SAM NUNN
ATLANTA FEDERAL CENTER
ENERGY AND LOAD SAVINGS
OPPPORTUNITIES SURVEY

Conducted by

F E D E R A L E N E R G Y M A N A G E M E N T P R O G R A M

June 2002 Report

FINAL REPORT FOR:

General Services Administration
Region IV and AFC Staff,
Atlanta, GA

Prepared by the U.S. Department of Energy's
Oak Ridge National Laboratory
Oak Ridge, TN 37831-6070

AFC ALERT Visit Contact Sheet

Site Information

Agency Name:	GSA
Facility Name:	Sam Nunn Atlanta Federal Center
Facility Address:	61 Forsyth Street SW, Atlanta, GA
Name of Buildings Visited:	same
Total square footage audited:	1.8 Million
Date of Site Visit:	March 25-27, 2002

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Under the Direction of Oak Ridge National Laboratory
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List of Acronyms

AFC	–	Atlanta Federal Center
AHU	–	air handling unit
ALERT	–	Assessment of Load and Energy Reduction Techniques
ARO	–	Atlanta Regional Office
DOE	–	Department of Energy
EPA	–	Environmental Protection Agency
FEMP	–	Federal Energy Management Program
FPA	–	fixed-pricing alternative
GSA	–	General Services Administration
GWh	–	giga-Watt hours
HVAC	–	heating, ventilating, and air conditioning
JCI	–	Johnson Controls, Inc
kVA	–	kilo-Volt Amperes
kW	–	kilo-Watts
kWh	–	kilo-Watt hours
LED	–	light-emitting diode
LMTD	–	log-mean temperature difference
MVA	–	mega-Volt Amperes
MW	–	mega-Watts
NRC	–	Nuclear Regulatory Commission
NREL	–	National Renewable Energy Laboratory
O&M	–	operations and maintenance
ORNL	–	Oak Ridge National Laboratory
PC	–	personal computer
PIU	–	powered induction unit
PNNL	–	Pacific Northwest National Laboratory
RTP	–	real-time pricing
VAV	–	variable air volume

EXECUTIVE SUMMARY – June 2002

SAM NUNN ATLANTA FEDERAL CENTER

Site Assessment of Load and Energy Reduction Techniques (ALERT) for GSA Region IV and AFC Staff, Atlanta, GA

A FEMP ALERT team visited the Atlanta Federal Center (AFC) March 25-27, 2002. The essentially all-electric AFC approaches 2 million total square feet, including a 10-story garage, and is located in downtown Atlanta. The AFC provides primarily office facilities for multiple federal agencies. Electricity is provided by Georgia Power. The objectives of the AFC assessment were to: (1) Improve building energy systems operation, including effective use of the central control system, and (2) Help inform how to obtain an Energy Star rating for the facility.

Current total electric use is about 36 GWh/yr, at a cost of approximately $1.5 Million/yr. The average annual cost per kWh for the facility has decreased over the last year from about 4.7 cents/kWh to 4.2 cents/kWh. A reduction of about 20% from current energy use levels is needed to achieve probable Energy Star label status.

Energy Savings Opportunities

Energy savings opportunities are stratified as low-cost (relative to savings), moderate cost (total cost), and other. Major capital improvements do not appear needed. Implementation of the low-cost measures is the most sure path to approaching Energy Star efficiency, with total energy savings potential as high as 7 GWh/yr of electricity use, with over 5 GWh/yr very likely. Cost savings for these measures are in the range of $200,000 – 250,000/yr or more. Moderate cost measures will lead to modest additional savings. Achieving unoccupied period shutdown of PCs and task lighting leads to major additional savings expected to be over 1.5 GWh/yr, but implementation of this shutdown is complicated. Potential cost savings over $50,000/yr may be possible for this shutdown.

Major Opportuity Category	Energy Savings Potential	Cost Savings Potential
Low-cost measures — Heating, lighting, and HVAC fan energy reductions, mixed air reset	7 GWh/yr on high end, over 5 GWh/yr likely	$200,000 – 250,000/yr
Moderate-cost measures	Modest, in noise level	Modest
Other measures — Unoccupied PC and task lighting shutdown	Over 1.5 GWh/yr possible	Over $50,000/yr
TOTAL	6 – 8 GWh/yr	Over $300,000/yr possible

Implementation

Low-cost measures should be a high priority, with the potential to achieve Energy Star status. The complicated unoccupied period shutdown of PCs and task lighting is worth pursuing in the future, if tenants can be convinced to cooperate and see value.

REPORT – June 2002

SAM NUNN ATLANTA FEDERAL CENTER

Site Assessment of Load and Energy Reduction Techniques (ALERT)
for GSA Region IV and AFC Staff
Atlanta, GA

Description of FEMP's ALERT Program

FEMP ALERT (Assessment of Load and Energy Reduction Techniques) Teams assist Federal agencies with short-duration site surveys to help site staff save energy and reduce power requirements. The surveys focus on general identification and simple quantification of lower-cost facility modifications that can be implemented fairly easily, while more costly potential modifications and opportunities for using other FEMP resources are also identified while providing only limited detail.

ALERT Team

The team for the Sam Nunn Atlanta Federal Center (AFC) assessment included the following individuals:

Michael MacDonald, ORNL	Sara Farrar-Nagy, NREL	Darrel Hatley, PNNL
Rich Combes, DOE ARO	Melissa Madgett, ORNL	Erick Koehling, EMP2
Lia Webster, Nexant	Tim Wisner, GSA	Darwin Simmons, GSA
Lisa Hollingsworth, DOE ARO	Terry Sharp, ORNL	

Important support was provided by Mr. Al Rouse of GSA, the AFC Facility Manager. Johnson Controls provided valuable assistance in assessing the Metasys system and its interaction with building energy systems, and the facility operating contractor, Vador Ventures, provided critical support in conducting the assessment.

General Facility Information

The AFC is located in downtown Atlanta and provides primarily office facilities for multiple federal agencies. Appendix A shows location and provides some photos. The facility consists of a high-rise tower, a bridge crossing Forsyth Street that connects the high-rise to a mid-rise tower, the mid-rise tower, and the 1924 building (the historic Rich's Department store), directly connected to the mid-rise. A 10-story parking garage (three stories below ground) connects partially to the high-rise tower. The facility is essentially all-electric at this time.

Total floor area without the garage approaches 1.5 Million square feet. Total workers in the facility number approximately 4400. The general operating schedule of the facility is 60 hr/wk minimum, but additional operation is regularly requested and some areas are normally scheduled longer. The overall impact, including some weekend operation, suggests that 66 hr/wk be used for the operating schedule for an Energy Star rating. Computer centers floor area of 11,203 square feet has been verified for the facility.

