

RFP-RH-13-002 Energy Management System				
		Johnson Controls Inc		K & S Ventures Inc
		2875 High Meadow Circle		2653 Auburn Road
496 vendors solicited via MITN		Auburn Hills MI 48326		Auburn Hills MI 48326
		248.444.6258		248.299.4212
		John Nicholson		Sid Blomberg Jr
Direct-Digital Control (DDC) System				
Coordination meeting: The installer furnishing the DDC network shall meet with the City staff providing installation services and installer(s) furnishing each of the following products to coordinate details of the interface between these products and the DDC network. Each installer shall provide the City and all other installers with details of the proposed interface including PICS for BACnet equipment, hardware and software identifiers for the interface points, network identifiers, wiring requirements, communication speeds and required network accessories. The purpose of this meeting shall be to insure there are no unresolved issues regarding the integration of these products into the DDC network. Submittals for these products shall not be approved prior to the completion of this meeting.	y			
Communications with Third Party Equipment: Any additional integral control systems included with the products integrated with the work shall be furnished with a BACnet/interface or METASYS N2for integration into the Direct Digital Control System.	y	Lighting Panels	y	
Control system shall consist of a high-speed, peer-to-peer network of DDC controllers and a web-based operator interface. Depict each mechanical system and building floor plan by a point and click graphic. A web server with a network interface card shall gather data from this system and generate web pages accessible through a convention web browser on each PC connected to the network. Functions performed through the web browser interface.	y			DDC Controls are existing
System shall directly control HVAC equipment as specified. Each zone controller shall provide occupied and unoccupied modes of operation by individual zone, furnish energy conservation features such as optimal start and stop, night setback, request-based logic and demand level adjustment of setpoints as specified.	y		y	Zones to be controlled as they are in existing system. Optimal Start/Stop to be added to each air handler.
Materials shall be new products the manufacturer is currently manufacturing and selling for use in new installations. Rochester Hills is not a test site.	y		y	
Spare parts shall be available for at least 5 years after completion of this contract.	y		y	
Communication:				

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Control products, communication media, connectors, repeaters, hubs and routers shall comprise a BACnet internetwork. Controller and operator interface communication shall conform to ANSI/ASHRAE Standard 135, BACnet or METASYS N2.	y	Using Existing N2 Controls (see attachment 1 for future N2 support)	y	
Project includes new wiring and network devices as required to provide a complete and workable control network.	y		y	Rochester Hills to provide static IP
Each controller shall have a communication port for temporary connection to a laptop computer or other operator interface. Connection shall support memory downloads and other commissioning and troubleshooting operations	y			Existing equipment
Internetwork operator interface and value passing shall be transparent to internetwork architecture.				
A. An operator interface connected to a controller shall allow the operator to interface with each internetwork controller as if directly connected				
B. Controller information such as data, status and control algorithms shall be viewable and editable from each internetwork controller				
C. Inputs, outputs and control variables used to integrate control strategies across multiple controllers shall be readable by each controller on the internetwork.				
D. Program and test all cross-controller links required to execute control strategies specified.				
E. An authorized operator shall be able to edit cross-controller links by typing a standard object address or by using a point and click interface	y			Using existing controllers and limited to existing capabilities
Controllers with real-time clocks shall use the BACnet Time Synchronization service. System shall automatically synchronize system clocks daily from an operator-designated controller via the internetwork. System shall automatically adjust for daylight saving and standard time	y	Existing N2 Controllers and future BacNet	y	
System shall be expandable to at least twice the required input and output objects with additional controllers, associated devices and wiring.	y		y	
System shall support web services data exchange with any other system that complies with XML (extensible markup language) and SOAP (simple object access protocol) standards specified by the Web Services Interoperability Organization (WS-I) Basic Profile 1.0 or higher. Web services support shall as a minimum be provided at the work station or web server level and shall enable data to be read from or written to the system.	y			

