Jefferson County School District 509 J
Request for Proposal

Building Automation System – Jefferson County Middle School

DUE DATE & TIME
March 8, 2019 no later than 2:00 p.m. PDT
No Late Responses Will Be Accepted

SUBMIT TO:
Jefferson County School District
Martha Bewley
445 SE Buff St.
Madras, OR 97741

Support Services Office
445 SE Buff Street • Madras OR 97741
Telephone: (541) 475-6192

TABLE OF CONTENTS

I. REQUEST FOR PROPOSAL

Notice is hereby given that proposals will be accepted by the Jefferson County School District at the Support Services Office, located at 445 SE Buff Street, Madras, OR 97741 no later than **2:00 p.m. March 8, 2019.**

The Jefferson County School District 509J (District) is seeking written proposals from qualified contractors to provide all labor, materials and equipment required for updating/replacing our Building Automation Systems (BAS) at Jefferson County Middle School (JCMS) (1180 SE KEMPER WAY MADRAS, OR 97741). JCMS has a BAS system that is antiquated and ineffective and results frequently in inconsistent temperatures at the sites. Certain parts are obsolete and can only be rebuilt and not replaced. Without the effective communication link facilities staff are unable to monitor temperatures at the sites and cannot remote in to address the issues that arise. This project will update/replace the BAS system to the site and improve the consistency of temperatures. We are asking for your proposal/solution to this project.

This is a qualified bid process so while overall costs are a major factor, contractors who can provide the most experience and scope of services requested, will receive higher marks. The District invites interested contractors to complete and submit a proposal.

II. INFORMATION FOR NEW DESIGN

The successful responder shall provide seamless integration into the existing Automated Logic Controls WebCTRL server. All programming and graphics shall be consistent in look and feel of the existing WebCTRL system. Programming and graphics shall be a true representation of actual field equipment layout. Canned programming and graphics are not acceptable.

Quarterly training classes shall be offered at the contractor's location at no additional cost, provide the 2019 training schedule in the RFP response.

Provide licensed software that includes full ownership and functionality for the following items.

- Programming (all programming shall be graphical with no line code programming allowed)
- Graphics
- Database creation
- No additional licensing fees to be required.

There shall be no additional software required for the owner to make future changes to the DDC system for the items shown above.

The new control system needs to be web based. The control system shall be able to but not be limited to:

- Remotely Adjust the Room Temperature
- Monitor Room Temperatures
- Set Trends
- Have Optimum Start/Stop
- Graphic Displays
- Switch Between Heating and Cooling Set Points Automatically
- Capable of Multiple Users

Attachment #1 provides additional information regarding the facility, current DDC system and new DDC system.

III. MANDATORY PRE-PROPOSAL MEETING

There will be a mandatory pre-proposal meeting on February 25, 2019 at 11:00 a.m.

IV. PROPOSAL SUBMISSION REQUIREMENTS

The Contractor shall be responsible for preparing an effective, clear, and concise proposal. The proposals must include the following minimum information:

1. Cover letter addressed to Randall H. Bryant, Human Resources and Operations Director, and signed by a person legally authorized to bind the applicant to its proposal. The cover letter must include the name of the company and the person(s) representing this project, address, and telephone and fax numbers of the contractor and email address of the person(s) who are authorized to represent the proposer. (The letter should also include that the contractor has made no agreements with any company that places it as the sole contractor for such company).
2. The Contractor providing the primary service to the District shall demonstrate in-depth knowledge to complete the project on schedule and within budget.
3. Proof of CCB licensure and a Bond for Public Works in the State of Oregon.
4. Profile of the Company that includes articulation of experience with public sector accounts of similar size and scope of service.
5. Name(s), titles, and qualifications of proposed key personnel with experience in public sector accounts of similar size and scope of service.
6. Articulate a plan and ability to provide continued local service, delivery and support to meet the following scope of work, including examples of previous projects.
7. References of current clients.
8. This proposal requires you to include pages 11 to 15.
9. The Jefferson County School District 509J is an Equal Opportunity Employer. Each Contractor shall comply with federal, state and local Equal Employment Opportunity requirements.

V. MINIMUM QUALIFICATIONS

1. This project must be completed by mid-August or at a time that will be as minimally invasive to the schools as possible.
2. Must be able to supply proper Bonds.
3. Before entering into contract, the successful respondent shall furnish to the District a Certificate of Insurance verifying all of the following coverage's and identifying the Jefferson County School District as an "additional insured." The Design Builder shall be required to maintain and carry in force, for the duration of the contract, insurance coverage for the types and minimum liability.

VI. SELECTION PROCESS

1. Each proposal received will be evaluated to determine if it meets the stated requirements. Failure to meet these requirements may be cause for eliminating the proposal from further consideration.
2. The District reserves the right to reject any and all proposals, to waive any technicalities, informalities and irregularities, to accept or reject all parts of the proposal, and to be the sole judge of the suitability of the proposals offered.
3. Proposals will be evaluated on the following criteria:
   a. Qualifications of the Contractor;
   b. Qualifications of assigned staff;
   c. System Design;
   d. Ability to meet scope-of-work and service required;
   e. Fees charged and cost effectiveness of the proposed services;
   f. Interview and presentation;
   g. Reference checks;
4. All submittals in response to this RFP are public records and available for inspection and copying upon request any portions of the RFP submittal marked as confidential will not be made public without consent of the Contractor prior to the award of the contract;

5. A review committee of qualified professionals will be appointed by the Human Resources and Operations Director or his designee. The review committee will evaluate the proposals received. The review committee will submit a recommendation to the Board of Directors.

VII. INSTRUCTIONS TO BIDDERS

PROPOSALS: Proposals shall be in accordance with the specifications and other contract documents on file in the Business Office, phone 541-475-6192. All proposals shall be addressed to the attention of the Chief Financial Officer, Jefferson County School District 509J, 445 SE Buff Street, Madras, OR 97741. Proposals shall be placed in an envelope which is sealed and which clearly states the name of the bidder, the date of the bid opening, and appropriate wording to indicate definitely the nature of the contents. Do not send proposals by FAX. Proposals submitted via FAX will not be accepted.

RFP COSTS: All costs incurred in the preparation and presentation of the RFP shall be the responsibility of the responding party to the RFP. All documents submitted as part of the RFP will become property of the District. Requests for specific material to be returned will be considered. Any material submitted that is confidential must be clearly marked as such.

CANCELLATION: The Jefferson County School District reserves the right to cancel this invitation or reject any and all proposals submitted or to waive any minor formalities of this call, if in the judgment of the School Board the best interest of the District would be served. No bidder may withdraw his/her bid after the hour set for the opening thereof, unless the award of contract is delayed for a period exceeding thirty (30) days.

LATE PROPOSALS: Proposals received after the scheduled closing time will be returned to the respondent unopened.

QUESTIONS AND CLARIFICATIONS: Questions, interpretations or clarifications of this RFP must be requested in writing. All questions should be directed to Martha Bewley, Chief Financial Officer at mbewley@509j.net. Oral instructions or information concerning the RFP given out by District employees or agents to prospective Respondents shall not bind the District.

EXTRA CHARGES: The proposal price shall be for the complete delivery, ready for Jefferson County School District 509J use, and shall include all applicable charges; extra changes will not be allowed. Proposals shall be prepared simply and economically, providing a straightforward, concise description of proposer's capabilities to satisfy the requirements of the RFP. Special production such as bindings, colored displays, and promotional material are not necessary; however, the proposer should be prepared to present to a selection panel onsite at the District offices if deemed necessary. Emphasis should be on completeness and clarity of the content.

INSURANCE: Successful Respondent shall be required to provide the School District with a certificate of insurance verifying that the successful Respondent has all of the following insurance coverages and endorses the School District as an additional insured: commercial general liability insurance, automobile liability insurance, and worker compensation insurance, each in an amount not less than required by the School Districts Policies.

ADDENDA: The District shall make interpretations, corrections, or changes of the Bid Documents in writing by published Addenda. Any changes and/or addenda to this solicitation will be posted on the Jefferson County School District website at http://jcsd.k12.or.us. Addenda will not be mailed out and it is the responsibility of the prospective Bidder to consult the website regularly until Bid Closing to avoid missing any Addenda. Failure to acknowledge all addenda may result in declaration of your bid as non-responsive.