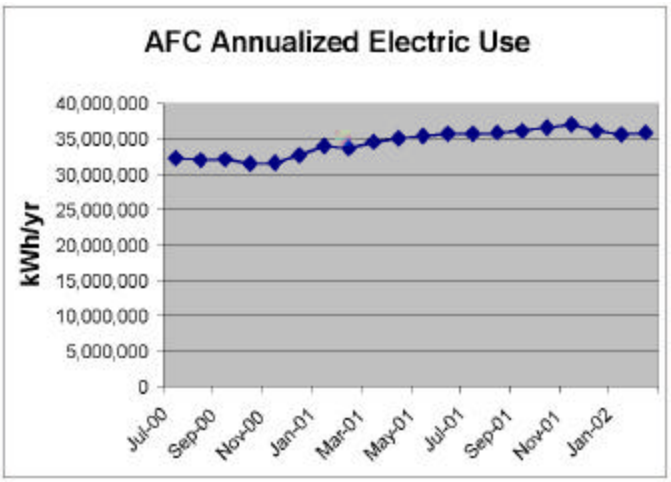
Objective of the Assessment

The objectives of the AFC assessment were to:

1. Improve building energy systems operation, including effective use of the Metasys central control system
2. Help inform how to obtain an Energy Star rating for the facility

Important Energy-Related Concerns

1. EPA, a major AFC tenant, would like the AFC to be an Energy Star certified building.
2. In recent months, the annualized electricity use of the facility has been increasing. From a reasonably steady base of about 32.5 GWh/yr of electricity use for calendar year 2000, the annualized use increased steadily throughout 2001 to a current level of 35.8 GWh/yr, an approximate 10% increase over one year. (This increase could be related to the electric generators' non-use.)



3. The facility is on a real-time pricing (RTP) schedule, which averages fairly low electric costs. The average annual cost per kWh for the facility has decreased over the last year from about 4.7 cents/kWh to 4.2 cents/kWh, an approximate 10% reduction. The pricing reduction combined with the use increase has meant total annual cost of about $1.5 Million/yr is about the same today as it was12 months ago. Customer base load costs, which will be relatively fixed on this schedule, are almost $1 Million/yr.
4. The reliability-centered capacity of the transformer vault (8 MVA) has been exceeded in the past year. If this capacity is exceeded regularly, the utility will likely have to require that capacity be upgraded; and the upgrade will be quite costly, with new major bussing and

multiple additional transformers. This should be easily avoidable through load reduction strategies. A related concern is that kVA data do not appear to be logged in the web-based tool by the utility for this facility, so some adjustment on the data in the web tool may be required to easily verify actual transformer kVA loading.

5. Regional clean air regulations are expected to make potential use of the diesel electric generators in the building for purposes of load shedding during high price periods unallowable within one year (by Spring 2003), although with recent electric costs, use of these generators is not worthwhile anyway, and they have not been used for load shedding in the past year.
6. As a result of these impending regulations, an alternative electricity pricing schedule has been developed (Fixed Pricing Alternative 1, FPA-1) for current real-time pricing customers of the electric utility. The facility faces a decision as to whether to switch to this FPA-1 schedule or remain on their current RTP schedule. Current trends and the natures of the schedules suggest both schedules could be an attractive option (more on that later).

Major Energy Systems

The central chiller plant is in the basement and consists of five Trane chillers, four 1310-ton units and one 500-ton unit, and is located in the basement of the high-rise, with chilled water pumped throughout the facility (bridge, mid-rise and 1924 building). Primary-secondary pumping with variable speed pumps on the secondary loop is used. An Alfa-Laval plate and frame heat exchanger allows water-side economizer operation, with 2000 tons of cooling capacity when the outdoor wet-bulb temperature is 38F and full cooling tower flow is maintained. Towers are on the roof.

The air-handler units (AHUs) are floor-by-floor variable speed units with chilled water coils. VAV zone control attempts to maintain interior space conditions at reasonable comfort levels (with no heating available), and exterior VAV zone control is supplemented with powered induction units with heating coils. Minimal outdoor air is provided, and no air-side economizers are used.

Three 1.8 MW diesel/generator sets are available for electricity generation, and reportedly had been used for electric demand load shedding in the past. The utility rate schedule used is intended for use by facilities that have this load-shedding capability. However, the actual method of switching on diesel generation and maintaining safety disconnects while still connected to grid power is unclear. The units have apparently been used in the past to power only the chillers, which can be disconnected from the grid, and after 20 minutes restarted on generator power. At the current time these units are not run, except for monthly testing.

Energy Use Accounting

GSA maintains energy accounting records via monthly utility bills. Additional extensive data are available from Georgia Power. Appendix B provides a sampling of the large amount of data

available. The most important facets of the energy picture were outlined above regarding the 10% increase in energy use over the last year, the 10% decrease in average electricity price, and the RTP pricing schedule. Although data are plentiful, not much is being done with these data now, and more extensive use of these data should allow better energy management.

Energy Star Approximate Rating

An approximate Energy Star rating for an office building was developed for the facility using the EPA Target Finder tool. The simple table below shows the input data for the rating estimates using Target Finder in the top of the table, and output ratings in the bottom. The model results show that currently the AFC would rate around 62 on the Energy Star office scale, while before the apparent energy increases that occurred during 2001, the rating would have been 70. Thus, simply bringing the building to the energy use apparent before 2001 would provide a 10% reduction in energy use and an increase of 8 points from 62 to 70 on the Energy Star scale. A rating of 75 or higher is needed to achieve Energy Star label status, and a reduction of about 20% from current energy use levels or 7-10% from pre-2001 energy use would be needed to achieve probable Energy Star label status. Floor areas may still need some adjustment (upward), as gross floor area should be used in the final calculation. Other changes in the input data also would impact results.

Check of Energy Star Ratings for AFC

EPA Target Finder model results

AFC Atlanta GA 30301 (zip only for rough reference)

SPACE	Floorspace, sf (usable?)	Hrs/wk	People	PCs	Floors above	Floors below
Office	1,476,362	66	4400	4400		
Computer Center	11,203	168				
Garage	400,000	168	8		7	3
Reported total	1,487,565					
TOTAL	~1,900,000					

Case	Units	Electricity	Energy Star Score	% reduction needed
Current actual	GWh/yr	35.8	62	18%
Before 2001	GWh/yr	32.5	70	7%
Rating of 75	GWh/yr	30.4	75	0%
Rating of 80	GWh/yr	28.3	80	- -

The Target Finder tool can be accessed through the Energy Star website: www.energystar.gov. The Target Finder tool can currently be accessed directly at:

http://yosemite1.epa.gov/estar/business.nsf/content/nbd_targetfinder.htm

(click on the Enter Target Finder icon on the right after familiarizing)

Current Related Energy Activities

A collaborative, pilot O&M program has been started by GSA and DOE at the AFC. Georgia Tech (within 2 miles of AFC) faculty and students will be doing energy modeling and real-time monitoring of AFC energy operations. The EPA has installed occupancy sensors on at least one floor in the high-rise, so there is existing experience in the facility with the use of occupancy sensors, which should be a priority for the future. The EPA is also currently beginning to test options for reducing security lighting energy (unoccupied lighting) and personal computer plug loads.

