-5894

Cell 704-562-6184

khurd@energylite.net

Englewood Electrical Supply

1945 Commerce Drive

Athens, GA 30607

Sam Brown

706-543-3413

800-339-3421

Email: <mailto:sbrown@eescodist.com>

E. Sam Jones Distributor, Inc.

4898 South Atlanta Road

Smyrna, GA 30080

Phone (404) 351 – 3250, (800) 624 – 9849

Fax (404) 351 – 4140, (800) 282 - 2094

Website: <http://www.esamjones.com/service.html>

EnviroLight, LLC

Frank S. Johnson

3886 Glen Meade Dr.

Valdosta GA 31601

Office: 229-559-7554

Cell: 229-834-1966

email: envirolight@bellsouth.net

Grainger Industrial Supply

Phone (888) 803-7320

Website: www.grainger.com

GreenWave Sustainable Lighting Solutions

1954 Airport Road, Suite 115

Atlanta, GA 30341

Paul M. Williams, President

Phone (678) 387 – 5111

Fax (404) 506-9746

Email: pwilliams@mygreenwave.com

Lighting Associates, Inc.

1775 Breckenridge Parkway

Duluth, GA 30340

Contact: Arthur Burdell

Phone (770) 448 – 9250 Ext 332

Fax (770) 263 - 0189

Email: aburdell.LLA462@lighting.net

Lincoln Associates

Harry Page

540 Powder Springs Street, SE

Suite 29E

Marietta, GA 30064

(770) 425-1500 (FAX) 425-1503 www.lincolnassoc.com

www.westinghouselightingsolutions.com

Mayer Electric Supply

Energy Services Group

Candace Eldridge

celdridge@mayerelectric.com

770-447-2715

Allison Wadsworth

awadsworth@mayerelectric.com

6500 Peachtree Industrial Blvd

Norcross, GA 30071

www.mayerelectric.com

NES

Reg Cook

President

250 Hembree Park Drive, Suite 114

Roswell, GA 30076

Office (800) 441-8871 x 702

Cell (770) 330 4479

rcook@natlenergy.com

Servidyne

Jim Dore
1945 The Exchange, Suite 325
Atlanta, GA 30339
Office 770-916-7107
Cell 404-428-2343
jim.dore@servidyne.com

Tibs/MCDean

3435 Mar5tin Farm Road
Suwanee, GA 30024
Ed McLaughlin
Office 404-456-1254
Cell 678-546-2646
Edwin.McLaughlin@MCDean.com

Vicar Lighting

8601 Dunwoody Place
Suite 348
Atlanta, GA 30350
Robby Rudasill
Office 770-552-8602
Cell 678-936-2704
www.vicarlighting.com

Whitehead & Associates, Inc.

Kyle D. Julian
D: 404-574-4895
C: 404-354-1494
F: 404-843-0392
www.whiteheadassoc.com

Dunwoody Retrofit Plan

Building:	Brook Run Maintenance Building	Spruill Arts Center & Library
Age of Construction:	1974	1960's
Year of Last Renovation:	N/A	N/A
Square Footage:	11,000	11,165

Energy Audit Results

ECM Ref #	ECM Description	Energy Type	Estimated Annual Electric Savings (kWh)	Estimated Annual Electric Savings (\$)	Estimated Annual Natural Gas Savings (Therms)	Estimated Annual Gas Savings (\$)	Install Cost	Option #1	Payback Period, (PBP) years	Notes
1	Replace 2 Boilers Brook Run Maintenance Bldg	GAS	0	\$0	1600	\$1,600	\$95,000	\$104,900	59	Comply with Energy Star purchasing policy
2	Add and relocated/position programmable thermostat in Brook Run Maintenance Bldg	Elec	30456	\$2,741			\$1,000	\$1,500	4	
3	Replace 2 AC units that supply 11,000 SF to Arts Center and Library	Elec	1,600	\$1,600			\$54,432	\$55,000	59.00	Projecting a 15% savings of current annual AC energy costs for the 11,000 SF portion of center
4	Install 40 occupancy sensors to Spruill Arts Center & Library	Elec	30,456	\$2,741	0	\$0	\$6,130	\$6,600	2.40	Projecting a 10% savings of current annual energy costs
5	Replace thermostats at Spruill Arts Center and Library with programmable thermostats and program a 5°F dead band temperature range, and higher and lower night setback temperature setpoints	Elec	30,456	\$2,741	0	\$0	\$10,350	\$12,000	36.30	
TOTALS			62,512	7,082	0	0	\$166,912	\$180,000	23.57	