

PHASE II ENERGY PERFORMANCE CONTRACT REVIEW COMMENTS/QUESTIONS and ESG RESPONSES

GENERAL

At present we only have \$4.4M of spending authorization for this project, so we need to have the final report structured so that it can be referenced specifically as to investment \$, \$ savings, recurring costs and energy savings associated with \$4.4M. Need to also include a second reference for the difference between the initial amount and the amount listed in the draft report.

ESG Response: The project has been split into two phases, with the first phase set to \$4.4 Million and the second phase set to the remainder of the project value.

We need to have the detailed breakdown of the cost estimates for each of the ECM, so that we can do “due diligence” on the review of the amount of the investment versus the payback? This has been requested previously.

ESG Response: Cost breakdown for various ECMs have been provided to the County. Please refer to email from Karen Galindo dated 11/21/2008. ESG will provide more details to facilitate County’s due-diligence review. Meeting to review a new cost break out has been scheduled for January 30, 2009.

Where do we show the cost and impact of the monitoring/savings validation on the overall project’s viability? This is a cost that has to be considered in the cost viability of the project.

ESG Response: The cost for measurement and verification (M&V) and Energy Savings Guarantee Bond (ESGB) are provided in the cash flow (refer to Column 7 from left) and are paid for from energy savings. The first year M&V costs (including the ESGB) are included below for County’s reference. Please note that the M&V and the ESGB costs are escalated annually at 3% in the cash flow.

Phase I, first year M&V+ESGB = \$10,413

Phase II, first year M&V+ESGB = \$ 3,100

Please provide a breakdown for the costs and savings associated with the Dorsey and the Gateway (separate) buildings, since we told you that a much shorter amortization period would have to be used.

ESG Response: Please refer to the following two tables below for Dorsey and Gateway buildings. The building-specific implementation costs have already been provided to the County.

Dorsey Building

Group	ECM	Dorsey Building	Savings	SPB, yr
Lighting	Upgrade Lighting & Controls	X	\$ 63,552	8.8
	Optimize Vending Machine Operation	X	\$ 597	3.2
HVAC System Upgrades	EMCS Tridium upgrade	X	\$ -	NA
	EMS upgrades	X	\$ 48,252	1.5
Envelope Upgrades	Upgrade Building Envelope	X	\$ 2,544	17.2
AGGREGATE VALUE	Dorsey Building		\$ 114,944	5.9

Note: The SPB calculation does not include PM/CM, P&P Bond or Phase I Study costs

Gateway Building

Group	ECM	Gateway Building	Savings	SPB, yr
Lighting	Upgrade Lighting & Controls	X	\$22,444	8.4
	Optimize Vending Machine Operation	X	\$ 740	3.1
Cooling System Upgrades	Cooling Tower VSD Drives	X	\$ 1,951	9.0
HVAC System Upgrades	EMCS Tridium upgrade	X	\$ -	NA
	EMS upgrades	X	\$ -	NA
	AHU, RTU VSD	X	\$12,644	4.5
Envelope Upgrades	Upgrade Building Envelope	X	\$ 1,996	6.4
Miscellaneous	Window Film	X	\$28,885	7.2
AGGREGATE VALUE	Gateway Building		\$68,660	7.1

Note: The SPB calculation does not include PM/CM, P&P Bond or Phase I Study costs

To the extent possible all lighting modifications should allow the use of the County standard fluorescent lamps (25W T8, 4' and color 5000K)

ESG Response: The above point was discussed and the County has approved ESG's use of 28-Watt lamps in lieu of the 25-Watt lamps discussed above.

The analysis throughout the study uses Lonworks protocol for the buildings system controls in lieu of the BACnet protocol, which we would consider the industry standard. We need the study/analysis to include the BACnet protocol in lieu of the Lonworks protocol, unless there is a clear technical/financial justification for not doing so.

ESG Response: As per County's direction, ESG will provide BACNET-compliant controls.

EXECUTIVE SUMMARY

What is the impact of not incorporating the proposed \$100,000 County contribution for the Detention Center boiler project? We have a lot of concerns that incorporating this funding will cause a distortion in the evaluation of this effort and we don't see how the fact that we were originally going to do some repairs changes the normal analysis for an energy project.

ESG Response: The project has changed considerably and the Phase I project now has \$400,000 capital contribution from the County. The \$100,000 requested in the proposal is no longer required and the boiler replacement has been included in the Phase I construction.

Do not include the comments on the 15 vs 13.5 year period, since we were told by DGS that the 13.5 is the State's standard.

ESG Response: The maximum term allowed in the State IDC is 15 years. This project is 15 years which includes a 12 month construction period.

ECMS RECOMMENDED IN MULTIPLE BUILDINGS

The write-up is too general relative to the building envelop improvements; needs to at least give a few examples of what is covered by this term.