Approximate End-Use Energy Estimate and Major Potential Savings

A simplified calculation of the breakout of end-use energy in the AFC is instructive for understanding how energy is used in the building and what potential means of reducing energy use and power might be. The first table below shows an estimate of energy use for lighting, plug loads, and AHU fans for occupied and unoccupied periods. Computer centers run all the time, and the estimate of heating and cooling uses an averaging approximation of the seasonal mean power density requirements for heating and cooling during the primary periods of heating and cooling operation during the year. This estimate indicates a total annual cost around $1.5 Million/yr and total annual electric consumption of about 35 GWh/yr for the facility.

End-use	Area, sq-ft	Watts/ sq-ft	Effici- ency	hr/yr	kWh/yr	$/kWh	Elec $ total
Lights,occ	1,500,000	1.2	1	5000	9,000,000	$0.05	$450,000
Lights,unocc	1,500,000	0.2	1	3760	1,128,000	$0.04	$45,120
plug loads, occ	1,500,000	1	1	2860	4,290,000	$0.05	$214,500
plug loads, unocc	1,500,000	0.2	1	5900	1,770,000	$0.04	$70,800
Fans, occ	1,500,000	0.8	1	4420	5,304,000	$0.05	$265,200
Fans, unocc	1,500,000	0.15	1	4340	976,500	$0.04	$39,060
Computer centers	11,000	7	1	8760	674,520	$0.05	$33,726
Cooling	1,500,000	1.7	3	3000	2,550,000	$0.05	$127,500
Heating	1,500,000	2	1	3000	9,000,000	$0.04	$360,000
TOTAL					34,693,020		$1,605,906

Important points to note from this estimate include:

- The long hours of operation for the "occupied" period for lighting, which leads to as much consumption (and quite possibly more) as for heating. Lighting is on for an average 19-hr day for the facility (this is an approximation of the mix of schedules for lighting).
- Due to some AHUs being locked on all the time, the hours of operation for the "occupied" part of AHU fan consumption are estimated higher than they should be (66 hr/wk for 52 wk is only 3400 hr/yr).
- Cooling use and unoccupied plug loads may be underestimated, which would mean some other use(s) would be overestimated — possibly heating for one.
- Electric prices are based on approximate averages of the impact of the RTP pricing schedule used. The adoption of the FPA-1 schedule would alter the prices some, shifting costs around, but would essentially be total cost neutral for the consumption in fiscal year 2001.

The next table shows the percentage breakout that each end use is estimated to contribute to the total electricity use in the AFC. Important opportunities for savings include reducing the extensive lighting schedule, reducing heating and cooling, and reducing AHU fan use.

End-Use	% kWh
Lights,occ	26%
Lights,unocc	3%
plug loads, occ	12%
plug loads, unocc	5%
Fans, occ	15%
Fans, unocc	3%
Computer centers	2%
Cooling	7%
Heating	26%
TOTAL	100%

Additional future opportunities related to space modifications and system practices by tenants could involve reductions in lighting energy and plug loads.

Energy Savings Opportunities

Preliminary Points

- The energy use of the AFC currently leads to an Energy Star rating of about 62, which is above the efficiency norm for typical energy use, but also reasonably typical for a new facility built to current standards
- Energy use prior to 2001 gives an Energy Star rating of 70, which is noticeably above the norm for energy efficiency, but this energy value may be influenced by not including diesel generator fuel use that offset electricity use
- Important opportunities for energy savings are available, but low energy costs reduce cost savings potential
- The end use estimates above gloss over some important detail that will be expanded in the discussion of opportunities
- Pursuit of an Energy Star label for the AFC is of interest, which requires total energy use be reduced to somewhere in the neighborhood of 30 GWh/yr, a reduction of over 5 GWh/yr from current levels, about a 20% reduction
- Some attention to tenant relations will be necessary to successfully implement some of the

recommendations
- As is typical in many building modifications, systems integration and interaction issues can become quite involved
- FEMP ad-hoc assistance, on a short-term basis, to provide support on any of the following recommendations should be available through requests to DOE

Opportunities will be stratified as low-cost (relative to savings), moderate cost (total cost), other, and general. Major capital improvements do not appear needed.

Low-Cost Improvements

The major end uses of occupied lighting and heating both have significant low-cost opportunities for savings. AHU fan loads can also be reduced. Some improvement in comfort, including possible elimination of some of the need for personal space heaters, should also be possible. Reduction of loading on the transformer vault appears likely also.

Heating Energy Reduction

Current programming of the Johnson (JCI) Metasys central control system does not map control of the powered induction units (PIUs) to an unoccupied setting for heating, and no adjustment in settings is made as a result of changes in outdoor air temperature. The PIUs (and other terminal units) provide primary heating and can run even when the central AHU fans are off. As a result, there is significant heating during unoccupied periods that is not necessary, as the control system is telling the PIUs and other terminal units to maintain space temperatures at 72F or above at all times. In addition, there is a small amount of heating kicking on for short periods even during mild weather, which the ALERT Team witnessed during our visit.

Savings approaching 3 GWh/yr appear possible, which correspond to a cost savings in the range of $100,000/yr under either the current RTP or the proposed FPA-1 schedule.

Implementation should require 2-3 days of JCI specialist time for initial implementation, and GSA/Vador should expect and plan for one or two additional callback days for dealing with any system assignment peculiarities and other fine tuning, at about $1,200/day. Training of Vador Ventures staff to understand the changes and be able to implement temporary override requests from tenants should be at least one additional day.

Implementation involves mapping the unoccupied period control of the PIUs and other terminal units to a Metasys data object that schedules the space heating temperature control to be 72F during occupied periods (presumably 6am – 6pm weekdays, although 5pm would probably work fine) and 60F during unoccupied periods (all other times, including any holidays). This programming must allow easy input of temporary override requests, as well as any other reasonable recommendations from JCI.

In addition to the above basic occupied / unoccupied scheduling, some consideration should be given

to varying the occupied period AHU supply air setpoint with outdoor air temperature. Once the outdoor air temperature drops below 60F, the cooling setpoint could be proportionately ramped up from desired cooling season settings of 55-60F to (possibly as high as) 70-72F (this value is quite dependent on the zone and zone loading) as the outdoor temperature drops from 60F to 20F (below 60F humidity is much less a concern). With outdoor temperatures of 20F or below, the supply air to most spaces should probably be almost tepid. This change will save a small amount of energy (even allowing for some slight increases in fan energy), but most importantly it will allow the existing heating capacity to better (and possibly actually) meet heating requirements in the building, as well as probably improving comfort in the interior zones noticeably.

At outdoor temperatures below 45 F, probably only the plate and frame heat exchanger should be used (pressure concerns discussed later in this report) to provide chilled water, but if cooling tower capacity is limited, every effort should be made to assure only the 500 ton chiller runs. Rough estimates indicate the plate frame heat exchanger should be able to provide 50F chilled water at 38F wet-bulb outside, for less than 0.15 kW/ton.

