March 3, 2011

INFORMATION ITEM

Energy Performance Contract – Auxiliaries Facilities – MSU (Bozeman Campus)

THAT

Montana State University hereby provides the Board of Regents with an update on the energy audit of its Auxiliary Facilities, and outlines a Plan of Action and Timeline for proceeding with critical cost saving energy conservation projects in the near future.

A. INTRODUCTION

1. MCA 90-4-1101 states:
   (1) "The legislature finds that:
   a. Conserving energy in local government and state agency buildings and vehicles will have a beneficial effect on the overall supply of energy and can result in cost savings for taxpayers;
   c. Energy performance contracts are a means by which local government units and state agencies can achieve energy and water conservation without an initial capital outlay.
   (2) It is the policy of the state of Montana to promote efficient use of energy and water resources in local government and state agency buildings … by authorizing local government units and state agencies to enter into energy performance contracts."

2. A goal of the Department of Environmental Quality is to fulfill the legislature's intent of promoting efficient use of energy and water resources, and helping local government units and state agencies to enter into energy performance contracts.

3. The Department of Environmental Quality is empowered to solicit proposals from providers of energy performance contracts, and to evaluate the qualifications of contractors on the basis of their knowledge of design, engineering, and installations associated with energy performance contracts; their experience in post-installation project monitoring; ability to guarantee conservation savings; management capability; ability to integrate financial resources into projects; and, experience with projects of similar size and scope.

4. The Department of Environmental Quality has also contracted with a third-party consultant, Trident Energy Services, Inc., Longmont, Colorado, to review contracts/terms, evaluate energy audit projections and to analyze investment grade audits of prospective project packages. (See Exhibit 1)

5. Montana State University has developed a model project utilizing one of the energy performance contractors that were prequalified by the Department of Environmental Quality; and, they are focusing their efforts on projects that will provide solid energy saving returns.

B. STATUS OF ENERGY PERFORMANCE CONTRACT for MSU Auxiliaries Facilities

1. There are three primary reasons why Montana State University is pursuing the development of this Energy Performance Contract.
   a. We are committed to doing all that we can to reduce our impact on the environment – and every one of these projects we can complete will directly reduce our carbon footprint.

b. We are committed to maintaining our long tradition of investing in energy conservation modifications that reduce utility consumption and our costs – and an Energy Performance Contract provides us with one more proven methodology for successfully implementing and financing building modifications that will produce significant energy cost savings.
c. And finally, our aging residence facilities have numerous mechanical and electrical systems that are just marginally functional, and some of which that are close to obsolete – and many of these potential projects will result in the replacement of systems before they fail.

2. An Energy Performance Contract provides us with a unique method for accomplishing a complex, comprehensive package of numerous energy conservation projects.
   a. Prior to the adoption of the Energy Performance Contract (EPC) statute in 2009, energy conservation projects were treated as individual, stand-alone conservation projects. Each individual project followed its own design/low-bid/build process with lengthy consultant/contractor procurement procedures. There was no way to effectively combine a complex mix of a broad range of technical systems modifications into a single project. As a result, energy conservation projects tended to focus on larger, single-system modifications as opposed to addressing a broad range of energy conservation opportunities throughout a building.
   b. The EPC statute provided state agencies the opportunity to employ an alternative method which included streamlining the contracting process, combining a complex mix of a broad range of technical systems modifications into a single project, blending deferred maintenance components with energy conservation elements, and having a single source of responsibility from the initial energy audit through project execution, measurement, verification and savings guarantee.

3. The business model for energy performance contracts is fairly straight forward. McKinstry will essentially act as a design-build contractor.
   a. The firm will receive compensation for its engineering work, its management of future construction projects, and its measurement and verification reporting after the construction is complete.
   b. MSU will still be able to review detailed contractor bids for each project we commit to. So, we will still have a way to ensure that the University is receiving the best possible price for each modification it makes.
   c. However, MSU selected McKinstry for its breadth and depth of engineering expertise and its experience and capabilities in executing the construction/installation of the resulting energy modifications. This expertise provides MSU the opportunity to evaluate a comprehensive report of over 300 potential energy conservation modifications that McKinstry has identified, described, priced, and evaluated for our review.