CERTIFICATION AS AN EEO AFFIRMATIVE ACTION EMPLOYER: Successful Respondent must abide by a policy of Equal Employment Opportunity Affirmative Action.

EQUAL OPPORTUNITY EMPLOYER: The Jefferson County School District 509J is committed to providing equal

opportunities to State of Oregon certified Minority, Disadvantaged and Women's Business Enterprises in contracting activities. (OAR 445-050- 0001 to 445-050-0090, State of Oregon). This contract is for public works subject to ORS 279C.800 to 279C.870 (the Oregon Prevailing Wage Rate Law).

LOCAL CONTRACTING: If the final evaluation scores are otherwise equal, the District prefers goods or services that have been manufactured or produced by a Local Business. The District desires to employ local businesses in the purchase, lease, or sale of any personal property, public improvements or services. The District wants the residents of the State of Oregon to benefit from optimizing local commerce and services, and the local employment opportunities they generate.

RESIDENT RESPONDENT: Respondents will be required to attest as to whether they are a resident or non-resident Respondent as defined in ORS 279A.120.

CONFLICT OF INTEREST: A Respondent submitting qualifications thereby certifies that no officer, agent or employee of the District who has a pecuniary interest in this RFP has participated in the contract negotiations on the part of the District, that the submission is made in good faith without fraud, collusion or connection of any kind with any other Respondent of the same RFP, and that the Respondent is competing solely in its own behalf without connection with or obligation to, any undisclosed person or firm.

CONFLICTS IN DOCUMENTS: In the event of a conflict or discrepancy among the Contract Documents, interpretations will be based on the following priorities:

1. Request for Proposal;
2. Addenda, with those of later date having precedence over those of earlier date;
3. Signed Change Orders;
4. Signed Agreement;
5. Modifications to the General Conditions;
6. State of Oregon General Conditions for Public Improvement Contracts;
7. AIA General Conditions;
8. Schedules.

CONFIDENTIALITY: All information submitted by Respondents shall be public record and subject to disclosure pursuant to the Oregon Public Records Act (ORS 192.410 et seq.), except such portions of the submittals for which Respondent requests exception from disclosure consistent with Oregon Law. Any portion of qualifications submission that the Respondent claims constitutes a "trade secret" or is "confidential" must meet the requirements of ORS 192.501, ORS 192.502 and/or ORS 646.461 et seq. If the entire submittal is marked as constituting a "trade secret" or being "confidential," at the District's sole discretion, such a Proposal may be rejected as non-responsive**.**

CONSERVATION: Jefferson County School District 509J seeks to acquire supplies and services that promote resource conservation and reduce both greenhouse gas emissions and energy consumption. Energy and water efficient products and services will be considered in all district contracts and procurements.

When contracting for services or construction that will include the provision of energy-consuming products, agencies shall specify products that comply with the applicable ENERGY STAR or other recognized efficiency rating programs. These products if financially feasible will be given preference over less efficient products.

AWARD: The award of this contract will be made by the District based on the Proposal, which, in the District's sole and absolute judgment, will best serve the best interests and needs of the District. The District reserves the right to accept or reject any or all the Proposals, and waive as an informality any immaterial irregularities in the proposals received.

APPEALS AND PROTEST OF AWARD: Adversely affected or aggrieved Bidders shall have seven (7) calendar days from the date of the Intent-to-Award Announcement within which to file a written protest. All appeals must be in

writing and physically received by the Chief Financial Officer no later than 10:00 a.m. on the seventh (7th) calendar day after the date of the Intent-to-Award Announcement or Bid Results are posted to the website.

APPEAL OF AWARD TO
Building Automation System – Jefferson County Middle School RFP

Jefferson County School District 509J
Business Office
445 SE Buff Street
Madras OR 97741

Protests submitted after that date would not be considered. Protests must specify the grounds upon which the protest is based.

In order to be an adversely affected or aggrieved Bidder, the Bidder must claim to be eligible for award of the Contract as the lowest responsible and responsive Bidder and that any and all lower Bidders are ineligible to receive Contract award. An actual Bidder who is adversely affected or aggrieved by the award of the Contract to another Bidder may protest award, in writing, within the timeline established. The written protest shall state the grounds upon which the protest is based. No protest of award shall be considered after the deadline. Protests must specify the grounds for the appeal including the specific citation of law, rule, regulation, or procedure upon which the protest is based. The judgment used in scoring by individual evaluators is not grounds for appeal.

No protest against award shall be considered because of the content of solicitation terms and conditions, contract terms and conditions or specifications after the deadline established for submitting protests of solicitation terms and conditions.
RFP documents may be picked up by the following methods:

Calling: 541-475-6192
E-mailing: mbewley@509j.net
Downloading from our website at http://www.jcsd.k12.or.us

VIII. GENERAL CONDITIONS

We adhere to the State of Oregon General Conditions for all our construction projects. Any modifications to the General Conditions are listed under MODIFICATIONS.

MODIFICATIONS TO THE STATE OF OREGON GENERAL CONDITIONS: These modifications to the General Conditions are a part of and are incorporated in the Contract Documents and modify, delete, add, and replace provisions of the General Conditions. Provisions not altered remain in effect. All terms defined elsewhere in the Contract Documents shall have the same meaning in these Modifications to the General Conditions.

CONTRACTOR'S LIABILITY INSURANCE: The following new subparagraph is replacing paragraph 2 and 3 in the State of Oregon General Conditions Section G.3.4.1:

General Liability insurance is required by the District with a combined single limit, or the equivalent, of not less than $1,000,000 each occurrence, $2,000,000 for multiple claimants, for Bodily Injury and Property Damage. It shall include contractual liability coverage for the indemnity provided under this contract. It shall provide that the State of Oregon, Jefferson County School District (Agency) and their divisions, officers and employees are Additional Insureds but only with respect to the Contractor's services to be provided under this Contract;

Automobile Liability insurance is required by the District with a combined single limit, or the equivalent, of not less than the Oregon Financial Responsibility Law (ORS 806.060), $1,000,000 each accident or $2,000,000 for multiple claims, for Bodily Injury and Property Damage, including coverage for owned, hired or non-owned vehicles, as applicable. Notice of cancellation or change. There shall be no cancellation, material change, reduction of limits or intent not to renew the insurance coverage(s) without 30 days written notice from the Contractor or its insurer(s) to Jefferson County School District (Agency).

Certificates of insurance. As evidence of the insurance coverages required by this contract, the Contractor shall furnish acceptable insurance certificates to Jefferson County School District (Agency) prior to its issuance of a Letter of Intent. The certificate will specify all of the parties who are Additional Insureds. Insuring companies or entities are subject to State acceptance. If requested complete copies of insurance policies, trust agreements, etc. shall be provided to the State. The Contractor shall be financially responsible for all pertinent deductibles, self-insured retentions and/or self-insurance.

LIQUIDATED DAMAGES: The following items are modified from the State of Oregon General Conditions: Paragraph E.2.4 (f) (h). The following items are modified from the Sample AIA documents: 3.3 Substantial Completion 3.3.3

IX. TIME TABLE:

Issuance of RFP	February 18, 2019	
Mandatory Pre Proposal Conference and Site Walk	February 25, 2019	11:00 a.m.
Last Questions Due	February 25, 2019	2:00 p.m.
Last Addendum Issued	March 1, 2019	4:00 p.m.
Proposal Due	March 8, 2019	2:00 p.m.
Intent to Award	March 15, 2019	
Award Contract	April 8, 2019	

The District reserves the right to deviate from this schedule.

X. CONTACT INFORMATION:

All inquiries for information regarding Proposal Submissions and Procurement Procedures should be directed to:

Martha Bewley, Chief Financial Officer
Phone: 541-475-6192
E-mail: mbewley@509j.net

XI. DATE OF RETURN: March 8, 2019 no later than 2:00 p.m.

It is the sole responsibility of the firm to ensure that their proposal is received no later than the above time.