Related to this resetting of supply air temperature, during morning warmup periods before occupancy really begins and when heating is required, the AHU fans should ALWAYS BE OFF, letting the PIUs bring the building up to temperature without having to fight the colder air coming from the AHU fans. This change will require some reprogramming of the AHU fan control. Ventilation air can be eliminated for short periods, with the overall time-integrated provision of fresh air more than adequate for low occupancy levels. AHU fans should start as soon as occupancy is known to increase beyond minimal. In addition, ONLY the 500-ton chiller should be running during morning startup, especially after a cold weekend.

These last changes above could be critical relative to the kVA loading on the transformer vault, as they help to ensure (and likely will ensure) that kVA loading stays safely below the 8,000 kVA limit.

As a side note, installation of space thermostats that could signal that somebody in a particular space wishes to activate occupied mode could save a lot of operational headaches by eliminating the need to program temporary overrides for either lighting or space heating/ cooling, and the Metasys could also log such occupant inputs automatically for space billing. Future use of occupancy sensors could also be important for improving operations.

Occupied Lighting Schedule Reduction

Possibly requiring the most adjustment by tenants, as current lighting schedules go way beyond so-called occupied times, the simple reduction of time that the main lights are left on can provide very significant savings. Current schedules appear to primarily allow cleaning crews a huge window of opportunity to perform their work (our night survey indicated this is extensively not necessary). Because lighting controllers are centralized by floor, an entire floor has to be on to allow any normal lighting on that floor, but current practice is to leave all lights on in the entire facility. Security lighting remains on all the time (unoccupied lighting in tables above).

The recommendation here is to significantly reduce the time that lights are left on in the building. If normal occupied period services are to be provided from 6am to 6pm, then turn off lights wherever possible outside this time band. Potential savings are 2-3 GWh/yr, for savings of $75,000 – 100,000/yr (possibly $18,000 more per year on the FPA-1 schedule if lights can absolutely be kept off between 6-7pm, from June-Sep). Having lights on more than 12 hr/day is not effective energy management. Security in areas like the Nuclear Regulatory Commission space could actually be enhanced by reducing lighting schedules and installing occupancy sensors. With this approach the NRC could monitor occupancy directly, have lights come on to indicate people moving about, and also keep lights off unless needed. Occupancy sensors for the entire facility should be considered for the future.

The combination of just the heating energy reduction measure and this lighting measure might lead to an Energy Star label for this facility.

There may be many reasons given why lights must be left on, as occupants have become accustomed to free lighting. Any such reasons used to justify why lights should be left on should be evaluated carefully, and responses to claimed needs handled as rationally as possible.

Implementation will require some means of allowing cleaning crews to turn on lights on a floor while they are working. Installation of one thermostat per floor that can send a signal to the Metasys, which could be used to indicate that a cleaning crew is present, would allow the Metasys to turn lights on for whatever an agreed upon cleaning period may be for a floor (one hour?). Optionally, a timer could be installed externally to the electrical closet on each floor where the main lighting controller interfaces with the Metasys. Overall installation costs might be $200-300 per floor zone (with 24 + 10 + 6 + 4 or ~ 30-40 zones). Programming of the Metasys to handle the light switching might take another 2-3 days of JCI specialist time.

Some means of also detecting when a non-cleaning crew person hits the switch for more lighting is also probably needed, with appropriate charges resulting. This requirement may take some creative design.

Walled offices will require additional task lighting to have any light when normal lighting is turned off and daylight is not available. There is an opportunity here to make people aware of important task lighting options, hopefully with occupancy sensors to control when task lights are on or off.

Other than a means for cleaning crews to signal the Metasys to turn lights on by floor zone for a specified period, the only additional requirements would be for Vador to reprogram the lighting schedules for each floor, which should be able to be handled as part of their normal duties.

AHU Fan Runtime Reduction and Use of 500 Ton Chiller

Currently quite a few AHU fans are locked into manual mode, meaning they run all the time, regardless of what the Metasys tells them to do. In addition, because these fans are running, the 500 ton chiller cannot handle the building load during unoccupied periods.

Assuring that all the appropriate AHU fans are off during unoccupied periods could save up to 1 GWh/yr at $35,000 – 40,000/yr, but even half that savings at almost no cost is a lot.

Cost of this implementation should be handled as part of normal current operations. Operating staff have to assure that fans are in AUTO mode instead of HAND (manual) operation, and the Metasys programming has to be checked to assure that fans are not running beyond occupied times. A field walkdown of the building should be conducted to verify the correct operation of each fan unit is achieved.

Moderate Cost Improvements

Some additional lighting improvements are also possible and described briefly here.

Cafeteria and Common Lighting

The common areas of the facility were generally found to contain high lighting levels, with the most extreme being the cafeteria in the Tower Building. This cafeteria was illuminated to over 7 Watts per sq. ft., with some areas going to over 8.5 Watts per sq. ft. These should be illuminated to 1.5 watts per sq. ft. and considering the daylighting harvesting that is available; most of the lights could and should be turned off during large portions of the day. The one side of the cafeteria had 90% glazing with the opposite side containing 50% glazing. The end walls did not have any windows. The cafeteria was basically a 50-foot by 80-foot room with windows along the 80-foot dimension. Assuming an average illumination density of 7.0, and a required density of 1.5, 5.5 Watts per sq. ft. could be saved by illuminating to the proper level. Daylight harvesting of the perimeter lighting could additionally save 50% annually of the remaining energy, yielding an energy requirement of 0.75 Watts per sq. ft. for 12 hours per day (6:00 AM TO 6:00 PM). (Daylight harvesting was not included in the savings analysis, so the savings are conservative.) This is opposed to 7.0 Watts per day for 16 hours per day, since the lights now remain on until 10:00 PM when the building is automatically shutdown for the night. It was assumed that the cafeteria is only a 5-day per week operation. Approximate savings for reduced schedule and power density are shown in the table below.

Configuration	Energy Use	Energy Cost
Baseline	0.12 GWh/yr	$ 6,000
Optimized Lighting	0.016 GWh/yr	$ 800
Savings	0.1 GWh/yr	$ 5,000

Exit Lights

The buildings are mostly equipped with fluorescent illuminated exit lights (the EPA space has efficient lights already, as described below). These consume approximately 20 watts of electrical energy each, and operate 24/7, or 8760 hours per year. New efficient lighting is available without sacrificing visibility. Light Emitting Diodes, (LEDs) are readily available and are the exit light of choice, consuming 2.7 watts for green lights and 5 watts for the red. The Tower Building, 22nd floor, had

40 exit lights, which was observed to be typical of the areas audited. This gave a density of exit lights as one per 1000 sq. ft. of rental space. Potential approximate energy savings for exit light changeout are shown in the table below. Some small maintenance savings over the long term are also achieved, but since no savings occur for an extended period, they were ignored in these calculations.