4. Some of the modifications MSU will implement may seem very basic, and not a decision that requires a complicated economic feasibility study – and that's true. But these will be blended with other modifications that aren't necessarily obvious investments, as well as with other projects that reflect some other primary objectives (such as deferred maintenance). But as a result of this blend of projects, we can accomplish a number of improvements, and still maintain a reasonable cumulative energy savings.

5. McKinstry has concluded its initial audit of over 2,000,000 square feet of MSU's Auxiliary Facilities. The audit process first identifies the rough order of magnitude of implementation cost, energy savings, and simple economics to allow early prioritization for further, more detailed analysis.

6. The Contractor is now completing the Investment Grade Audit Report, which will become the basis for the initial construction contract.
   a. This focuses on the specific modifications that MSU selects for inclusion in its Phase I Project.
   b. While final selection of the modifications is dependent upon the completion of the Investment Grade Audit, the Phase I Project is expected to involve approximately 20-22 specific modifications, in 4 separate buildings (See Exhibit 2 for Inventory of Proposed Phase 1 Energy Performance Contract Projects).
   c. The overall Construction Cost for Phase I is expected to be in the range of $1.9-2.2 Million, and it is expected that the modifications will produce energy savings that would fulfill an overall payback schedule of approximately 15 years.

7. MSU is hopeful that it can secure Regent authority to proceed with this Phase I Project yet this Spring, so that most of the work can be completed during the Summer 2011 construction period.
   a. Assuming this first phase is successful, over the course of the following 3-4 years, MSU is hopeful that it can secure Regent authority for subsequent Project Phases like this.

C. OVERVIEW OF ENERGY PERFORMANCE CONTRACT

1. Energy Performance Contracting

   An Energy Performance Contract (EPC) is a project delivery method that vertically integrates all consulting, construction, and post-construction services to identify, capture, and retain efficiency improvements in the operation of facilities. An Energy Services Company (ESCO) acts as the single point of accountability to deliver all of the EPC services. Operation efficiency improvements, in the case of MSU's proposed projects, are primarily energy and water savings, but well defined operation and maintenance savings are also anticipated.

   In many cases, clients choose to finance a portion of the project, with the guaranteed energy savings equaling the loan payment obligations. The end result is budget neutral to the client, since the loan payment would be less than or equal to the reduction in utility bills. This approach allows clients to stretch limited capital and accomplish more with less. Financing may be linked to the EPC or completely separate. In MSU's case, financing will be separate through a Montana Board of Investments Intercap Loan.

   An EPC is typically executed in the following phases:

   a. Technical Energy Audit

      This phase involves investigation of potential energy, water, and operating savings associated with energy consuming systems in buildings. An initial list of identified projects, or Facility Improvement Measures (FIMs), is then reviewed and reduced to those that meet the Owners' goals for the project, including financial performance and retirement of deferred maintenance. The analysis of this optimized list is then taken to an investment grade quality which involves detailed energy modeling to confirm potential savings and complete schematic design to arrive at a guaranteed maximum price of construction. The Investment Grade Audit is the basis for the final selection of FIMs that are then bundled into a project to be implemented through the EPC. A monitoring and verification plan to measure the success of the implemented project is developed and included in the EPC.

b. The Energy Performance Contract
The goal oriented results of the investment grade audit are executed in a design-build project that has performance based goals. During this phase, design is completed, reviewed with the Owner, and then implemented. The cost of the project and the energy savings are guaranteed by the ESCO. The energy savings will be guaranteed for 3 years per MCA 90-4 Part 11.

c. Measurement and Verification
Achieving the performance contract's savings goals is measured in accordance with the International Monitoring and Verification Protocol. The monitoring and verification plan developed in the audit phase is implemented and reporting mechanisms are put into place.

2. Methodology for addressing time value of money in the financial analysis of an Energy Performance Contract.
The Investment Grade Audit addresses the time value of money through cash flow analysis. An example of that analysis is included in Exhibit 3 – ECM Summary Report and Cash Flow Analysis.