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System shall support Web services read data requests by retrieving requested trend data or point values (I/O hardware points, analog value software points or binary value software points) from any system controller or from the trend history database.	Y		Y	
System shall support Web services write data request to each analog and binary object that can be edited through the system operator interface by downloading a numeric value to the specified object	Y		Y	
For read or write requests, the system shall require user name and password authentication and shall support SSL (Secure Socket Layer) or equivalent data encryption.	Y		Y	
System shall support discovery through a Web services connection or shall provide a tool available through the Operator Interface that will reveal the path/identifier needed to allow a third party Web services device to read data from or write data to any object in the system which supports this service.	Y			
Operator Interface				
Web server shall reside on high-speed network with building controllers. Each standard browser connected to server shall be able to access all system information.	Y			Building controllers are N2 network
Web server or workstation and controllers shall communicate using BACnet protocol or METASYS N2. Web server or workstation and control network backbone shall communicate using ISO 8802-3 (Ethernet) Data Link/Physical layer protocol and BACnet/IP addressing as specified in ANSI/ASHRAE 135, BACnet Annex J	Y		Y	
<p>Each workstation or web server (if needed), shall consist of the following:</p> <p>A. Industry standard hardware shall meet or exceed Direct Digital Controller system manufacturer's recommended specifications and shall meet response times specified. Hard disk shall have sufficient memory to store system software, one month of data for trended points specified and a system database at least twice the size of the existing database at system acceptance. Configure computers and network connections to meet specified memory and performance. Web server or workstations (if needed) shall be IBM-compatible PCs with a minimum of:</p> <ol style="list-style-type: none"> 1. Intel Core 2 Duo 3 GHz processor 2. 8 GB RAM 3. Two minimum 600GB Hard Disks configured as a mirrored RAID1 pair. 4. 24x CD-RW/DVD drive 				

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5. Serial, parallel, and network communication ports and cables required for proper system operation				
B. An auto-dial modem and associated cables may be used to transmit over voice-grade telephone lines at a nominal 56,000 baud and may provide communication between workstation or web server and remote buildings and workstations				
C. Operator interface shall allow each authorized operator to execute the following functions as a minimum:				
1. Log In and Log Out. System shall require user name and password to log in and to operator interface				
2. Point and Click Navigation. Operator interface shall be graphically based and shall allow operators to access graphics for equipment and geographic areas using point and click navigation				
3. View and Adjust Equipment Properties. Operators shall be able to view controlled equipment status and to adjust operating parameters such as setpoints, PID gains on and off controls and sensor calibration				
4. View and Adjust Operating Schedules. Operators shall be able to view scheduled operating hours of each schedulable piece of equipment on a weekly or monthly calendar-based graphical schedule display, to select and adjust each schedule and time period and to simultaneously schedule related equipment. System shall clearly show exception schedule and holidays on the schedule display				
5. View and Respond to Alarms. Operator shall be able to view a list of currently active system alarms, to acknowledge each alarm and to clear (delete) unneeded alarms				
6. View and Configure Trends. Operators shall be able to view a trend graph of each trended point and to edit graph configuration to display a specific time period or data range. Operator shall be able to create custom trend graphs to display on the same page data from multiple trended points.				
7. View and Configure Reports. Operators shall be able to run preconfigured reports, to view report results and to customize report configuration to show data of interest				
8. Manage Control System Hardware. Operators shall be able to view controller status to each controller.				

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<p>9. Manage Operator Access. Typically, only a few operators will be authorized to manage operator access. Authorized operators shall be able to view a list of operators with system access and of functions they can perform while logged in. Operators shall be able to add operators to delete operators and to edit operator function authorization. Operator shall be able to authorize each operator function separately.</p>	Y		Y	
System Software				
Operating System: Windows Server 2008R2				
System Graphics. Operator interface shall be graphically based and shall include at least one graphic per piece of equipment or occupied zone, graphics for each chilled water and hot water system and graphics that summarize conditions on each floor of each building included in this contract				
<p>A. Functionality. Graphics shall allow operator to monitor system status, to view a summary of the most important data for each controlled zone or piece of equipment, to use point and click navigation between zones or equipment and to edit setpoints and other specified parameters</p>				
<p>B. Animation. Graphics shall be able to animate by displaying different image files for changed object status</p>				
<p>C. Alarm Indication. Indicate areas or equipment in an alarm condition using color or other visual indicator</p>				
<p>D. Format. Graphics shall be saved in an industry-standard format such as BMP, JPEG, PNG or GIF. Web-based system graphics shall be viewable on browsers compatible with World Wide Web Consortium browser standards. Web-graphic format shall require no plug-in (such as HTML and JavaScript) or shall only require widely available no-cost plug-ins (such as Active-X and Macromedia Flash).</p>	Y		Y	
System Tools. System shall provide the following functionality to authorized operators as an integral part of the operator interface or as stand-alone software programs. If furnished as part of the interface, the tool shall be available from each workstation or web browser interface. If furnished as a stand-alone program, software shall be installable on standard IBM-compatible PCs with no limit on the number of copies that can be installed under the system license.	Y		Y	
<p>A. Automatic System Database Configuration. Each workstation or web server shall store on its hard disk a copy of the current system database.</p>	Y		Y	