Configuration	Energy Use	Energy Cost
Baseline	0.25 GWh/yr	$ 10,000
Optimized Lighting	0.03 GWh/yr	$ 1,400
Savings	0.21 GWh/yr	$ 8,500

Walled Office Lighting

Individual offices that are partitioned out of the main floor area are over illuminated 1.5 – 2 times the recommended levels. Many of these offices could have one-third to one-half the lamps removed from the fixtures, which combined with appealing task lighting, would actually improve lighting in these offices. No savings are offered, as implementation is tricky and requires fairly extensive tenant involvement, including effective offering of appealing task lighting and occupancy sensor control on all lighting.

Other

Task Lighting and PC Unoccupied Loads

The night audit determined that the task lights in the various offices were left ON a minimum of 20% and a maximum of 80% of the time. These task lights were all T-12 style lamps with magnetic ballasts, which means that a ballast is also consuming about 50% as much as each light.

Most people working in the facility have a personal computer. The number of employees in the facility is approximately 4400, and of these, the minimum area was found to have 20% of the computers ON after hours, and the worst areas were found to have 80% still operating. These findings indicate that, on average, approximately 50% of the people in the facility do not shut down their computers when they leave work.

Unoccupied plug loads are estimated at over 1.5 GWh/yr, of which task lights and computers left on account for a major portion. Implementing shut down of both personal computers and task lights during unoccupied times leads to approximate savings of 1.5 GWh/yr or more, worth over $50,000/yr. This shutdown should be an important priority for GSA for this facility, as lessons learned about how to accomplish this shutdown here could likely be applied at many other facilities.

One means of achieving this shutoff is currently being tested by EPA in this facility. Some means similar to what EPA is testing for task light and PC shutoff has potential important implications for reduced energy use in this facility. Future build-outs could incorporate unoccupied shutdown methods for PCs and task lighting, possibly as integrated occupancy sensing controls in the systems

furniture used.

Effort to educate tenants as to the importance of implementing this shutdown also appears very useful and needed.

One other means for encouraging this shutdown would involve increased billing of tenants by submetering electric use on each floor, but with the low electric costs, tenants are likely to be unconcerned with any resulting cost increase.

General

Safety Issues

Two safety issues are mentioned for consideration. First, the security lighting could be specially marked to allow determination of whether these lights are functioning during normal working hours, which would allow lamp repair / replacement while overall lighting is at safe working levels.

Second, the plate and frame heat exchanger designed to provide water-side economizer cooling for the facility is only rated at 250 psig operating pressure, but the pressure gauges on both the tower and chilled water loops indicated near 300 psig was being maintained. A professional engineering determination of the actual system operating pressures and the safety of operating this Alfa-Laval unit should be made.

This pressure disparity for this one piece of equipment may mean that all the pressure ratings on valves, pumps, etc, located in the basement and part of either the tower water or chilled water system should be checked against actual system operating pressures.

Plate and Frame Heat Exchanger

The Alfa-Laval plate and frame heat exchanger is apparently designed to provide the following performance at 38F wet bulb temperature outdoors, and the unit is also apparently intended to provide all building cooling whenever outdoor wet-bulb is 38F or below. Likely the unit could provide all cooling requirements at outdoor dry-bulb temperatures of 45F or below. Data obtained from the equipment submittals is:

Model: M30-HD Operating Pressure: 250 psig

	Chilled Water Side	**Tower Water Side**
GPM	6000	7485
Inlet Temp	58.0	48.0
Outlet Temp	50.0	54.4
	24,000 kBtuh (2000 tons)	LMTD = 2.75F

Metasys Tracking of Building kW

The Metasys currently is set up to track building kW, apparently obtaining a signal from the Georgia Power totalizer. Currently these data are only stored for one day. The output observed for the period of March 25 – 26, 2002, while the team was at the facility, indicated some instability in the reading, which appears to suggest a problem with signal resolution, but not enough data were available to confirm this difficulty.

The data point ID hierarchy is: AFC, MECH-PLT, PLT-MISC, BLDG-KW.

Future energy management activities at the AFC could benefit significantly from a reporting of daily kWh against models of expected kWh/day for given conditions, which would allow drift from expected performance to be picked up quickly. After any building kW signal resolution issues are resolved and calibration against the Georgia Power equipment is completed, the maximum and minimum kW for each day and the total kWh for each day should be tracked and logged by the Metasys. Reporting of daily kW and kWh results might be daily during any time when the building is undergoing changes, and possibly weekly during more stable periods. Comparison of actual kW and kWh against models of expected values for each day during periods of stable operation is one of the most effective tools for system tracking, energy management, and operational problem identification.

Check Valve in Decoupler Loop

A check valve is currently installed in the decoupler piping loop that is directed toward isolating the primary from the secondary chilled water loop. A major system concern with the presence of this check valve relates to potential burnout / blowup of pumps in this system, as in cases when the plate and frame heat exchanger loop is not open for circulation and the chillers trip off or shut down for some reason. In such a scenario, secondary loop pumping ends up with a major dead head load. A recent experience of this situation occurred the month of this ALERT visit, and one pump housing was almost 300F. Elimination of the check valve ability to stop reverse flow in the decoupler loop should eliminate this potentially major breakdown situation, while probably only leading to small increases in pumping energy for short periods of the year.

Georgia Power FPA-1 Pricing Schedule

The FPA-1 alternative pricing schedule is designed to be revenue neutral relative to the current RTP costs, using FY 2001 as the calibration baseline year. This schedule may be an advantage for the AFC if current low prices are truly the bottom of a price cycle, as the schedule allows the AFC to lock in at these prices. FPA-1 eliminates the customer base load and only uses on-peak and off-peak pricing. On-peak hours are weekdays from 2pm – 7pm, June through September, excepting Labor Day and Independence Day holiday.

Alternatively, staying on the current RTP schedule may be advantageous if prices continue to fall.

Stack Effect in the High-Rise

Testimony was heard about doors between the garage and the high-rise being held open by air movement in the winter. During the site visit there was an occasion where these doors were observed being held open a little, but the visit did not occur during extremely cold weather.

Implementation

Implementation of the low-cost measures is the most sure path to approaching Energy Star efficiency, and the AFC should consider early implementation of these as they are relatively easy to accomplish. Total energy savings may be 7 GWh/yr of electricity use on the high end, with over 5 GWh/yr very likely from the three measures, which is the savings needed to achieve an Energy Star label. Total cost savings are in the range of $200,000 – 250,000/yr.

Implementation of moderate cost measures will lead to modest additional savings, which are in the noise level relative to the major savings possible from the low-cost measures.

Achieving unoccupied period shutdown of PCs and task lighting leads to major additional savings expected to be over 1.5 GWh/yr, but implementation of this shutdown is complicated. Potential cost savings over $50,000/yr may be possible.