The Cost of Capital - Nearly all Energy Performance Contracts are financed by third-party institutions. MSU's EPC project is proposed to be financed directly by MSU (i.e., not through the ESCO). The intended financing partner for MSU's work is the Montana Board of Investments Intercap Loan Program. Because the funds to implement the projects are being borrowed, the energy savings resulting from the work must be of a guaranteed level to fund both principal and interest components of the resulting payments. MSU intends to limit its debt repayment period to 15 years. Interest payments are clearly indicated on the sample proforma in Exhibit 3.

Energy Cost Escalation - In order to address the time value of money in the analysis of energy projects, the escalation rate of MSU's purchased energy sources must also be considered. And, since it is virtually assured that energy costs will continue to escalate with time, the effective annual savings will grow with the escalating value of avoided energy usage in the future.

3. Construction Cost Guarantee: Section 2.2 of the (draft) Energy Performance Contract addresses this item. It states in part:

"In consideration for the services to be provided, Montana State University shall pay the Contractor up to a maximum of $_____, in conformance with…." a Maximum Project Allowable Cost attachment.

(See Exhibit 4 for a *sample* Maximum Allowable Project Cost attachment – from the McKinstry/Great Falls Public Schools Energy Performance Contract).

4. Energy Savings Guarantee: Section 3.2 of the (draft) Energy Performance Contract addresses this item. It states in part:

"For each one-year period of the Contract after the commencement date, Contractor shall measure and/or calculate energy-related cost savings, as specified in the Measurement and Verification Plan, and provide a report of the cost savings to Montana State University within 90 days after the end of the one-year period.

If Energy and Cost Savings achieved during the guarantee year are less than the Guaranteed Energy and Cost Savings, as defined in the Energy Cost Savings Guarantee attachment, Contractor shall pay Montana State University an amount equal to the deficiency.

Contractor shall remit such payments to Montana State University with 30 days after written notice by Montana State University of the deficiency."

The contract further stipulates that savings in excess of the guaranteed amount shall be used to abate contractor payments for previous years' deficiencies, but in no event shall credit for excess savings be used to satisfy savings guarantees in future years of the contract.

See Exhibit 5: S*ample* Energy Cost Savings Guarantee attachment – from the McKinstry/Great Falls Public Schools Energy Performance Contract).

D. <u>SPECIFICS – ENERGY PERFORMANCE CONTRACT</u> – MSU Auxiliaries Facilities

1. <u>McKinstry's track record of performance on previous and current contracts</u>. (This material provided by McKinstry Company, Inc. Also refer to Exhibit 6 for McKinstry's Statement of Qualifications and to Exhibit 7 for a list of McKinstry's Clients and Projects)

   a. <u>Guaranteed Energy Savings</u>
   McKinstry is extremely proud of the fact that we have not issued a "short-fall" check to any of our past or present clients for the non-performance of guaranteed energy savings in a McKinstry Energy Services Contract. We believe this to be due to our integrated design/build delivery process, which greatly mitigates this risk, while providing excellent engineering and energy cost savings analysis.

   b. <u>Guaranteed Maximum Project Costs</u>
   Once again, McKinstry is extremely successful at guaranteeing the maximum construction/project costs of our Energy Services Performance Contracts. However, there have been a few situations where McKinstry did not meet our own and/or the expectations of our customer. As you will learn, as you read the examples below, McKinstry stepped up and did the right thing for our customers:

   <u>Washington State University – Beasley Coliseum</u>
   McKinstry contracted with Washington State University to upgrade the lighting in Beasley Coliseum, their major indoor sporting/events arena on campus. The contracting method was a performance contract where McKinstry guaranteed the cost of the project, the performance of the lighting system, and the energy savings. During the audit phase of the project, a lighting model was created that predicted the lighting levels after the retrofit. The lighting levels were designed around the standards for televising NCAA basketball games. At the time, it was our understanding that the criteria dictated by television broadcast requirements defined the upper limit of necessary light levels.