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B. System Configuration. Operator shall be able to configure the system	Y		Y	
C. Online Help. Context-sensitive online help for each tool shall assist operators in operating and editing the system	Y		Y	
D. Security System. System shall require a user name and password to view, edit, add, or delete data.	Y		Y	
1. Each user name and password combination shall define accessible viewing, editing, adding and deleting functions in each system application, editor and object. Authorized operators shall be able to vary and deny each operator's accessible functions based on equipment or geographic location	Y		Y	
2. Automatically log out each operator if no keyboard or mouse activity is detected. Operators shall be able to adjust automatic log out delay	Y		Y	
3. Store system security data including operator passwords in an encrypted format. System shall not display operator passwords	Y		Y	
E. System Diagnostics. System shall automatically monitor controller and I/O point operation. System shall annunciate controller failure and I/O point locking (manual overriding to a fixed value)	Y		Y	
F. Alarm Processing System input and status objects shall be configurable to alarm on departing from and on returning to normal state. Operator shall be able to enable or disable each alarm and to configure alarm limits, alarm limit differentials, alarm states, and alarm reactions for each system object. Configure and enable alarm points as specified. Alarms shall be BACnet alarm objects and shall use BACnet alarm services	Y		Y	
G. Alarm Messages. Alarm messages shall use an English language descriptor without acronyms or mnemonics to describe alarm source, location and nature	Y		Y	
H. Alarm Reactions. Operator shall be able to configure (by object) actions workstation or web server shall initiate on receipt of each alarm. As a minimum, workstation or web server shall be able to log, print, start programs, display messages, send e-mail, send page and audibly annunciate	Y		Y	

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I. Alarms Maintenance. Operators shall be able to view system alarms and changes of state chronologically, to acknowledge and delete alarms and to archive closed alarms to the workstation or web server hard disk from each workstation or web browser interface	Y		Y	
J. Trend Configuration. Operator shall be able to configure trend sample or change of value (COV) interval, start time and stop time for each system data object and shall be able to retrieve data for use in spreadsheets and standard database programs. Controller shall sample and store trend data and shall be able to archive data to the hard disk. Configure trends as specified. Trends shall be BACnet trend objects.	Y		Y	
K. Object and Property Status and Control. Operator shall be able to view, and to edit if applicable, the status of each system object and property by menu, on graphics or through custom programs	Y		Y	
L. Reports and Logs. Operator shall be able to select, to modify, to create and to print reports and logs. Operator shall be able to store report data in a format accessible by standard spreadsheet and word processing programs	Y		Y	
M. Standard Reports. Furnish the following standard system reports:	Y		Y	
1. Objects. System objects and current values filtered by object type, by status (in alarm, locked, normal), by equipment, by geographic location, or by combination of filter criteria	Y		Y	
2. Alarm Summary. Current alarms and closed alarms. System shall retain closed alarms for an adjustable period	Y		Y	
3. Logs. System shall log the following to a database or text file and shall retain data for an adjustable period:	Y		Y	
a. Alarm History	Y		Y	
b. Trend Data. Operator shall be able to select trends to be logged	Y		Y	
c. Operator Activity. At a minimum, system shall log operator log in and log out, control parameter changes, schedule changes, and alarm acknowledgment and deletion. System shall date and time stamp logged activity	Y		Y	

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<p>M. Graphics Generation. Graphically based tools and documentation shall allow operator to edit system graphics, to create graphics and to integrate graphics into the system. Operator shall be able to add analog and binary values, dynamic text, static text and animation files to a background graphic using a mouse.</p>	Y		Y	
			Y	
<p>N.Graphics Library. Complete library of standard HVAC equipment graphics shall include equipment such as chillers, boilers, air handlers, terminals, fan coils, and unit ventilators. Library shall include standard symbols for other equipment including fans, pumps, coils, valves, piping, dampers and ductwork. Library graphic file format shall be compatible with graphics generation tools.</p>	Y		Y	
			Y	
<p>N. Custom Application Programming. Operator shall be able to create, edit, debug, and download custom programs. System shall be fully operable while custom programs are edited, compiled and downloaded. Programming language shall have the following features:</p>	Y		Y	
<p>1. Language shall be graphically based or English language oriented. If graphically based, language shall use function blocks arranged in a logic diagram that clearly shows control logic flow. Function blocks shall directly provide functions listed below, and operators shall be able to create custom or compound function blocks. If English language oriented, language shall be based on the syntax of BASIC, FORTRAN, C, or PASCAL, and shall allow for free-form programming that is not column-oriented or "fill-in-the-blanks"</p>	Y		Y	
<p>2. Programming Environment. Tool shall provide a full-screen, cursor-and-mouse-driven programming environment that incorporates word processing features such as cut and paste. Operators shall be able to insert, add, modify and delete custom programming code, and to copy blocks of code to a file library for reuse in other control programs.</p>	Y		Y	
<p>Operator shall be able to insert, add, modify and delete custom programming code and to copy blocks of code to a file library for reuse in other control programs</p>	Y		Y	
<p>3. Independent Program Modules. Operator shall be able to develop independently executing program modules that can disable, enable and exchange data with other program modules</p>	Y		Y	