ESG Response: Detailed scope of building-specific envelope upgrades, included in the appendix, is provided below:

Building Envelope -- Detention Center

a. Adjust and replace weather stripping as required for:

- 1. Nine (9) doors**
- 2. Four (4) garage doors**
- 3. Eighteen (18) steel doors**

Building Envelope – Scaggsville Public Safety Complex

a. Adjust and replace weather stripping as required for:

- 1. Twenty eight (28) doors**
- 2. Ten (10) garage doors**

b. Seal fifteen (15) penetrations in the main mechanical room

c. Seal 32-foot long crack in wall in the mechanical room

d. Seal 1,215 linear feet of roof/wall intersection

Building Envelope – East Columbia Library

a. Adjust and replace weather stripping as required for:

- 1. Four (4) doors**
- 2. Nine (9) steel doors**

b. Seal 1,095 linear feet of roof/wall intersection

Building Envelope – Central Library

a. Adjust and replace weather stripping as required for:

1. Six (6) doors
2. Four (4) steel doors
3. One (1) garage door

b. Install 125 square feet of insulation (energy wall) in the soffit area at the front entrance

c. Seal 1,875 linear feet of cracks around the window frames, wood beams, seams, joints and connections of the wood ceiling, identified using the blower door and infrared camera

d. Seal 860 linear feet of roof/wall intersection above the drop ceiling in the office area on the 2nd floor

Building Envelope – Recreation & Parks HQ

a. Adjust and replace weather stripping as required for:

1. Four (4) doors
2. Twenty (20) steel doors
3. Nineteen (19) garage doors

b. Seal 1,160 linear feet of roof/wall intersection above the drop ceiling in the office area on the 2nd floor

Building Envelope – Dorsey Building

a. Adjust and replace weather stripping as required for:

1. Twenty two (22) doors
2. Five (5) garage doors

b. Seal 1,962 linear feet of cracks around windows

c. Seal 2,424 linear feet of roof/wall intersection

Building Envelope – Gateway Building

a. Adjust and replace weather stripping as required for twenty five (25) doors

b. Seal 618 linear feet of cracks around windows at masonry gap

c. Install 184 square feet of insulation (energy wall) in the soffit areas at the overhangs

d. Insulate 368 square feet of exposed floor in the soffits

Detention Center

How did you document that the existing chillers in the Detention Center are operating at 1.1kW/ton?

ESG Response: We procured the original selection and performance ratings for the chillers from the manufacturer. The performance rating for the chillers was derated for age, tube fouling and partial load operating conditions. The existing Trane chillers (compressor + auxiliary electrical loads of the chiller) were rated at 0.89 kW/ton when they were new and at full load operation.

Scaggsville Public Safety Complex

You should also stipulate that the proposed installation of a natural gas service to service the proposed new boilers in the main mechanical room could also be economically used for other purposes within the building.

ESG Response: Agreed. Once the gas service is available to the building, the County can extend the gas service further within the building, and utilize gas service up to the capacity of the proposed extension.

If natural gas boilers (and the associated natural gas service) is installed at Scaggsville Public Safety, piping or a separate service to the fire department side of the building should be considered:

- 1) Heating in the engine bays and to replace the propane purchased for the eight burner kitchen stove;
- 2) Replacement of the oil burner assembly on the PVI water heater in the main mechanical room should also be considered.
- 3) Oil tank will have to remain, with piping modified (supply/fill and overflow/return) to supply the 200kv emergency generator.

ESG Response: The numbered responses below correspond to the numbered comments above:

- 1) ESG did consider gas-fired infrared heaters for the engine bay but did not recommend them due to poor economics
- 2) Replacement of oil burner has been included in the scope of the proposed work
- 3) Agreed; the oil tank will remain in place and ESG had not proposed to remove the oil system

The replacement of the isolation valves for the chillers should be done in conjunction with new control scheme to allow circulation of the glycol/water mixture in the pipelines periodically during winter months.

ESG Response: Agreed.

East Columbia Library

For the proposed Green Roof, will the addition to the existing roof cause any problems with the structural supports/roofing system? Where on the existing roof?

ESG Response: ESG has proposed 1200 square feet of green roof, which weighs 17-20 lbs/ft² (saturated dead load). The location and the layout of the green roof will be finalized during the

construction phase with County's input and direction. ESG's proposal of the measure includes structural load analysis of the existing roof at ECL due to the green roof.

Dorsey Building

The discussion should include a statement that to the extent possible the replacement of the RTU's should be designed/installed to allow for the planned future roof replacement or coordinated with the roof replacement.

ESG Response: Please note that the new rooftop units (RTUs) will be placed on the existing roof curbs and the RTU installations do not impact the roof replacement.

