

From: Scott Locke [mailto:slocke@umci.com]

Sent: Friday, August 7, 2015 11:19 AM

To: Dave Robison <drobison@fortworden.org>

Cc: 'Jeff Jackson' <jeff@thayerventures.com>; Gee Heckscher <gheckscher@fortworden.org>; Ian McFarland <imcfarland@umci.com>; Douglas Kilpatrick (Doug.Kilpatrick@des.wa.gov) <Doug.Kilpatrick@des.wa.gov>

Subject: Fort Worden - Proposal for Investment Grade Audit

Dave,

As Ian mentioned already, we are extremely excited about the opportunity to work with you and the Fort Worden team on this project. And we look forward to helping you develop conservation & sustainable projects that will support your vision for the campus.

Attached is a draft proposal for the initial Investment Grade Audit that we discussed. This will include measures targeted towards lighting, controls and solar. Once you've had a chance to review, please feel free to contact me with any questions or comments as needed.

On another note, following our meeting yesterday, we continued to brainstorm potential options for future mechanical (heating) system renovations...and the various technologies that could be employed on your campus. While I do think that the Variable Refrigerant Flow (VRF) system we discussed has a lot of merit from a simple cost/benefit analysis; I also believe there are numerous other technically creative options that could be employed in a very remarkable way...but would come with a significant cost. The key would be to find and secure targeted state/federal grants that could help to offset the additional cost. A few of the thoughts that we discussed in-house include:

- There are now available several versions of large capacity, high temperature heat pumps that utilize Carbon Dioxide as the primary refrigerant. This equipment is being utilized in Europe and provides very high hot water (HW) distribution temperatures at a very efficient COP. If a large part of the campus is incorporated into a heating HW loop, a heat pump of this type could be utilized to serve a majority of the campus very efficiently
- The existing 3 million gallon water storage tank could be re-appropriated to serve as a thermal storage tank. Allowing the campus to generate and store heating capacity for long periods of time; which would allow you to generate heating at opportune times and provide heating from the storage tank for days at a time without turning on the heat pump (or other heat sources as applicable).
- We took a closer look at the opportunity to utilize seawater as a heat sink after the discussion in our meeting. This is something that we may want to analyze further in the future as a heat source if the core campus is interconnected with a heating HW loop.
- If a HW loop is employed, solar thermal applications could be considered for generating heating capacity and incorporating into the heating HW return side of the system. This would be most applicable if a thermal storage tank is employed to store capacity for future use.

These are just a few thoughts for future heating systems. Sorry for the long-winded email, but I think there are some very interesting systems that would provide a great story for the community...and help you meet your goals for the Fort Worden campus. As we begin the initial IGA development, we would like to support your team by continuing to brainstorm these, and other options as we gain a better understanding of the campus. And also to keep abreast of upcoming grant opportunities that could help fund a project of this type.

Thanks again for the opportunity. We are very much looking forward to working with you!

Best Regards,

Scott Locke, PE, LEED AP

Manager, Energy Services

University Mechanical Contractors, Inc.

We Build Value

11611 49th Place W

Mukilteo, WA 98275

Direct (206) 368-6974

Mobile (206) 295-3214

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August 6, 2015

Fort Worden Public Development Authority
200 Battery Way
Port Townsend WA, 98368

ATTENTION: DAVE ROBISON

SUBJECT: INVESTMENT GRADE AUDIT FOR ENERGY SAVINGS PERFORMANCE CONTRACT

Dear Mr. Robison:

We appreciate the opportunity to work with you and the Fort Worden team in the pursuit of your goals to revitalize the historic site, and hope to be a vital part of your project development team on this exciting venture. The following is a Proposal for University Mechanical Contractors (UMC) Energy Services Group to perform an Investment Grade Audit (IGA) for Fort Worden Public Development Authority. This IGA will target projects that will deliver needed energy, sustainability and infrastructure upgrades. All work associated with this effort will be developed in coordination with the State of Washington's Energy Savings Performance Contracting (ESPC) program.

STATEMENT OF UNDERSTANDING & OBJECTIVES:

The intent of this IGA is to identify and develop Utility Conservation Measures (UCM's) in the identified areas and system types that can be implemented to improve energy efficiency, enhance sustainability and improve infrastructure. This effort will identify the scope of work, schedule, construction plan and financial basis for the execution of an Energy Savings Performance Contract. The IGA will also provide a turn-key implementation proposal that includes the associated guaranteed cost and savings.

Fort Worden has specific goals and development criteria that UMC will work to incorporate into this audit. These goals include the following:

- Develop projects that will help Fort Worden meet a stated vision & plan of transforming the fort into a financially self-sustaining lifelong learning center.
- Implement measures that will have a lasting impact on sustainability goals
- Reduce the overall energy, water and operational costs for the facility
- Upgrade existing infrastructure
- Reduce costs associated with deferred and ongoing maintenance
- Review and facilitate the utilization of potential funding sources that may be available (including utility incentives, state & federal grants, pass-thru tax credits and other potential funding sources as applicable)
- Targeted measures will be developed based on projects that will meet a simple payback that falls within the life expectancy of the measures installed (including incentives, grants, utility savings, operational savings and capital replacement dollars)



All facilities located on the Fort Worden campus will be included in the audit unless otherwise excluded.