   McKinstry completed the lighting retrofit on-time and on-budget. In addition to providing better lighting throughout the coliseum, the project also addressed many safety issues by removing aging ballasts that were leaking PCBs. Also, the new lighting system provided more options for switching and lighting control than the previous system.

After the project was complete, the light levels in the coliseum were tested. The light levels met the television broadcast requirements. However, one additional criteria which, in retrospect, should have been better evaluated, was the requirement for digital photography. Due to the fast action of sporting events, digital photography in the arena needed to use very fast exposures and needed the lighting levels in the coliseum to be at specific levels. It turns out the level for digital still photography actually exceeded the requirements for television broadcasts.

As a result, McKinstry needed to add additional lighting throughout the coliseum, at a cost of $60,000 to McKinstry. WSU did not pay for any of these costs. Since the addition of these lights also created additional energy use, we also verified that the energy savings guarantee would still be achieved. Since the maximum lighting for digital still photography was only required a minimal amount of time throughout the year (i.e. major sporting events), the energy savings guarantee was still achieved even though additional lighting was added.

Walla Walla County

Mckinstry completed a comprehensive $2,000,000 HVAC upgrade for Walla Walla County about five years ago. After the project had been completed for approximately one year, there were several issues that came to light that needed to be resolved. McKinstry spent approx. $50,000 to rectify issues related to terminal units that were undersized and/or noisy. While these issues were not related to energy savings and/or the warranty, they were issues that directly impacted performance, which McKinstry was committed to fix. Currently the facility is operating correctly and the county is happy with the end result.

2. Example of a McKinstry/University Project similar to MSU's.
Additional descriptions of McKinstry's projects that share similarity with MSU's project are included in Exhibit 7. The following narrative describes a similar project completed by McKinstry for Eastern Washington University:

McKinstry has completed a wide variety of projects to date at Eastern Washington University. The projects have focused on improving the energy and operational performance of campus facilities. To begin, McKinstry conducted an audit of approximately 2,200,000 square feet of core campus Academic, Auxiliary, and Infrastructure buildings to identify the greatest needs and opportunities of the University. At completion of the audit, projects were prioritized and completed through separate phases of work. McKinstry is the single point of accountability for all aspects of the work, responsible to design, construct, and verify operational performance of the completed work. To date, the work has resulted in the following benefits:

- Project Value $14,743,000
- Electrical Savings 3,884,389 kWh
- Gas Savings 167,177 Therms
- Annual Energy Savings $316,324
- Annual Operational Savings $260,254

Isle & Kingston Halls: This $3 million project focused on major HVAC renovations in Isle and Kingston Halls. In Isle Hall, the existing wall unit ventilators were removed from the project. McKinstry installed a new forced air system, including new roof top AHUs, duct distribution and VAV units, and connected the existing hydronic system in the building to the VAV hot water heating coils. At Kingston, the large basement AHU was converted from constant volume to variable air

volume, with new VAV boxes installed throughout the space. In both projects, there was substantial other work need to support the mechanical upgrades including roofing, electrical, new lay-in ceilings, painting, drywall, and other miscellaneous trades. Scheduling was critical in order to accommodate EWU's timeline, with the work occurring over the summer resulting in a compressed schedule.

Rozell Physical Plant: McKinstry also focused on work in Rozell, the primary physical plant for EWU. At this building a 200 ton plate & frame heat exchanger was installed for free cooling. Also, a new 1000 ton cooling tower was installed to improve the performance of the chillers. A campus-wide initiative was also developed to replace inlet guide vanes and vari-cones with VFDs where applicable. This occurred in eight buildings on campus.

Control System Upgrades: Much of the work also focused on upgrading the control systems on campus. Delta was the single-source provider of controls on the campus, however, EWU made a policy decision that they wanted to have a second campus control vendor. To facilitate this direction, McKinstry developed information that EWU used to evaluate control vendors, with ATS selected as the other potential vendor. Bid packages for control projects were developed by McKinstry and then evaluated by the ESCO team to select the appropriate vendor. All told, new control systems were installed in five buildings on the campus.