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<p>4. Debugging and Simulation. Operator shall be able to step through the program observing intermediate values and results. Operator shall be able to adjust input variables to simulate actual operating conditions. Operator shall be able to adjust each step's time increment to observe operation of delays, integrators, and other time-sensitive control logic. Debugger shall provide error messages for syntax and for execution errors.</p>	Y		Y	
<p>5. Conditional Statements. Operator shall be able to program conditional logic using compound Boolean (AND, OR and NOT) and relational (EQUAL, LESS THAN, GREATER THAN, NOT EQUAL) comparisons.</p>	Y		Y	
<p>6. Mathematical Functions. Language shall support floating-point addition, subtraction, multiplication, division and square root operations, as well as absolute value calculation and programmatic selection of minimum and maximum values from a list of values</p>	Y		Y	
<p>7. Variables: Operator shall be able to use variable values in program conditional statements and mathematical functions</p>	Y		Y	
<p>a. Time Variables. Operator shall be able to use predefined variables to represent time of day, day of the week, month of the year and date. Other predefined variables or simple control logic shall provide elapsed time in seconds, minutes, hours and days. Operator shall be able to start, stop and reset elapsed time variables using the program language</p>	Y		Y	
<p>b. System Variables. Operator shall be able to use predefined variables to represent status and results of Controller Software and shall be able to enable, disable and change setpoints of Controller Software as described herein.</p>	Y		Y	
<p>8. Portable Operator's Terminal. Provide all necessary software to configure an IBM-compatible laptop computer for use as a Portable Operator's Terminal. Operator shall be able to connect configured terminal to the system network or directly to each controller for programming, setting up and troubleshooting</p>	Y		Y	

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9. BACnet. Web server or workstation shall have demonstrated interoperability during at least one BMA Interoperability workshop and shall substantially conform to BACnet Operator Workstation (B-OWS) device profile as specified in ASHRAE/ANSI 135, BACnet Annex L.	Y		Y	
Controller Software				
Building and energy management application software shall reside and operate in system controllers. Applications shall be editable through operator workstation, web browser interface or engineering workstation	Y		Y	Limited to existing controller capabilities
System Security				
System shall provide the following schedule option as a minimum:	Y			
A. Weekly. Provide separate schedule for each day of the week. Each schedule shall be able to include up to 5 occupied periods (5 start-stop pairs or 10 events)	Y			
B. Exception. Operator shall be able to designate an exception schedule for each of the next 365 days. After an exception schedule has executed, system shall discard and replace exception schedule with standard schedule for that day of the week.	Y			
C. Holiday. Operator shall be able to define 24 special or holiday schedules of varying length on a scheduling calendar that repeats each year	Y		Y	
Remote Communication. System shall automatically contact operator workstation or server on receipt of critical alarms.	Y		Y	To be determined by customer
Maintenance Management. System shall generate maintenance alarms when equipment exceeds adjustable runtime, equipment starts, or performance limits. Configure and enable maintenance alarms as specified.	Y		Y	
Sequencing. Application software shall sequence chillers, boilers, and pumps as specified	Y			Existing equipment
Staggered Start. System shall stagger controlled equipment restart after power outage. Operator shall be able to adjust equipment restart order and time delay between equipment restarts	Y		Y	
Auxiliary Control Devices				
Wiring and Raceways				
A. General. Provide copper wiring, plenum cable, and raceways as specified	Y		N/a	No new wire
B. Insulated wire shall use copper conductors and shall be UL listed for 90° C (200° F) minimum service	Y		N/a	No new wire
Programming				