Attn: Martha Bewley
Building Automation System – Jefferson County Middle School RFP
Jefferson County School District 509J, Business Office
445 SE Buff Street
Madras, Oregon 97741

XII. DEFINITIONS

The following definitions shall apply to the various titles used in these Documents:

Owner: Jefferson County School District 509J
445 SE Buff Street
Madras, OR 97741

Site: Jefferson County Middle School
1180 SE KEMPER WAY
MADRAS, OR 97741

XIII. PROPOSAL PROCEDURE

EXAMINATION OF SITE AND CONTRACT DOCUMENTS: Proposers shall carefully examine the documents and the construction Site to obtain first-hand knowledge of existing conditions. Submit Proposal with the understanding that prior to submission of Proposal, Bidder has become acquainted with the requirements of the Contract Documents, the Site, and has obtained all information essential for completion of the work on or before the date specified.

The Bidder shall not, at any time after the submission of Proposal, set up any claims whatsoever based upon insufficient data or incorrectly assumed conditions. Nor shall Bidder claim any misunderstanding in regard to the nature, conditions, or character of Work to be done under the contract, and shall assume all risks resulting from any changes in conditions which may occur during the progress of the Work. Contractors will not be given extra payments for conditions, which can be determined by examining the Site and Contract Documents.

INTERPRETATION OF DOCUMENTS: The Owner will not be responsible for oral clarification. Submit in writing to the Owner, all questions regarding the Contract Documents. Replies in the form of Addenda will be issued to all Bidders of Record and will become a part of the Contract.

CORRECT SIGNATURES: If the Bidder is an individual trading under their own or a fictitious name, the Proposal shall be signed by the Authorized Individual of the Contractor, and the exact mailing address and telephone number shall be given. If someone other than the Authorized Individual signs the Bid, then a notarized Certificate of Authority signed by the Authorized Individual of the Contractor shall accompany the Bid.

If the Bidder is a firm or partnership trading under an individual or fictitious name, the Proposal shall be signed by one or more partners with the exact names and mailing addresses of the firm or partnership members included.

If someone other than a partner signs the Proposal, then a notarized Certificate of Authority signed by all the partners shall accompany the Bid. If the Bidder is a corporation, the Bid proposal shall be signed by the President or Vice-President, or by an individual with a notarized Certificate of Authority shall accompany the Proposal.

Names, titles, telephone numbers, and business addresses of the president, secretary, and treasurer shall appear on the Certificate or Authority. The corporate Bidder shall include the name of the state under which it is Incorporated.

No agreement will be made with a Bidder who is a foreign corporation, or who is operating under a fictitious or assumed name, unless such Bidder has complied or agrees to comply with the proper qualifications and registration under the laws of the State of Oregon, and such compliance or agreement to comply has been communicated to the Engineer at the time of the Bid opening.

BID ASSURANCE: The Bidder is to agree not to withdraw their Bid for a period of 30 days after the scheduled closing time. If the Bid is accepted, Bidder shall execute an Agreement with the Owner and deliver the specified Performance and Payment Bonds.

BID SECURITY: Bid shall be accompanied by a Bid Bond or certified check, payable to the Owner, of not less than 10 percent (10%) of the total Base Bid. Bidders may use their own form for the Bid Bond.
Submit Bid Security with the understanding it shall guarantee that Bidder will not withdraw the Bid for a period of 30 days after the scheduled closing time. If the Proposal is accepted, Bidder shall execute an Agreement with the Owner and deliver the specified Performance and Payment Bonds. In the event of withdrawal of the Bid within said period, failure to execute an Agreement, or failure to deliver Performance/Payment Bond within 10 days after receiving notice of acceptance of the Bid, the Bid Security will be forfeited.

The Bidder shall be liable to the Owner for the full amount of the Bid security as representing the damage to the Owner on account of the default of the Bidder in any particular hereof. The Bid Bond shall be satisfactory to the Owner and executed by a licensed bonding company doing business in the State of Oregon.

FIRST TIER SUB DISCLOSURE: Pursuant to ORS 279C370, all bidders must submit the attached First Tier Subcontractor Disclosure form within two working hours of bid opening or bid will be deemed non-responsive. This form needs to be submitted even if no subcontractors are proposed on this project, simply state that on the form.

BACKGROUND CHECKS: Background checks are mandatory for all employees and contractors working on the site. It is the responsibility of the contractor to alert the School District of any changes to the list of employees including sub-contractors.

PREVAILING WAGE: Successful bidder and every subcontractor must have a public works bond filed with the Construction Contractors Board before starting work on the project. ORS 279C.830(3).

Successful bidder must pay applicable prevailing wage rates. The applicable prevailing wage rates are those in effect at the time the initial specifications are first advertised for bid solicitations. Current applicable rates can be viewed at http://www.oregon.gov/boli/WHD/PWR/Pages/PWR-Rate-Publications---2018.aspx. ORS 279C.830(1); OAR 839-025-0020(4) and (5) **Contractors are to use "Prevailing Wage Rates for Public Works Contracts in Oregon BOLI Rates" July 1, 2018 Rate Schedule.**

ADVANCED PAYMENTS & DEPOSITS: Jefferson County School District 509J will not provide advanced payments/deposits for goods or services.

XIV. BOLI CONTRACTOR RESPONSIBILITIES

FILING A PUBLIC WORKS BOND WITH CONSTRUCTION CONTRACTORS BOARD: Contractors and subcontractors must file a $30,000 public works bond with the Construction Contractors Board (CCB) before beginning work on a public works project. The public works bond must provide that the contractor or subcontractor will pay claims ordered by the bureau to workers on public works projects. Unlike other required payment and performance bonds, the public works bond remains in effect continuously and covers all public works projects worked on during the duration of the bond. ORS 279C.836(1) OAR 839-025-0020(4)(e)

Before allowing a subcontractor to start work on a public works project, the contractor must ensure the subcontractor has filed a public works bond with the CCB. This information can be found on CCB's website at www.oregon.gov/ccb (under the Contractor License Search section). ORS 279C.836(2)

Any person that is required to pay prevailing wages on a public project must file a public works bond with the CCB. This is the case even if the employer does not have a CCB license. For example, non-construction companies such as temporary employment agencies are not required to have a CCB license, but if they employ workers on a public works project, they will have to pay those workers the appropriate prevailing wage rate and will therefore be required to file a public works bond with the CCB. ORS 279C.836(4)

An exemption from this requirement is allowed for certified disadvantaged, minority, women or emerging small

business enterprises, for the first year of certification. Such an enterprise must provide the CCB with written notification of its certification. In addition, the business enterprise must notify the public agency and the prime contractor that a public works bond has not been filed by the business enterprise. ORS 279C.836(7)

In some cases of emergency, if declared in accordance with rules adopted under ORS 279A.065, the requirement for filing a public works bond with CCB may be excused. ORS 279C.836(9) Adopted ORS279A.065, ORS 279A.010(f)

Public works bond forms can be found on BOLI's website at www.oregon.gov/boli. Other forms, such as non-construction company forms and exemption forms, can be found on CCB's website at www.oregon.gov/ccb.

REQUIRED CONTRACT LANGUAGE: Every contract and subcontract must contain a provision that states the workers will be paid not less than the applicable prevailing wage rate for the type of work being performed. ORS 279C.830(1)(c); OAR 839-025-0020(3)

PAYMENT OF PREVAILING WAGES: Contractors and subcontractors must pay workers on public works projects no less than the applicable prevailing rate of wage for the type of work they perform. ORS 279C.840; OAR 839-025-0035(1) **Contractors are to use "Prevailing Wage Rates for Public Works Contracts in Oregon BOLI Rates" July 1, 2018 Rate Schedule.**

Except for CM/GC contracts, the rates in effect at the time the initial specifications are first advertised for bid solicitations are the rates that apply for the duration of that project. OAR 839-025-0020(4)(a) (See Section (7) of this rule for CM/GC related information.)