The GSA contracting arrangement with Georgia Tech may allow some ability to accomplish portions of the changes recommended here. Additionally, GSA may wish to find a means to allow DOE National Lab personnel and/or contractors to have direct access to buildings in the Southeast. This approach might allow small contracting arrangements to accomplish needed small operational changes as described in this report. In the AFC national lab personnel and possibly contractors could accomplish some of the recommended changes, as well as help Georgia Tech monitor what is accomplished. Other buildings could also be studied and treated to meet GSA needs to improve operational efficiency and achieve improved energy systems operation. Another option is for GSA to request specific assistance from FEMP through the annual call for technical assistance, or through a specific ad hoc request through the regional DOE office in Atlanta for assistance.

Inclusion of incentives in operating contracts to achieve improved energy efficiency appears potentially useful also.

APPENDIX A — FACILITY LOCATION and PHOTOS
Sam Nunn Atlanta Federal Center
Atlanta, GA

The Sam Nunn Atlanta Federal Center is located in central downtown Atlanta, near the Georgia Dome and the recreational attraction Underground Atlanta (see arrow on map). Construction of the facility was completed in phases, with the first completed in 1996 and the final phase in 1998. The facility consists of a high-rise tower, a bridge crossing Forsyth Street that connects the high-rise to a mid-rise tower, the mid-rise tower, and the 1924 building (the historic Rich's Department store), directly connected to the mid-rise. A 10-story parking garage (three stories below ground) connects partially to the high-rise tower.

The AFC from the east is shown in the picture to the left, with the high-rise tower in the back, the mid-rise tower to the left, and the Rich's building in the foreground.

A view from the main AFC plaza in front of the high-rise tower looking east shows the Rich's building on the left, the mid-rise tower on the right, and the bridge between high-rise and mid-rise in the right foreground. The high-rise can be seen reflected in the glazing of the mid-rise tower.

A colorful window highlights the interior of the main AFC entry in the high-rise tower.

APPENDIX B — ENERGY DATA EXAMPLES
Sam Nunn Atlanta Federal Center
Atlanta, GA

Energy data are available both from GSA records and from Georgia Power directly for this facility. The GSA data are entered by hand into a database from utility billing statements. Apparently anomalous data from the GSA database were observed for this study, and report of previous anomalies was heard. With the abundance of data available from the utility, use of the utility data appears most useful. Examples of the data available are given below.

Download from:
EnergyDirect.com

User Defined Name: Sam Nunn Federal Center
Name on Bill: US GENERAL SERVICES ADMIN
Doing Business As:
Address: 61 FORSYTH ST SW
Location: ATLANTA GA 30303
Account Number: 3447407

Month	Meter Read	Billing Days	Total kWh	Peak kW Demand	Electric Service Total	Average Cost
Mar-00	3/24/2000	29	2381538	6236	$100,757	4.23
Apr-00	4/25/2000	32	2555080	6016	$107,864	4.22
May-00	5/24/2000	29	2367487	5793	$115,606	4.88
Jun-00	6/23/2000	30	2536527	6221	$86,104	3.39
Jul-00	7/25/2000	32	2739685	6609	$156,520	5.71
Aug-00	8/24/2000	30	2787064	6138	$161,576	5.80
Sep-00	9/25/2000	32	2492739	6158	$117,243	4.70
Oct-00	10/24/2000	29	2115507	5778	$98,608	4.66
Nov-00	11/22/2000	29	2379198	7426	$115,331	4.85
Dec-00	12/22/2000	30	3845598	7802	$180,085	4.68
Jan-01	1/25/2001	34	4233600	7515	$195,404	4.62
Feb-01	2/23/2001	29	3234934	7301	$145,708	4.50
Mar-01	3/26/2001	31	3269312	7157	$134,017	4.10
Apr-01	4/25/2001	30	3055014	7080	$141,375	4.63
May-01	5/24/2001	29	2732143	5562	$130,615	4.78
Jun-01	6/25/2001	32	2922752	5891	$127,555	4.36
Jul-01	7/25/2001	30	2734488	5700	$112,067	4.10
Aug-01	8/24/2001	30	2809660	5495	$128,433	4.57
Sep-01	9/25/2001	32	2816535	5486	$121,026	4.30
Oct-01	10/24/2001	29	2503687	5770	$110,542	4.42
Nov-01	11/26/2001	33	2888655	5815	$117,773	4.08
Dec-01	12/26/2001	30	2958081	7206	$114,856	3.88
Jan-02	1/25/2002	30	3678120	7935	$133,750	3.64
Feb-02	2/25/2002	31	3481287	7609	$123,819	3.56

The basic monthly data above provide the overall picture of the consumption at the AFC. These data can be loaded into a spreadsheet and additional calculations can be performed. The data below indicate the impact of the customer base load (CBL) in the current real-time pricing schedule the AFC is under. The CBL has been calculated for each half-hour period in the year. CBL cost is always paid, and depending on whether the AFC is over or under the demand of the CBL for a specific half-hour period, they either pay the RTP price for the difference in electricity use between the CBL and actual for that half hour if above the CBL, or they are refunded the RTP price times electricity use difference if under the CBL. One source indicated that many thousands of dollars had been saved through use of the electric generators during very expensive electricity periods in the past. Stabilization of natural gas costs and the brokering of electric power throughout the country appear to be moving electric RTP pricing down.

Month	Total kWh	CBL Cost	RTP Cost	Other Charges	Electric Service Total	Average Cost
Mar-00	2381538	$78,281	$21,854	$622	$100,757	4.23
Apr-00	2555080	$77,851	$29,398	$615	$107,864	4.22
May-00	2367487	$71,586	$43,388	$633	$115,606	4.88
Jun-00	2536527	$70,847	$41,492	($26,235)	$86,104	3.39
Jul-00	2739685	$76,365	$79,552	$603	$156,520	5.71
Aug-00	2787064	$84,556	$76,542	$478	$161,576	5.8
Sep-00	2492739	$82,914	$33,785	$544	$117,243	4.7
Oct-00	2115507	$74,844	$23,192	$571	$98,608	4.66
Nov-00	2379198	$82,765	$32,083	$482	$115,331	4.85
Dec-00	3845598	$89,490	$90,245	$350	$180,085	4.68
Jan-01	4233600	$90,101	$104,984	$319	$195,404	4.62
Feb-01	3234934	$84,398	$60,929	$381	$145,708	4.5
Mar-01	3269312	$83,928	$49,680	$408	$134,017	4.1
Apr-01	3055014	$79,815	$61,169	$391	$141,375	4.63
May-01	2732143	$74,677	$55,546	$391	$130,615	4.78
Jun-01	2922752	$76,298	$50,542	$716	$127,555	4.36
Jul-01	2734488	$78,836	$43,583	($10,353)	$112,067	4.1
Aug-01	2809660	$85,067	$42,650	$716	$128,433	4.57
Sep-01	2816535	$83,159	$37,152	$716	$121,026	4.3
Oct-01	2503687	$75,329	$34,497	$716	$110,542	4.42
Nov-01	2888655	$88,310	$28,747	$716	$117,773	4.08
Dec-01	2958081	$90,921	$23,219	$716	$114,856	3.88
Jan-02	3678120	$82,712	$50,322	$716	$133,750	3.64
Feb-02	3481287	$85,103	$38,000	$716	$123,819	3.56

Additional detail on the cost breakout between the CBL and the RTP components is given in the table below.