The following conservation measures will be included as part of this audit.

- Lighting Upgrades and Retrofits
 - Facility lighting (interior & exterior)
 - Street lighting upgrades to LED (target dark sky compliant fixtures)
 - Target fixtures that meet historical requirements
 - Lighting Controls
 - The following facilities have upcoming or future renovations scheduled and will be excluded from the interior lighting scope of work.
 - Buildings 201, 202, 203, 300, 305, 326, 331, 332, 333, 334, 335, 336, 352 & 353

- New Campus Controls Upgrade / Building Automation System
 - Install direct digital control (DDC) for control & monitoring via new Building Automation System (BAS)
 - Provide building controls for future expansion throughout core campus. Provide open protocol system throughout for ease of expansion
 - Implement select DDC conservation measures
 - Provide options for sub-metering at select locations (elect & water) with the ability to monitor & track ongoing utilization
 - Develop control work to coordinate with facilities that have future scheduled renovations. This includes the following facilities.
 - Buildings 201, 202, 203, 300, 305, 326, 331, 332, 333, 334, 335, 336, 352 & 353

- Solar Photovoltaic and/or Solar Thermal Project
 - Develop options for application of solar photovoltaic and/or thermal projects at Commons Building and possibly Laundry Facility

ACTIONS TO BE PERFORMED: UMC's Energy Services Group will complete the following actions leading to implementation of the identified utility conservation measures.

Detailed Site Assessment and Energy Audit

- Perform a detailed audit & analysis of electrical, fuel oil, propane and water consuming equipment associated with the areas identified
- Measure and monitor the operating characteristics and energy usage of select equipment/systems to quantify actual operating parameters. This will be done through a combination of stand-alone measurement devices and trend loggers (provided by UMC), as well as utilization of trending options on the existing Building Automation System.
- Interview facility staff to understand & prioritize issues or deficiencies that need to be resolved
- Collect and review equipment design documents, diagrams and O&M manuals
- Establish operational and energy baselines as applicable
- Review local, state and federal code requirements



- Coordinate with BPA and local utilities to obtain an estimate of utility incentives associated with recommended measures
- Analyze grant opportunities and work with Fort Worden Public Development Authority to facilitate applications as applicable
- Perform all preliminary design as appropriate for each measure
- Develop guaranteed energy savings associated with each measure
- Develop guaranteed maximum construction cost for each measure
- Develop life-cycle cost analysis for the overall project as well as for each UCM
- Provide a report that is clear and concise and can accurately be used to further develop or implement the project and make informed financial decisions
- Coordinate with Fort Warden personnel to assure that disruptions to ongoing operations is minimized during audit

Turn-key Construction Proposal

Provide a final Investment Grade Audit for all recommended UCM's that includes the following:

- Project Scope of Work
- Energy and operational baselines
- Guaranteed Energy Savings
- Estimated Operational Savings
- Guaranteed Implementation Cost
- 20 year cash flow analysis based on life cycle cost
- Measurement and verification plan
- Implementation schedule
- Provide equipment specification/cut sheets
- Provide preventative maintenance requirements for the proposed equipment
- Provide a cost proposal that includes a breakout of all pricing

PROJECT ASSUMPTIONS:

In developing this cost proposal UMC assumes the following:

- Access to facilities and equipment for site assessment will be provided.
- 3 years of historical utility usage will be provided
- As-built design documents will be provided
- Capital & Operations budgets (existing and historical) for applicable systems will be made available
- Existing equipment O&Ms will be provided
- Asbestos assessment reports for each building and area affected will be provided

TIMELINE:

- Begin IGA – Upon receipt of the notice to proceed
- Substantial Investment Grade Audit completion – scheduled to meet requirements of Commerce Grant application deadline
- Final Investment Grade Audit completion – within 120 days from receipt of notice to proceed
- Anticipated Construction Period – 2016

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REQUIRED PAYBACK CRITERIA:

Planned cost effectiveness criteria will be developed based on a blended project that will provide an overall project payback of less than 20 years (including incentives, grants, tax credits, loans and capital contributions). This minimum payback does not place a limit on the overall project goals or project payback that Fort Worden may decide to implement.

AUDIT FEE:

The fee to develop an Investment Grade Audit is **twenty nine thousand five hundred dollars (\$29,500)**. All fees assessed will be included in the final turn-key ESPC implementation costs. If Fort Worden chooses not to implement projects that meet the development criteria, then Fort Worden will reimburse UMC the proposed audit fee.

We look forward to working with Fort Worden Public Development Authority and the Washington State Department of Enterprise Services on developing this important project. If you have any questions or concerns please contact me at (206-368-6974).

Sincerely,

Scott Locke, PE, LEED AP
Manager, Energy Services
University Mechanical Contractors, Inc.