REQUIRED POSTINGS: Prevailing Wage Rates; Each and every contractor and subcontractor must post the applicable prevailing wage rates and fringe benefit plan information in a conspicuous place at the work site so workers have ready access to the information. ORS 279C.840(4); OAR 839-025-0033(1)

DETAILS OF FRINGE BENEFIT PROGRAMS: Contractors and subcontractors must post the details of all fringe benefit plans or programs if any contributions are made to a third party for fringe benefits. The posting should include a description of the plan, information about how to file a claim and where to obtain more information. ORS 279C.840(5); OAR 839-025-0033(2)

WORK SCHEDULE: Contractors and subcontractors must give workers the regular work schedule (days of the week and number of hours per day) in writing, before beginning work on the project. Contractors and subcontractors may provide the schedule at the time of hire, prior to starting work on the contract, or by posting the schedule at the work site, along with the prevailing wage rate information and any fringe benefit information. If an employer fails to give written notice of the worker's schedule, the work schedule will be presumed to be a five-day schedule. The schedule may only be changed if the change is intended to be permanent and is not designed to evade the PWR overtime requirements. ORS 279C.540(2); OAR 839-025-0034

CERTIFIED PAYROLL: Filing Requirements
Every contractor and subcontractor on a covered project must file certified payroll records with the contracting agency. Contractors and subcontractors must complete a certified payroll statement for each week a worker is employed on a public work. These certified payroll statements must be submitted once a month, by the fifth business day of the following month, to the contracting agency. ORS 279C.845; OAR 839-025-0010

CERTIFIED PAYROLL FORM: To help contractors and subcontractors satisfy the filing requirement, Form WH-38 is included in each PWR rate book, and can also be found on BOLI's website at http://www.oregon.gov/boli/Pages/index.aspc. BOLI does not require contractors and subcontractors to use this form, but they must supply all information the form requests, and this information must be certified. Contractors and subcontractors using their own forms or reports can comply with the certification requirement by attaching and completing a copy of the certified statement from the WH-38 form to their filing

PROPOSAL FORM
JEFFERSON COUNTY SCHOOL DISTRICT 509J
PAGES 11 THROUGH 15 MUST BE RETURNED WITH PROPOSAL
Building Automation System – Jefferson County Middle School RFP
The following Bid Form shall be part of Contract Work.

The Undersigned, having visited the Site of the proposed construction and having become familiarized with the conditions affecting the cost of the Work and all requirements of the Contract Documents, hereby proposes and agrees to provide any and all labor, materials, equipment, transportation, and services, and perform all Work for the project **Building Automation System – Jefferson County Middle School.** The Undersigned also agrees to perform all Work in strict accordance with Contractors Proposal and any Addenda issued prior to Proposal closing date.

The Undersigned further agrees not to withdraw the Proposal for a period of thirty (30) days after the scheduled closing time. If awarded the Contract, the Undersigned further agrees to be bound by the Agreement with the Owner.

Bidder has made inspection of Site: Yes _____ No_____

Bidder's Name _____

Bidder's Address _____

Federal Tax I.D. # _____

Responders must hold current State Licensing applicable to any work they may be performing.

City of Madras Business License # _____

State of Oregon CCB # _____ Expiration Date _____

Telephone _____

If Firm Is Corporation, State in Which Incorporated _____

Base bid Building Automation System at Jefferson County Middle School: All materials, services, and equipment necessary for completion of the Work shown in Contractors Proposal.

The Bidder specifically agrees to the provisions required by ORS 279C.840 that are required by this Contract.

_____$_____
Bid (Bid Price in Words) (Numerically)

_____Date _____
Signature of Bidder

Signing Officer _____

Office Held_____ Date _____

If a Partnership, Members of Firm _____

Corporate Seal

CERTIFICATE OF COMPLIANCE WITH TAX LAWS
(MUST BE RETURNED WITH BID)

I, the undersigned, being first duly sworn, hereby certify under penalty of perjury that I am authorized to act on behalf of _____ [insert Proposer's name] and to the best of my knowledge, _____[insert Proposer's name] is not in violation of any Oregon Tax Laws. For purposes of this Certificate, "Oregon Tax Laws" are those laws and programs listed in ORS 305.380(4), namely ORS Chapters 118, 314, 316, 317, 318, 320, 321 and 323 and Sections 10 to 20, Chapter 533, Oregon Laws 1981, as amended by Chapter 16, Oregon Laws 1982 (first special session); the elderly rental assistance program under ORS 310.630 to 310.706; and any local tax laws administered by the Oregon Department of Revenue under ORS 305.620. I will continue to comply with the tax laws of this state, or a political subdivision of this state, during the term of the public contract, and provide that my failure to comply with the tax laws, of this state or a political subdivision of this state, before I have executed the public contract or during the term of the public contract is a default for which the contracting agency/the State may terminate the public contract, and seek damage and other relief available, under the terms of the public contract or under applicable law.

Business Designation (check one):

____Corporation ____Partnership ____Sole Proprietorship

____Governmental/Non-Profit ____Limited Liability Company

Social Security No. or Federal Tax Identification No.: _____

(Above information must be provided with the Proposal. If awarded the contract, this information will be reported to the Internal Revenue Service under the name and taxpayer I.D. number submitted. Information not matching IRS records could subject architect to 31 percent backup withholding.)

Signature: _____Date:_____

Name: _____Title:_____

Firm:_____

Address:_____

City/State/Zip: _____Phone (____) _____

Fax:_____

Email: _____

SIGNATURE PAGE
(MUST BE RETURNED WITH PROPOSAL)

SIGNATURE OF FIRM'S DULY AUTHORIZED REPRESENTATIVE FOR THIS PROPOSAL MUST BE SIGNED IN INK BY AN AUTHORIZED REPRESENTATIVE OF THE FIRM; ANY ALTERATIONS OR ERASURES TO THIS PROPOSAL MUST BE INITIALED IN INK BY THE UNDERSIGNED AUTHORIZED REPRESENTATIVE.

The undersigned agrees and certifies that he or she:

1. Has read and understands all Proposal instructions, specifications, and terms and conditions contained herein;

2. Is an authorized representative of the Proposer, that the information provided in this Proposal is true and accurate, and that providing incorrect or incomplete information may be cause of Proposal rejection or contract termination;

3. Is bound by and will comply with all requirements, specifications, and terms and conditions contained herein;

4. Will furnish the designated item(s) and/or service(s) in accordance with the contract if awarded to Proposer;

5. Proposer will provide its Federal Tax Identification number or Social Security Number with Proposal submission.

Authorized Signature: _____

Title: _____

Company Name: _____

Date: _____

FEIN ID# or SSN# (required_____

ADDENDA RECEIPT: Acknowledge receipt of all addenda. This proposal includes all work indicated and specified in the following Addenda which were received during the time of bidding.

Addendum No._____ Date: _____ Addendum No._____ Date: _____

Addendum No._____ Date: _____ Addendum No._____ Date: _____

Bonds Due at Time of Proposal Submission

Bid Bond
First Tier Subcontractor Disclosure Form

Pages 12-15 must be included with your bid submission. Page 16 must be delivered by 4:00 p.m. on day of submission.

Upon reward of Contract

Performance and Payment Bond

PERFORMANCE BOND AND LABOR-MATERIAL PAYMENT BOND ASSURANCE
(MUST BE RETURNED WITH PROPOSAL)

The successful Bidder guarantees they shall be bonded by Performance Bond and Labor-Material Payment Bond, each in an amount equal to 100% of the Contract. The bonds shall be satisfactory to the Owner and executed by a licensed bonding company doing business in the State of Oregon. The Bid shall include the cost of such Bonds. Deliver required bonds to Owner not later than the date of execution of the Agreement. Submit, with Bid, evidence satisfactory to the Owner that such bonds will be issued. The attorney who executes the required bonds on behalf of the surety shall affix to the bonds a certified and current copy of his/her power of attorney indicating the monetary limit of such power.

The surety requested to issue the Performance Bond will be

_____
(Name of Surety Company - not insurance company)

Agent _____ Phone number _____

The Undersigned herby authorizes said surety company to disclose any information to the Owner concerning the undersigned's ability to supply a Performance Bond in the amount of the contract.

FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM

(ORS 279C.370)**Bids which are submitted by Bid Closing, but for which a required disclosure submittal has not been made by the specified Disclosure Deadline, are not responsive and shall not be considered for Contract award**

AGENCY SUPPLIED INFORMATION:

PROJECT NAME: Building Automation Systems – Jefferson County Middle School
BID CLOSING: Date: March 8, 2019 Time: 02:00 PM
Deliver Form To (Agency): Jefferson County School District 509J
Designated Recipient (Person): Martha Bewley Phone #: (541) 475-6192
Agency's Address: 445 SE Buff Street
Madras, OR 97741

INSTRUCTIONS:

The contracting agency will insert "N/A" above if the contract value is not anticipated to exceed $100,000. Otherwise, this form must be submitted either with the bid or within two (2) working hours after the advertised bid closing date and time; but no later than the DISCLOSURE DEADLINE stated above.