Month	CBL kWh	CBL Cost	Avg CBL Cost	RTP kWh	RTP Cost	Avg RTP Cost
Mar-00	1529926	$78,281	5.12	851612	$21,854	2.57
Apr-00	1510769	$77,851	5.15	1044311	$29,398	2.82
May-00	1248344	$71,586	5.73	1119143	$43,388	3.88
Jun-00	1218418	$70,847	5.81	1318109	$41,492	3.15
Jul-00	1411201	$76,365	5.41	1328484	$79,552	5.99
Aug-00	1532967	$84,556	5.52	1254097	$76,542	6.1
Sep-00	1551973	$82,914	5.34	940766	$33,785	3.59
Oct-00	1245765	$74,844	6.01	869742	$23,192	2.67
Nov-00	1546029	$82,765	5.35	833169	$32,083	3.85
Dec-00	1813978	$89,490	4.93	2031620	$90,245	4.44
Jan-01	1838342	$90,101	4.9	2395258	$104,984	4.38
Feb-01	1611077	$84,398	5.24	1623857	$60,929	3.75
Mar-01	1592378	$83,928	5.27	1676934	$49,680	2.96
Apr-01	1428481	$79,815	5.59	1626533	$61,169	3.76
May-01	1239641	$74,677	6.02	1492502	$55,546	3.72
Jun-01	1285483	$76,298	5.94	1637269	$50,542	3.09
Jul-01	1349809	$78,836	5.84	1384679	$43,583	3.15
Aug-01	1535828	$85,067	5.54	1273832	$42,650	3.35
Sep-01	1544118	$83,159	5.39	1272417	$37,152	2.92
Oct-01	1250409	$75,329	6.02	1253278	$34,497	2.75
Nov-01	1747061	$88,310	5.05	1141594	$28,747	2.52
Dec-01	1849930	$90,921	4.91	1108151	$23,219	2.1
Jan-02	1583190	$82,712	5.22	2094930	$50,322	2.4
Feb-02	1689815	$85,103	5.04	1791472	$38,000	2.12

Detailed half-hour data are also available as shown below:

Datetime	kW
1/1/2001 0:30	5161
1/1/2001 1:00	5154
1/1/2001 1:30	4860
1/1/2001 2:00	4914
1/1/2001 2:30	5158
1/1/2001 3:00	5138
1/1/2001 3:30	5121
1/1/2001 4:00	5162
1/1/2001 4:30	5152
1/1/2001 5:00	5168
1/1/2001 5:30	5199
1/1/2001 6:00	5210
1/1/2001 6:30	5319

ALERT Site Interview Record
DOE FEMP

Date:
Site Name / Agency:
Site Contact – Name
Contact Phone:
Interviewer:

Part 1: Informational Interview

(Regional Office or Team Leader)

The intent of these initial questions is to help determine how good of a candidate the site/building may be for an ALERT and what specific objectives the site would like to accomplish with the ALERT. The best person to interview may be the Lead Facility Manager for the site/building.

Date: 1/30/02
Agency: GSA Region 4
Site Name: Sam Nunn Atlanta Federal Center
Site Address: Forsyth Street
Site City/State: Atlanta, GA
Contact Name: Tim Wisner
Contact Phone: 404-331-6417
Interviewer: Rich Combes

1. Please describe the site/facility:

SNAFC is the largest federal building in the ARO nine-state region, at 1.49 million rentable square feet. Opened in 1996, the City of Atlanta built the facility and leases it to GSA, who sub-leases to a number of federal agencies, including EPA, Army Corps of Engineers, Social Security, etc. The facility is three distinct spaces – an historic building (1924 building), a multi-story bridge with offices, and a 23-story high rise. An integral parking garage is used only by the tenants and the building is all-electric, with electric resistance heating and reheat, making it winter-peaking.

2. What is the desired objective of the ALERT assessment and what is the motivation?

___ a. Energy cost containment in areas experiencing price volatility; **YES**
___ b. Peak load management; **YES**
___ c. Assessing on-site generation to reduce energy vulnerability and enhance mission reliability;
___ d. Improve operational discipline and reduce O&M costs; **YES**
___ e. Other, describe: _____

***3. Utilities*:**

a. What utilities are on site? **X** Electricity ☐ Natural Gas ☐ Other: _____
b. Who pays the utility bill? *(whose line item is it? operations, engineering, etc)* ____GSA Region 4_____
c. What is the estimated annual cost of utilities? *(electrical rates above $0.7/kWh are good candidates)*
   i. Electricity __$1.7 million____
   ii. Natural Gas _____
   iii. Other _____

ALERT Site Interview Record
DOE FEMP

Date:
Site Name / Agency:
Site Contact – Name
Contact Phone:
Interviewer:

4. ***Site*** *(This information will be documented in detail by the ALERT team. Typically a square footage of 250,000 or greater will be a good candidate.)*
   a. Are buildings Federally owned? **No**
   b. What building types are on the site? **See above**
   c. What is the square footage? **1.49 million, rentable**
   d. Will specific buildings be targeted for ALERT? **All buildings are connected and use common energy systems**

5. ***The work will require some staff time and/or contractor expense to implement. Do you have the staffing, funding flexibility and authority to redirect some O&M activities to implement the no-cost and low-cost ALERT recommendations?***

   GSA staff and O&M contractor will assist ALERT team with analysis. Tim Wisner, GSA Region 4 Energy Coordinator will be responsible for implementing ALERT recommendations. The SNAFC is currently Region 4's highest priority for energy efficiency improvement.

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6. ***ALERT assessments generally cost $10k to $15k. Do you have resources to support the assessment in any of the following areas?***
   ___ a. Provide the site controls specialist during the site visit **YES**
   ___ b. Provide the site O&M specialist during the site visit **YES**
   ___ c. Other

7. ***Does site management have a preference for a particular organization to conduct the ALERT?***
   GSA Region 4 has worked closely with ARO and ORNL on a number of energy projects in existing buildings, O&M evaluations, Design Assistance, and ESPC work. ORNL would be the preferred ALERT provider.

8. ***When does the site want the ALERT team to visit the site?*** *(i.e. timeframe)*

   As soon as the visits can be arranged for all parties.

9. ***Are there others at the site we should be contacting to get specific information for the ALERT?***
   No

Interviewer recommendations regarding priorities and objectives:

SNAFC is a very large GSA building and has potential for significant improvements in O&M procedures, BAS control optimization and utility projects, such as load-shedding on the current Real Time Pricing rate . In addition, FEMP and GSA have collaborated in a pilot O&M program at the SNAFC, with Ga. Tech (within 2 miles of SNAFC) faculty and students will be doing an energy model and real-time monitoring of SNAFC energy operations. The combination of factors offers FEMP a great opportunity to use the new ALERT program to rapidly improve energy efficiency in the SNAFC – a high priority for GSA Region 4.