Gateway Building

In the section "Week Days" the Gateway Buildings hours of operation did not include the college classes that conclude at 10:00pm, or the weekend college classes.

ESG Response: ESG will add the above exception to existing footnote 'b'.

APPENDICES

BUILDING DESCRIPTIONS

CENTRAL LIBRARY

In the opening description of the building the report lists it as a one story building when in fact it is three stories (ground floor, first floor, second floor).

ESG Response: ESG will make the necessary correction.

The building temperatures are set for 74⁰F cooling, and 68⁰F for heating.

The perimeter cabinet heat pumps are set by facilities staff and the controls cabinet is locked. Keys are supplied to the library staff in case of customer requests. Facilities will reset the temperature settings.

The Central Air Handling system has outside air dampers installed for gangs of air handling units. Facilities determined that the drive motors for the dampers only operated 0-100% open. This created high humidity conditions during the summer months. Variable drive motors are being installed and software upgrades are in effect to regulated outside air and allow free cooling during low ambient days.

A heat curtain is being installed at the main entrance to the library by one of our requirements contractors under the supervision of facilities staff.

ESG Response: During the construction phase of the project, ESG will continue to discuss and work with the County to dove-tail the proposed ECMs with other on-going projects.

GATEWAY BUILDING

In the section “Heating and Cooling” the report only lists the five heat pumps located in the mechanical rooms on each floor. The building has additional heat pumps on the first floor for the college classrooms, board room, and the college computer server room. In addition there are four (two in service) water source heat pumps on the third floor in the buildings communication and server room, and two on the fifth floor in the executive conference room.

ESG Response: The AHUs included in the report are only those that will be affected by the scope of work.

SCOPE OF WORK—DETENTION CENTER

For the replacement of the boiler piping in shown in the included drawing, **RESERVE RETURN** should be utilized, per manufacturer recommendations

ESG Response: The new boilers are connected to the existing piping header within the Detention Center that currently serves the existing Cleaver Brooks boilers. Modifications to the boiler piping within the boiler room was not included in the scope other than those modifications needed to re-connect the new boilers to the existing heating water header. A review of the existing design drawings indicates that the header is set up in a reverse return arrangement.

EAST COLUMBIA LIBRARY

In lieu of the recommendation of window tinting at East Columbia Library it is felt that repair of the “Mecoshades” computer to operate the window blinds in the building (@ approx. \$2,000), might be a better option.

ESG Response: The County should continue to control ambient lighting by using “Mechshades,” which helps control the ‘visible’ spectrum of the light. The window film proposed by ESG will simply help cut down on the ultra-violet radiation, which contributes to heat gain and leads to discoloration of the building interior finish. During the winter months, the film reduces the radiation heat loss from the building, which helps save energy.

For the East Columbia Library the report mentions the replacement of 8 - 250w. quartz flood lights, when there are actually 20.

ESG Response: Agreed. ESG’s as-built lighting reconciliation report will reflect the actual installed quantity.

CENTRAL LIBRARY

The installation of the variable drive motor on the cooling tower should take place in the fall when ‘free cooling’ might be possible.

ESG Response: Agreed.

The installation of LED lighting for the parking lot should consider the inclusion of solar panels and batteries on the poles to supply the energy for the lights.

ESG Response: ESG did consider solar panels with battery backup for the above application, but reduced the scope to just the LED lighting due to poor economics.

GATEWAY BUILDING

The removal of one of the drive motors on the cooling tower and replacement of the remaining motor with a unit equipped with a variable frequency drive. Will the VFD need to be kept in a conditioned space? Rooftop mechanical rooms are heated only.

ESG Response: The proposed Honeywell VSD's are capable of operating within environments ranging in temperatures from -14 deg F and 122 deg F. The mechanical spaces are ventilated and should be no more than 10 deg F above ambient conditions as long as the ventilation systems are functioning and properly sized. If the County is aware of poor ventilation within this room, then we should evaluate including the addition of supplemental exhaust within the mechanical space. A problem with ventilation was not evident during the facility audit.

Shouldn't the systems water pumps be replaced for the open and closed loops at the same time?

ESG Response: The pumps are not impacted by the installation of a VSD on the cooling tower fans. The condenser water loop will remain constant volume.

Daylight harvesting for Bldg B & C – which bldgs are these? And what is the impact on the roofing system?

ESG Response: Buildings B and C are next to the Recreation and Parks HQ building. No adverse impact on the roofing system from the proposed daylight harvesting measure.

Central Library

The County's long-term plan includes a possible gut-and-rebuild plan for the Central Library. ESG recommends keeping the building in the project scope because the ECMs recommended for the Central Library have an aggregate simple payback of nine years.