Unless otherwise stated in the solicitation, this document shall not be submitted by facsimile. It is the responsibility of bidders to submit this disclosure form and any additional sheets, with the bid number and project name clearly marked, at the location indicated by the specified disclosure deadline. See "Instructions to Bidders".

List below the Name, Category of Work add Dollar Value for each first-tier subcontractor that would be furnishing labor, or labor and material, for which disclosure is required. Enter the word "NONE" if there are no first-tier subcontractors subject to disclosure. ATTACH ADDITIONAL SHEETS IF NECESSARY.

BIDDER DISCLOSURE:

	SUBCONTRACTOR NAME	CATEGORY OF WORK	DOLLAR VALUE
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____

The above listed first-tier subcontractor(s) are providing labor, or labor and material, with a Dollar Value equal to or greater than:

a) 5% of the total Contract Price, but at least $15,000. [If the Dollar Value is less than $15,000 do not list the subcontractor above.]

or

b) $350,000 regardless of the percentage of the total Contract Price.

Form Submitted By (Bidder Name): _____

Contact Name: _____ Phone #: _____

TECHNICAL ANALYSIS STUDY

JEFFERSON COUNTY SCHOOL DISTRICT
JEFFERSON COUNTY MIDDLE SCHOOL
1180 SE KEMPER WAY
MADRAS, OR 97741

PROJECT: ETECPS1538439366

SPONSORED BY:

ENERGY TRUST OF OREGON
EXISTING BUILDING PROGRAM

ELECTRIC UTILITY: PACIFIC POWER
GAS UTILITY: CASCADE NATURAL GAS CORP.

SUBMITTED BY:
R&W ENGINEERING, INC.

10/18/18
VERSION # 2

CONTACTS

SITE CONTACT

The following facility personnel assisted with this report:

Randall Bryant
Director of HR and Operations
Phone: (541) 475-6192
rbryant@509j.net

ENERGY TRUST CONTACT

Jesse Holland
ICF
615 SW Alder Street, Suite 200
Portland, OR 97205
Phone: (503) 866-8361

ATAC CONTACT INFORMATION

The Allied Technical Assistance Contractor (ATAC) that prepared this report is:

Mark D. Jones, P.E., LEED AP, CCP
R&W Engineering, Inc.
9615 SW Allen Blvd., Suite 107
Beaverton, OR 97005
Phone: (503) 292-6000
mjones@rweng.com

DISCLAIMER

In no event will Energy Trust of Oregon, Inc. or ATAC be liable for (i) the failure of the customer to achieve the estimated energy savings or any other estimated benefits included herein, or (ii) for any damages to customer's site, including but not limited to any incidental or consequential damages of any kind, in connection with this report or the installation of any identified energy efficiency measures. The intent of this energy analysis study is to estimate energy savings associated with recommended energy efficiency upgrades. This report is not intended to serve as a detailed engineering design document, any description of proposed improvements that may be diagrammatic in nature are for the purpose of documenting the basis of cost and savings estimates for potential energy efficiency measures only. Detailed design efforts may be required by participant in order to implement potential measures reviewed as part of this energy analysis. While the recommendations in this report have been reviewed for technical accuracy and are believed to be reasonably accurate, all findings listed are estimates only, as actual savings and incentives may vary based on final installed measures and costs, actual operating hours, energy rates and usage.

NEXT STEPS FOR THE PARTICIPANT

APPLY FOR ENERGY TRUST INCENTIVES

Make an implementation decision: *Please evaluate the information contained in this report and any potential measures and incentives listed in the Form 110C – Project Detail and Incentive Estimates (produced by ICF). Have your contractors bid for the measures(s) you wish to implement and send ICF a copy of the final bid. ICF will review your contractor's proposed scope to determine compliance with Existing Building's requirements and the energy efficiency measures as described in this report. After it is determined by ICF that the project bid specification match the studied measures, Form 120C-Incentive Application will be provided for you to review. If you apply for Energy Trust incentives for you project, your signed Form 120C – Incentive Application must be provided to ICF BEFORE you issue purchase orders or make other financial commitments to begin the project work.*

Upon Completion of the Project: *ICF must be notified once the project is completed in order to arrange a post-installation verification for projects that receive incentives greater than $5,000. The program must receive all required documentation and perform any required post installation verifications before incentives can be issued.*

APPLY FOR ENERGY TRUST SOLAR INCENTIVES

Make a solar implementation decision: *Please evaluate the solar site evaluation (SSE), if included in this report. Your PMC will arrange a meeting to discuss the results of the evaluation. Or, if you wish to move forward, your PMC will provide you with a list of qualified Trade Ally contractors. Obtain bids on the solar measures you want to implement. When you've selected a solar Trade Ally contractor for the installation, the Trade Ally will provide and submit the necessary incentive application paperwork to Energy Trust on your behalf. The PMC and Energy Trust's solar staff are available to answer all your solar questions.*

Upon Completion of the Solar Project: *The solar Trade Ally will arrange for the final Energy Trust verifications, and within 30 days of a successful verification you'll receive your solar incentive check from Energy Trust.*

EXECUTIVE SUMMARY

This report documents energy efficiency improvements for the HVAC controls at Jefferson County School District's Jefferson County Middle School at 1180 SE City View Street in Madras. The school was originally built in 1995, is two-stories, and contains a total floor area of 143,000 square feet. There have been minor remodels since it was first built. The energy efficiency measure (EEM) affects the entire building. Using data from the last two years, the average annual energy use for the building was 39,170 therms and 1,037,760 kWh. This translates to an Energy Use Index of 52.2 kBtu/SF/year. Table 1 below lists the energy efficiency recommendation for the facility. This recommendation is expected to reduce the building's gas usage by 61% and reduce the electricity consumption by 34%. R&W provided an SB1149 audit in 2012 with the recommendation below, but this was never implemented. Since that time, the controls have had increased failures. This study revises the 2012 SB1149 study with updates to the measure and pricing based on current conditions.

HISTORICAL ENERGY USE

TABLE 2a: HISTORICAL BUILDING ENERGY USE

	Electric Use (kWh)				Natural Gas Use (Therm)			
	2016	2017	2018	3 Year Average	2016	2017	2018	3 Year Average
Jan		64,080	87,040	75,560		7,508	5,206	6,357
Feb		82,560	80,240	81,400		6,374	5,410	5,892
Mar		78,560	79,840	79,200		3,945	5,363	4,654
Apr		73,440	73,040	73,240		4,225	3,560	3,893
May		90,880	90,160	90,520		3,133	980	2,057
Jun		94,640	85,920	90,280		761	406	584
Jul		102,960	92,480	97,720		245	408	327
Aug		89,120	95,840	92,480		255	457	356
Sep		105,440		105,440	1,212	779		996
Oct	77,120	81,360		79,240	2,474	3,205		2,840
Nov	78,480	86,080		82,280	3,202	4,491		3,847
Dec	99,280	81,520		90,400	7,729	7,012		7,371
Total	254,880	1,030,640	684,560	**1,037,760**	14,617	41,933	21,790	**39,170**
Total (kBtu)	869,687	3,516,690	2,335,816	3,540,984	1,461,700	4,193,300	2,179,000	3,917,000
Total Energy Use (kBtu)	**7,457,984**							
Energy Use Index (KBTU/SF/YR)	**52.2**							

NOTE: The EUI for this school is 31% higher than the target used by the Oregon Department of Energy for a middle school in Western Oregon without summer school. The first EUI represents the target value for a school without summer use. The second EUI represents the target value for a school with summer use. See Table 2B below.

TABLE 2B: OREGON DEPARTMENT OF ENERGY EUI TARGET FOR SCHOOLS

	Elementary Western OR	Middle Western OR	High School Western OR	Elementary Eastern OR	Middle Eastern OR	High School Eastern OR
Average (kBtu/SF)	37.8/43.2	39.9/45.6	44.8/51.2	47.6/54.4	46.9/53.6	46.9/53.6

FACILITY OVERVIEW

FACILITY DESCRIPTION

Jefferson County School District's Jefferson County Middle School is located at 1180 SE City View Street in Madras. The school was originally built in 1995 and it consists of the following areas: Four main classroom wings, administrative offices, kitchen/cafeteria, media center, locker rooms and two gymnasiums. There have been minor remodels in recent years including a bathroom addition and other minor improvements. The building was partially re-roofed 12 years ago. The school operates as an educational center for grades 6th thru 8th. The school year runs from September thru mid-June for 470 students and 29 staff members. The number of students dropped in recent years due to the opening of Warm Springs K-8. Starting in October, a K-8 after school program will start with 250 students and 20 staff, that will continue indefinitely. The building has sporadic summer use of various classes.