Date:
Site Name / Agency:
Site Contact – Name
Contact Phone:
Interviewer:

Part II: Team Leader Interview

(Prepare for Site Visit)

The intent of these questions is to determine the scope of the ALERT to prepare the team and site personnel for the site visit.

1. Site:

a. What is the site location/address? *(provide map if available)*

61 Forsyth St, SW

Atlanta, GA 30303

Map & directions to AFC at http://www.epa.gov/region4/visitors/transpor1.htm

b. Do you have a building inventory? *[(type, square footage, age, etc.) Request electronic or hard copy.]*

YES

c. Do you have any industrial processes or other energy intensive operations/building types?

NO

d. Are there particular buildings you would like assessed? *(Refer to attachment 1)*

All space in AFC

e. Are there specific systems or concerns in the buildings to be assessed that you would like addressed? *(controls, equipment, etc.)*

Optimized operation of BAS (JCI Metasys); Energy Star rating for building

2. Facility Management:

a. The work will require some staff time and/or contractor expense to implement. Do you have the staffing, funding flexibility and authority to redirect some O&M activities to implement the no-cost and low-cost ALERT recommendations? Who is responsible for funding implementation of the measures recommended?

YES. Tim Wisner, GSA Region 4 Energy Coordinator, 404-331-6417

b. What energy management plans and staffing exist now?

GSA Repair & Alterations Branch staff tracks energy use, plans and implements modifications.

c. Does the site have a load curtailment plan in place? When and how is it activated?

YES. AFC is on Real Time Pricing schedule which assumes use of standby generators to shed load at high-cost times.

d. What energy efficiency or demand reduction efforts have been completed, started, or planned?

EPA and GSA are doing a pilot of occupancy controlled lighting and plug loads

e. What energy audits and/or building condition assessments have been done?
None, other than monitoring utility bills, building opened in 1996

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2. Facility Management (continued)

f. How well has management supported doing the recommended actions?
Management is committed to reducing operating costs of the AFC and Tim Wisner states the AFC is Region 4's highest priority for energy reduction

g. Would you provide copies of these documents to me? *(email is preferable)*
???

REFER TO ATTACHMENT 1

3. Brief description of building systems to assess scope. (*HVAC/Lighting/Generation/Building Construction/Other) BEGIN FILLING IN ATTACHMENT 1.*
AFC is all-electric, winter-peaking facility with measured peak demand of 7.5 MW during heating season. Central chiller plant (Trane chillers) is located in basement of high-rise, with chilled water pumped throughout facility (bridge, mid-rise and 1924 building). Perimeter fan coil units are used for heating and cooling is accomplished with VAV boxes and zone control. All heating is electric resistance and during coldest days, the system has difficulty maintaining comfortable temperature.

4. Building Controls:

a. What is your site and building control system? *(manufacturer, version, age, may have multiple systems)*
JCI Metasys

b. What systems are controlled with the automation systems?
HVAC, lighting, air-side economizers

c. Are there problems with operation of the control system?
Complexity, lack of on-site expertise in trouble-shooting and programming

d. Who manages and trouble-shoots the control system? *(in-house staff, contractors, bldg owner)* Will they be available during the ALERT site visit?
O&M contractor, Vador Ventures (started at AFC on 3/1/2002)

5. Occupancy: How satisfied are the occupants of the facilities? *(request copies of surveys, complaints, etc)*
Have requested copy of latest tenant satisfaction survey.

6. Utilities:
Georgia Power Company

a. Describe the metering capability. Is there one meter at the gate or are there several or individual building meters? (kW, kWh, real-time vs. monthly)
Single facility electric meter

b. What is the name and phone number of the person who can give us meter data?
Darwin Simmons, GSA, 404-331-5405

Part III: Building Information

(Site Visit Interview)

The building information is to be completed by the ALERT team and site personnel.

1. ***Building Occupancy & Work Schedule:*** *(Attachment I)*
   a. How many occupants? **6584**

   b. Who are the major occupants? **EPA, SSA**

   c. What are their work hours? **M – F, 7am – 6 pm**

2. ***What is the location of the building(s) being assessed?***
   Downtown Atlanta

3. ***Who operates and maintains the buildings?*** *(in-house staff, contractors, bldg owner)*
   GSA contractor, Vador Ventures

4. ***Building Facts*** *(Attachment 2.)*
   a. How are the buildings heated and cooled? *[Gas, electricity, etc.] [Central site-wide systems vs. stand-alone per-building systems?]*
   Electricity
   b. What general condition assessments have been done?
   Monitor utility bills, PM by O&M contractor
   c. Can you provide a list of building square footage per type of occupancy/space?
   11,000 ft2 of computer center, 1.47 million office space w/ cafeteria, conference center
   d. Can you provide a list or inventory of the buildings' characteristics? *(age, condition, HVAC and motor inventory)*
   Opened 1996

5. ***Building Controls: What is automated?*** *(systems, points, PC / terminal inventory?)* ***Who manages the control systems?*** *(name and phone number)*

6. ***What are the costs for all energy sources consumed at the site?***

Utility	Demand	Annual Consumption	Rate

Date:
Site Name / Agency:
Site Contact – Name
Contact Phone:
Interviewer:

a.	Electricity	kW	$29.6x10^6$ kWh	$0.0574 /kWh
b.	Natural Gas	Therms	_____ therm/yr	$_____ /Therm
c.	Water	Gallons	_____ gallons/yr	$_____ /gallon
d.	Sewer		_____	$_____
e.	Other _____		_____	$_____

7. ***Please provide utility rate schedules and 12 months of billing copies. (give a due date)***
   See e-mail from Mike MacDonald, ORNL

8. ***What are the largest electrical end-uses?*** *(See response to Part II, question 1b)*
   HVAC; electric peak is during heating season

9. ***What uses are essential or critical to maintain in event of outages?***
   Computer centers

10. ***Do you recharge the utility costs to occupants or programs? What is the recharge method?***

11. ***Electricity Generation: How much of the buildings' load can your generators provide? Can you provide key data for the on-site generators: types, capacity, age, % of bldg load, and whether generators are designed for short or long hours of operation?***

    50 – 70% of electric demand; 3- 1.8 MW diesel/generator sets, typically used 250 hr/year for load shedding; no transfer switchgear currently in place to parallel grid; emission limitations going into effect on April 2003 will probably preclude use of standby generators for load-shedding

12. ***Projects: For the buildings that will be assessed, do you have any projects planned, under construction or recently completed?***
    Georgia Tech (nearby) faculty and grad student will be under contract 4/1 – 12/31/2002 to GSA to do DOE2 model of AFC and recommend optimization measures for energy systems

13. ***Describe the load curtailment plan.*** *(Team Lead: Document for the ALERT report. If the site does not have a plan in place, briefly discuss the model and encourage them to make use of it. If the site is located in one of the transmission constrained areas assist the site with setting up the implementation process.)*
    O&M contractor tracks RTP costs and uses standby generators during periods above threshold cost, with utility recommending load-shedding periods