Tawanka Commons: One unique project included Tawanka Hall, a multiuse building on campus that included a production kitchen, dining facilities, and various offices and other common spaces for student and staff use. On this project, EWU blended performance contracting with a traditional procurement project to leverage the benefits of the ESPC process. The overall project budget was approximately $3,500,000, with McKinstry responsible for approximately $600,000 and a contractually separate design & general contractor team responsible for the other $2,900,000.

Under the total project, EWU wanted to modernize the aesthetic quality of the building, as well as add an additional 18,000 square feet. McKinstry's scope of work focused on upgrading the existing infrastructure of the system to improve energy performance. One unique aspect of the project was that the energy upgrades had to be closely coordinated with the other design consultants so the infrastructure was correctly designed to accommodate the expansion and new space requirements. Ultimately, this project was a good example of the flexibility of the ESPC program and how it can be utilized by universities to help stretch limited capital resources.

Aquatics: This project involved a challenging renovation of the pool complex. The existing HVAC system was not functioning properly, creating many challenges including temperature control, poor energy performance, and structural degradation due to high humidity. McKinstry analyzed the entire facility and delivered a $1.4 million project that replaced the existing HVAC system, upgraded the lighting system, and replaced the pool liner. Also as part of the project, the interior of the building was filled with scaffolding so that the existing lay-in ceiling could be removed. This was done so the structural degradation could be addressed through treatment and painting of the ceiling and structure. The installed measures drastically improved the energy performance, improved lighting, and addressed the structural deterioration. The new lighting solution also located all lights around the perimeter of the pool instead of over the pool.

This vastly simplified the maintenance effort to perform maintenance on the lightings and eliminated safety hazards for EWU staff. The project was completed over a three month shutdown of the facility and had to be on-line in time for Seahawks training camp.

Physical Education Activities: This project focused on making HVAC and lighting improvements throughout the physical education facilities on campus. Eight air handling units were replaced including duct distribution systems and controls. Additionally, lighting retrofits were completed in two gymnasiums, Jim Thorpe Fieldhouse, and Reese Court. The upgrades significantly improved the physical environment and replaced aging equipment.

Physical Education Classroom: In the Physical Education Classroom building, McKinstry replaced the existing HVAC system with new HVAC system. The existing system was aging, in poor condition, and used a constant volume air flow system. Additionally, all building controls were pneumatic and had very limited control capabilities. The new HVAC was chosen after a Total Cost of Ownership analysis was completed. The chosen system was a central variable air volume (VAV) air handling unit with terminal VAV boxes and reheat coils. The central AHU was equipped with new fan wall technology. Baseboard perimeter hot water heat was also installed on both floors of the building. All new electronic controls were installed with energy saving strategies. New T5HO lighting was installed throughout the building and extensive work was done on the steam station in the basement mechanical room. New lay-in ceilings were installed throughout the buildings as well as painting the interior spaces. An electrical service upgrade was also completed as a part of this project. The $4 million project was fairly intrusive to the occupant space, resulting in the need for a well coordinated plan to minimize the impact of the building. To address this issue, McKinstry worked with EWU to come up with a two phased approach that allowed the second floor to remain occupied while the first floor was renovated. After the first floor was complete, it became occupied while the work on the second floor commenced.

3. Financial strength of McKinstry.

McKinstry is an established firm in the Northwest with proven stability and capacity:

- Annual revenues for 2011 will be approximately $450 million
- Overall Bonding Capacity - $300 million with $100 million single project
- Profitable 49 out of 50 years
- Successful execution of single projects in excess of $50 million

(Refer to Exhibit 8 for addition financial information.)

LISTING OF EXHIBITS

1. Trident Energy Services, Inc. – Background & Experience Statement
2. Inventory of Proposed Phase 1 Energy Performance Contract Projects
3. Sample – ECM Summary Report & Cash Flow Analysis – GTF Public Schools
4. Sample – Maximum Project Allowable Cost – GTF Public Schools
5. Sample – Energy Cost Savings Guarantee - GTF Public Schools
6. McKinstry Statement of Qualifications
7. McKinstry Clients & Projects
8. McKinstry's Financial Information