The majority of the lighting in the school is T-8 fluorescent fixtures with some metal halide fixtures in the commons and gym. Emergency exit signs are LED. Interior lighting is controlled manually by switches. Exterior lighting fixtures are metal halide, controlled by photocells.

Heat is provided via two natural gas fired hot water boilers, which run to air conditioning units, air handlers, and convectors throughout the building. There is a closed-circuit cooling tower, which feeds five indoor water-cooled air conditioning units serving most of the building. These ac units are ducted to VAV boxes with hot water reheat. The gyms have heating and ventilation only (no cooling). Ventilation air is provided through all HVAC units. The kitchen hoods are served by two gas fired/evaporative cooled makeup air units and separate exhaust fans. The HVAC control system is a DDC system, which does not work properly, with many failed components.

Domestic hot water is provided to most of the school via a water heater connected to a large storage tank. The kitchen has its own boiler and storage tank for domestic hot water.

See below for additional details on building's energy using systems. Table 2a above shows the electrical and natural gas use over the past three years. Table 2b above shows typical energy use for schools in the Pacific Northwest.

BUILDING SHELL

The entire 2-story building is metal frame construction. Most of the walls are framed with 2x6 at 16" on center and filled with R-19 batt insulation. The exception to this is at the gymnasium area, which has 2" rigid insulation on the interior of the wall system. The exterior of the walls varies: Most is covered in brick veneer, with a 3' band of concrete at the bottom of the wall. This area has a calculated U-value of 0.104. The exterior walls at the gym are concrete tilt-up panels with a panel of metal facia at the top, and a calculated U-value of 0.071. The exterior wall heights vary: At the classroom wings they are 8' high on the first floor and 5'6" high on the second floor, except at the end of the wings, where the second-floor walls extend up to the roof pitch and are 20' high, and at the edge of the building, where the walls are 25' high. At the kitchen the walls are 14' high. At the art classrooms, the walls extend almost to the roof peak and are 34' high. At the gym the tilt up walls are 18' high and the metal facia at the top of the wall is 9' high. The roof is pitched and framed with steel trusses and is filled with R-38 batt insulation. The roof covering is pre-finish metal. The calculated U-value is 0.033. The peak of the roof runs down the center of the wings and is 36' high. An acoustic tile ceiling hangs down 4'-5' below the second-floor structure in the

classroom and office areas on the first floor, giving 9'-10' ceilings in these areas. On the second floor the ceiling hangs down approximately 2' below the bottom of the trusses, creating 9' ceilings in the classroom areas.

The building foundation is a 4" slab on grade. According to the original drawings, the slab is insulated with 2" rigid insulation at the perimeter and a band of 2" rigid slab insulation extending under the slab 24". There are no basements or crawlspaces. This construction has a heat loss (F-factor) of 0.53.

Windows are all aluminum framed with lightly tinted, ¼" double paned glazing, with a calculated U-value of 0.670, a Shading Coefficient of 0.5, and a Solar Heat Gain Coefficient (SHGC) of 0.43. There are (8) 3'x7' metal entry doors with full height glazing, (11) 3'x7' metal entry doors with half height glazing, (2) 3'x7' partial light metal entry doors, (7) 3'x7' metal doors with no glazing and (1) 6'x8' metal roll-up door in a storage room. The air space on all windows appears to be ¼". Weather-stripping on doors is old and in poor condition and the maintenance staff indicates that some doors have gaps large enough to allow rattlesnakes to enter the school.

INTERNAL LOADS

The school has roughly 470 students and 29 staff on a typical day. The school is in session five days per week and is used from the first part of September through the middle of June. During the typical school day, the building is occupied eight hours per day. The gyms are used after hours for six hours per day, seven days per week. During summer, on average, seven classes are used for two weeks for summer programs.

The school uses primarily T8 fluorescent interior lighting on manual switches with metal halide lighting in the commons and gym. Internal lighting power is estimated to be 0.8 watts per square foot.

Internal equipment in the classrooms and administrative areas primarily consists of office equipment. An estimate of 0.22 and 0.5 watts per square foot is estimated for equipment power in the classrooms and office respectively. Computer rooms are estimated to have an equipment heat load of 3 watts/sf. The kitchen is used as a full cook kitchen serving breakfast, lunch (and dinner starting in October) each day with primarily electric appliances. There is one gas-fired oven. The kitchen is estimated to have a heat load of 10 watts/sf affecting the HVAC system.

WATER SIDE HVAC SYSTEM

The boiler system consists of two Weil-McLain natural gas fired hot water boilers (Model 1288, NG input: 3,753 MBH max, 1,251 MBH min), which alternate to provide heat to the entire building (with the exception of the make-up air system for the kitchen hoods). The hot water discharge temperature is set at 165°F and the 3-way mixing valve no longer works. Boiler efficiency testing in the past indicated an efficiency of 80% for both boilers, however a boiler tune-up was completed in the past year improving the boiler efficiency to 87%. This tune-up was per a 2012 SB1149 study by R&W Engineering. There are two 10 HP Taco (Model FE2010) boiler distribution pumps which operate alternately.

The majority of the cooling is done with a Baltimore Aircoil (Model F1-643) closed circuit cooling tower, which is piped to the five AC units serving most of the school. The AC units are water-cooled, and each has multiple compressors. The cooling tower is located on an equipment mezzanine yard adjacent to the kitchen and has an

internal 5 HP circulation pump. The cooling tower has two stages with a 10 HP pony fan and a 40 HP main fan. The system utilizes two 7.5 HP Taco (Model FE2508) distribution pumps which operate alternately.

Domestic hot water is provided to the school by a Teledyne Laars (Model Mighty Therm 600) natural gas fired hot water boiler (NG input: 600 MBH max, 150 MBH min) with an approximately 610-gallon jacketed storage tank, residing in the boiler mechanical room. The main water tank is set to a discharge temperature of 120°F. There are two hot water recirc pumps (1/15 hp), one of which is disabled.

The kitchen has its own Teledyne Laars (Model Mighty Therm 600) natural gas fired hot water boiler (NG input: 600 MBH max, 150 MBH min) with a 360-gallon jacketed storage tank, also residing in the boiler mechanical room.

AIR SIDE HVAC SYSTEM

The boilers and cooling tower water are piped to the five AC units mentioned above. Four of these have VAV boxes with reheat coils (AC-1, AC-2, AC-4, AC-5). Airflow to the VAV boxes is controlled by inlet guide vanes. The commons is served by one AC unit without VAV boxes (AC-3). AC-3 has not been operating for one year because its control card was removed and placed in AC-1. The gyms, locker rooms and associated areas are served by air handlers, which provide heating and ventilating only (AHU-1, AHU-2, SCF-1, FC-1, FC-2), and the boilers serve these as well. AHU-1, serving the small gym, has a cracked heating coil, which is manually turned off. The fan for AHU-1 is also turned off in winter to eliminate cold air. When heat is needed in the small gym, the doors to the large gym are opened. There are hot water convectors serving two entry areas (C-1, C-2). The majority of the HVAC equipment resides in mechanical plenum rooms, which, as the name suggests, utilize a plenum for return air. These plenum rooms are also equipped with various exhaust fans to relieve the ventilation air brought into each unit through large ducts piped to the outdoors through louvers. These exhaust fans use inlet vane guides to modulate airflow. The kitchen hoods each utilize a makeup air unit (MUA-1, MUA-2) and an exhaust fan (EF-6, EF-9) dedicated to the hood. The makeup air unit provides heat via a gas fired heat exchanger and cooling via evaporative cooling coils but staff mentioned that these never run. Presumably, makeup air for the hoods is coming from other areas of the building. The exhaust fans are roof mounted. There are various exhaust fans serving restrooms and janitor's rooms which are small, roof mounted type fans.

The make, model numbers, and capacities for the majority of this HVAC equipment (>1 HP) is cataloged below:

- AC-1 (Serves North Classroom Wing – 1st and 2nd Floors): McQuay SWP 055 C; 55 tons, 16,000 cfm at 3.75 in ESP. 8,000 CFM outside air. (2) 10 HP Compressors and (2) 12 HP Compressors. 25 HP Supply Fan, inlet guide vanes.
- AC-2 (Serves South Classroom Wing – 1st and 2nd Floors): McQuay SWP 055 C; 55 tons, 16,800 cfm at 3.0 in ESP. 7,500 CFM outside air. (2) 12 HP Compressors and (2) 15 HP Compressors. 30 HP Supply Fan, inlet guide vanes.
- AC-3 (Serves Commons and Stage): McQuay SWP 035 C; 35 tons, 9,800 CFM at 3.00 in ESP. 6,000 CFM outside air at lunch time, 2,000 CFM outside air all other operable times. (2) 5 HP Compressors and (2) 10 HP Compressor. 15 HP Supply Fan.
- AC-4 (Serves Admin and Media Area): McQuay SWP 035 C; 35 tons, 10,000 CFM at 3.5 in ESP. 3,600 CFM outside air. (3) 5 HP Compressors and (1) 10 HP Compressor. 15 HP Supply Fan, inlet guide vanes.
- AC-5 (Serves Art Classrooms and Kitchen): McQuay SWP 035 C; 35 tons, 9,800 CFM at 3.25 in ESP. 3,800 CFM outside air. (3) 5 HP Compressors and (1) 10 HP Compressor. 15 HP Supply Fan, inlet guide vanes.

- AHU-1 (Serves Small Gym): McQuay (model number unavailable); 8,200 CFM at 1.5 in ESP. 4,000 CFM outside air. 5 HP Supply Fan.
- AHU-2 (Serves Large Gym): McQuay (model number unavailable); 16,000 CFM at 1.5 in ESP. 11,000 CFM outside air during assembly, 2,000 CFM outside air all other operable times. 7.5 HP Supply Fan.
- FC-1, FC-2 (Serves Locker Rooms): Trane UNT-DS-4 (from drawings – actual make/model number unavailable); 1,900 CFM at 0.75 in ESP. 1 HP Supply Fan.
- SCF-1 (Serves Wresting Room): Pace SCF-114A (from drawings – actual make/model number unavailable); 2,500 CFM at 1.25 in ESP. 800 CFM OSA. 2 HP Supply Fan.
- MUA-1 (Serves Kitchen Hood): Sterling E2ART60; 4,800 CFM at 0.75 in ESP. 5 HP Supply Fan.
- MUA-2 (Serves Kitchen Hood): Sterling E2ART20; 1,840 CFM at 0.75 in ESP. 2 HP Supply Fan.
- C-1, C-2 (Serves Entry Areas): Trane SFG 38 (from drawings – actual make/model number unavailable); 10,000 BTU/h minimum.
- EF-1 (Serves AC-1, AC-5, AHU-2, operates in parallel with EF-5): TCF Axial TCVA-XXXX (model number unreadable); 25,000 CFM at 1.25 TSP. 10 HP, inlet guide vanes.
- EF-2 (Serves AC-2, AC-3, operates in parallel with EF-3): TCF Axial TCVA-XXXX (model number unreadable); 16,000 CFM at 1.25 TSP. 7.5 HP, inlet guide vanes.
- EF-3 (Serves AC-2, AC-3, operates in parallel with EF-2): TCF Axial TCVA-2884; 8,000 CFM at 1.25 in. TSP. 5 HP, inlet guide vanes.
- EF-4 (Serves AC-4): Pace AF30 (from drawings – actual make/model number unavailable); 9,000 CFM at 1.0 in TSP. 5 HP, inlet guide vanes.
- EF-5 (Serves AC-1, AC-5, AHU-2, operates in parallel with EF-1): TCF Axial TCVA-XXXX (model number unreadable); 12,500 CFM at 1.25 TSP. 5 HP, inlet guide vanes.
- EF-6 (Serves MUA-2): Greenheck CUBE 300 HP (from drawings – actual make/model number unavailable); 2,300 CFM at 2.25 in. TSP. 2 HP.
- EF-9 (Serves MUA-1): Greenheck CUBE 300 HP (from drawings – actual make/model number unavailable); 6,000 CFM at 2.25 in. TSP. 5 HP.

CONTROLS

The HVAC control system is a 1995 DDC system, specifically a Johnson Controls Energy Management Control System (ECMS), model Johnson "Metasys Companion" system, with a "Microtech" open protocol master system. The staff indicates that the system is not operating properly and never has. The following control issues were noted for each system:

- General:
  - All units running in occupied mode even during the summer, with no unoccupied times (except AC units turn off for one hour each evening). AC units are disconnected from central controls and operate off internal cards.
  - Maintenance spend 2.5 hours per day during school year manually adjusting controls as needed. This includes:
    - Manually opening or closing valves to maintain heating or cooling of a room,
    - Manually opening or shutting outside air dampers to save on heating or cooling,
    - They also stated they spend time every day bleeding air out of the boiler loop to keep pressure down.
  - Typical ventilation setting are indicated by staff to be 10%. At the time of the site visit (during summer, just prior to the start of the school year) all AC units and AHU's were observed to have OAD manually closed. As noted above, staff manually opens or closes the dampers that aren't working (approximately 50%). If the days are warm these dampers are opened manually first thing in the morning to cool down the building by economization. Then once it warms up outside they are closed. They are opened and closed by putting a wrench on the shaft and twisting it.
  - Occupied setpoints at AHU's observed on controls to average 68°F. Unoccupied setpoints average 58°F, but this doesn't occur. Occupied setpoints for gym AHU's observed to be 60°F. Occupied setpoints for locker rooms and wrestling observed to be 72°F.

- Approximately 50% of dampers are not working (including dampers at VAV boxes and main units). Of these approximately 50% don't work due to faulty actuators. The remaining dampers don't work due to mechanical issues with the dampers. From the original drawings the average reheat setpoint for the VAV boxes should be 50%. The actual readings for the VAV boxes are approximately 50% but many are over this and many are under to arrive at this average.
- There are no CO2 demand ventilation controls.
- It appears that supply air temperature reset is operating from each unit's internal controls.
- It is unknown if economizer operation is working or not by observing DDC. It is suspected that internal controls of units are operating economizer mode automatically where the dampers are working.
- Control transformers for VAV boxes (one per five boxes) are difficult to access and half a dozen seem to fail every two to three years.
- Exhaust fans for AHUs and building are only enabled at night and not during the day.

- Boiler Plant:
  - Controller has failed and is bypassed. Staff turns the boilers on and off manually depending if heat is needed on a particular day.
  - The boiler is typically off completely from late-June to mid-September.
  - Mixing valve not working so there is no hot water reset. Water is supplied at 165°F constantly.
  - Twenty-seven heating water valves (out of 113) are not working and operated manually as needed.
- Domestic Hot Water:
  - There are two recirculation pumps. One runs 24/7 and the other is disabled.
  - Disconnected from central controls.
- Cooling Plant
  - Condensing water supply setpoint: 78°F. It appears pony fan is not working as staff indicates frequent cycling of the main fan to maintain setpoint during mild weather.
- AC-2:
  - There is no balancing on RADs. Most of the air comes from upstairs back to plenum.
- AC-3:
  - Control card removed, and unit is completely off.
- AHU-1:
  - Heating coil cracked and turned off. Fan off in winter.
- MUA-1 and 2
  - Gas valves off and never run.

DETAILED DESCRIPTION OF PROPOSED MEASURES

EEM 1 – DCC CONTROLS UPGRADE

BASELINE CONDITION

The HVAC control system is a 1995 DDC system, specifically a Johnson Controls Energy Management Control System (ECMS), model Johnson "Metasys Companion" system, with a "Microtech" open protocol master system. The staff indicates that the system is not operating properly and never has. The following control issues were noted for each system:

- General:
  - All units running in occupied mode even during the summer, with no unoccupied times (except AC units turn off for one hour each evening). AC units are disconnected from central controls and operate off internal cards.
  - Maintenance spend 2.5 hours per day during school year manually adjusting controls as needed. This includes:
    - Manually opening or closing valves to maintain heating or cooling of a room,
    - Manually opening or shutting outside air dampers to save on heating or cooling,
    - They also stated they spend time every day bleeding air out of the boiler loop to keep pressure down.
  - Typical ventilation setting are indicated by staff to be 10%. At the time of the site visit (during summer, just prior to the start of the school year) all AC units and AHU's were observed to have OAD manually closed. As noted above, staff manually opens or closes the dampers that aren't working (approximately 50%). If the days are warm these dampers are opened manually first thing in the morning to cool down the building by economization. Then once it warms up outside they are closed. They are opened and closed by putting a wrench on the shaft and twisting it.
  - Occupied setpoints at AHU's observed on controls to average 68°F. Unoccupied setpoints average 58°F, but this doesn't occur. Occupied setpoints for gym AHU's observed to be 60°F. Occupied setpoints for locker rooms and wrestling observed to be 72°F.
  - Approximately 50% of dampers are not working (including dampers at VAV boxes and main units). Of these approximately 50% don't work due to faulty actuators. The remaining dampers don't work due to mechanical issues with the dampers. From the original drawings the average reheat setpoint for the VAV boxes should be 50%. The actual readings for the VAV boxes are approximately 50% but many are over this and many are under to arrive at this average.
  - There are no CO2 demand ventilation controls.
  - It appears that supply air temperature reset is operating from each unit's internal controls.
  - It is unknown if economizer operation is working or not by observing DDC. It is suspected that internal controls of units are operating economizer mode automatically where the dampers are working.
  - Control transformers for VAV boxes (one per five boxes) are difficult to access and half a dozen seem to fail every two to three years.
  - Exhaust fans for AHUs and building are only enabled at night and not during the day.
- Boiler Plant:
  - Controller has failed and is bypassed. Staff turns the boilers on and off manually depending if heat is needed on a particular day.
  - The boiler is typically off completely from late-June to mid-September.
  - Mixing valve not working so there is no hot water reset. Water is supplied at 165°F constantly.
  - Twenty-seven heating water valves (out of 113) are not working and operated manually as needed.
- Domestic Hot Water:
  - There are two recirculation pumps. One runs 24/7 and the other is disabled.
  - Disconnected from central controls.
- Cooling Plant
  - Condensing water supply setpoint: 78°F. It appears pony fan is not working as staff indicates frequent cycling of the main fan to maintain setpoint during mild weather.

- AC-2:
  - There is no balancing on RADs. Most of the air comes from upstairs back to plenum.
- AC-3:
  - Control card removed, and unit is completely off.
- AHU-1:
  - Heating coil cracked and turned off. Fan off in winter.
- MUA-1 and 2
  - Gas valves off and never run.

PROPOSED CONDITION

This measure proposes replacing the existing DDC system with a new web-based DDC system and provide retro-commissioning. This will save energy in the following ways:

- HVAC occupied times to match people occupancy.
- Add automatic air vent valve to boiler piping loop and connect to DDC for alarms. Allows for reduced maintenance time.
- Reduced unoccupied setpoints to allow reduced energy use when building areas aren't being used.
- VAV dampers in VAV boxes reset to original design amounts for minimum and maximum.
- Economizer operation for free cooling verified and controlled by central DDC. Allows for reduced maintenance time.
- Exhaust fans for AHUs and building are enabled appropriately during occupied hours.
- Working mixing valve at boiler to allow hot water reset out to system.
- Automatically operating hydronic valves allows proper control of temperature and reduced maintenance time.
- Domestic hot water pumps operated by DDC to match occupancy of building.
- Working pony fan on cooling tower reduces wear and tear on cooling tower main fan.
- Automatic balancing of RADs for AC-2 based on pressure.
- AC-3 operational (controls issue, not mechanical issue).
- McQuay control cards bypassed by new control system to allow central control.
- AHU-1 heating coil working correctly.
- Control transformers difficult to access
- MAU-1 and 2 operational and tied into new DDC system.

NON-ENERGY SAVINGS DESCRIPTION

Facilities staff spent an average of 2.5 hours per day during school year and summer school operating control system manually at a fully loaded labor rate of $43.50/hour. This labor would be eliminated by this measure. This totals $30,450 (40wks/yr x 7 d/wk x 2.5h/d x $43.50).

TABLE 5: EEM 1 CONDITIONS

Item	Baseline Condition	Proposed Condition
HVAC Occupied Schedules	Occupied 24/7 (ACs occupied 23/7) – Temperature and fans run continuously but outside air dampers are manually opened and closed. *(See custom people and ventilation schedule in Templates/Internal Loads & Templates/Airflow)*	Typical Space: 8 hours/day (M-F) Gym: 14 hours/day (M-F), 6 hours/day (Sa,Su) Summer: 7 classes, 2 weeks, 8 hours/day (M-F) *(See custom people schedule in Templates/Internal Loads)*
Air Bleeding Boiler Loop	Manually	Automatically by valve *(Non-energy benefit only)*
Temperature Setpoints	Typical: 68°F/75°F Gym: 60°F Lockers and Wrestling: 72°F No setback *(See Templates/Thermostat)*	Occupied same Night setback: 55°F/85°F *(See Templates/Thermostat)*
Dampers	Approximately 50% not working, requiring manual operation (includes VAV and mixed air dampers). For VAV reheat settings, setpoint averages 50% with some zones under and some over. For mixed air damper setting, dampers are operated manually as needed for economizer and unoccupied closure. *(See Templates/Airflow)*	100% working, automatic operation. For VAV reheat, reheat setpoint based on original design at 50%. For mixed air dampers all dampers working automatically. *(No changes to model since VAV reheat, while set correctly across the board, averages out to same energy use, mixed air damper operation is now automatic resulting in non-energy benefit only)*
Economizer Operation	Unknown but assumed to be controlled by each individual AC and AHU. Some manual operation. *(See Systems/Options)*	Working correctly and visible at DDC. *(No changes to model as this results in non-energy benefit only)*
Exhaust Fans Operation	Enabled at night only. *(Simulated by reducing peak power and airflow by half)*	Scheduled with supply fans during occupied hours and as needed during unoccupied hours. *(Set back to original airflow and power)*
Heating Water Reset	Not working. HWS setpoint 165°F always. *(See equipment schedule for boiler)*	Working correctly. HWS setpoint varies based on outside air temperature. *(See custom equipment schedule for boiler)*
Hydronic Heating Valves	27 of 113 operated manually	All valves working automatically. *(Non-energy benefit only)*
DHW Recirc Schedule	One runs 24/7. The second is disabled. *(See Plants/Base Utility)*	Both run based on school occupancy schedule and DHW return temp. Estimated two hours/day weekday. *(See Plants/Base Utility)*
Tower Pony Fan	Not working resulting in frequent cycling of main fan. Simulated by worsening 78°F setpoint of tower to 76°F (temperature overshoot). *(See equipment schedule for tower)*	Working correctly. Setpoint of 78F achieved without frequent cycling. Two stage tower fan added to model. *(See equipment schedule for custom tower)*
AC-2 RAD	Not balanced. Results in warm air from upstairs being primary source. Simulated by increasing RAT by 2°F for AC-2. *(See Templates/Thermostat)*	Balanced resulting in even airflow from all spaces with average RAT of 68°F. *(See Templates/Thermostat)*
AC-3	Controls not working. Unit disabled. *(Simulated by assigning rooms to AC-1. Vent schedule for reassigned rooms set to 0%)*	AC-3 working *(Rooms assigned back to AC-3, with ventilation restored)*
AHU-1 Heating	Heating coil cracked and off. Fan off in winter. All heat from large gym. *(Simulated by assigning rooms for AHU-1 to AHU-2. Fan energy for AHU-1 is in Base Utility. Vent schedule for reassigned rooms set to 0% and changed to match new unit)*	Heating coil fixed and fan working. *(Rooms assigned back to AHU-1 with fan energy removed from Base Utility and assigned back to System)*
MAU-1 & 2	Units off resulting in makeup air from other systems. *(Simulated by assigning rooms for MAUs to AC-5, Vent schedule for reassigned rooms set to 0% and changed to match new unit, makeup air from transferred from AC-5)*	Units working. *(Rooms assigned back to MAUs and transfer air removed)*