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Software Programming. Programming shall provide actions for each possible situation. Graphic- or parameter-based programs shall be documented. Text-based programs shall be modular, structured, and commented to clearly describe each section of the program	Y			
A. Application Programming. Provide application programming that adheres to sequences of operation. Program documentation or comment statements shall reflect language used in sequences of operation.	Y			
B. Install, initialize, start up and troubleshoot operator interface software and functions (including operating system software, operator interface database and third party software installation and integration required for successful operator interface operation)	Y			Application programs exist in existing equipment
Training				
Provide training for designated City staff. Training shall be provided via self-paced training, web-based or computer-based training, classroom training or a combination of training methods. Please describe.	Y	On Site Training	Y	On-site or at our facility in Auburn Hills
Training shall enable students to accomplish the following objectives:				
A. Proficiently operate system	Y		Y	
B. Understand control system architecture and configuration	Y		Y	
C. Understand DDC system components	Y		Y	
D. Understand system operation, including DDC system control and optimizing routines (algorithms)	Y		Y	
E. Operate workstation and peripherals	Y		Y	
F. Log on and off system	Y		Y	
G. Access graphics, point reports and logs	Y		Y	
H. Adjust and change system setpoints, time schedule, and holiday schedules	Y		Y	
I. Recognize common HVAC system malfunctions by observing system graphics, trend graphs and other system tools	Y		Y	
J. Understand system drawings and operation and maintenance manual	Y		Y	
K. Understand job layout and location of control components	Y		Y	
L. Access data from DDC controllers	Y		Y	
M. Operate portable operator's terminals	Y		Y	
N. Create and change system graphics	Y		Y	
O. Create, delete and modify alarms, including configuring alarm reactions	Y		Y	
P. Create, delete and modify point trend logs (graphs) and multi-point trend graphs	Y		Y	
Q. Configure and run reports	Y		Y	

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R. Add, remove and modify system's physical points	y		y	
S. Create, modify and delete application programming	y		y	
T. Add operator interface stations	y		y	
U. Add a new controller to system	y		y	
V. Download firmware and advanced applications programming to a controller	y		y	
W. Configure and calibrate I/O points	y		y	
X. Maintain software and prepare backups	y		y	
Y. Interface with job-specific, third-party operator software	y		y	
Z. Add new users and understand password security procedures	y		y	
Divide presentation of objectives into three sessions. Participants will attend one or more sessions, depending on knowledge level required				
A. Day-to-day operators	y		y	
B. Advanced operators	y		y	
C. System managers and administrators	y		y	
Provide course outline and materials. Provide training materials to each student	y		y	
Instructors shall be experienced in presenting material and factory-trained	y		y	
Perform classroom training using a network of working controllers representative of installed hardware/software	A	Can be Modeled to suit needs at later date.	y	
Will training be conduct on-site?	y		y	
If not, where will training sessions be held?				
What is availability of training?	y			Flexible based on requirements of customer
A training plan is included in proposal	y		y	
Software				
Proposal includes a schedule and timelines for system implementation	N	Will provide schedule upon award.	y	
Proposer shall list all recommended computer hardware needed to implement suggested software system	y	Hardware will be provided	y	
A. State the electronic hardware devices that are compatible with the proposed software	y	N2 and BacNet		
B. All devices operate in a mobile environment	y			
C. All devices run a Windows based operating system	y			
D. Provide recommended peripheral devices	n/a		y	
Software upgrades/updates are received automatically from vendor. Describe method, i.e., on-line, etc.	y	Field Installed	N	Upgrades need to be installed

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Software upgrades/updates are provided by vendor free of charge. If not, state costs	Y	All versions of update 6 are free		Stated in quote
A. Do you have an internet support site?	Y			
B. Can updates, patches and fixes be downloaded from this site?	N			We will take remote control of customer's computer and walk them through the issue
C. Describe how on-line support works including telesupport?	N		Y	
Does the vendor web site have a knowledge base for technical support?	Y		Y	
Can proposer provide a hosted system? Please explain	N		Y	We maintain server for customer use
Any browser technology required for the system uses Windows Explorer	Y		Y	All major web browsers are supported
Reporting System is fully Microsoft Windows 2000XP and 2007 compliant	Y		Y	
Reporting System is compatible with all virus detection software and does not present backup, archival or loading problems with viruscan.	N	Norton's Antivirus	Y	to our knowledge
System will provide administrative reports				
A. Describe how those reports are run	Y	Report are set up by customer from the standard interface. Please see attachment 2		
B. From what interface can they be run	Y			
C. Include examples of reports generated by the system	Y		Y	From browser
User help functionality includes context and key word search capability	Y		N	
Does the reporting system provide an on-line tutorial for basic functions?				
The reporting system provides clear and concise error messages	Y	Offered as a cloud based option	N	
System's user interface will support input via finger-touch, stylus and keyboard. Please describe.	Y		Y	
System shall interface to a commercially supplied wireless data network. Please describe how this requirement will be met.	Y		N	All systems to run on Rochester Hills Ethernet network.
All parts of the software shall comply with standard Windows interface designs as produced by Microsoft, except where deviating from standard interface elements provide a superior function advantage.	Y			
Warranty. Please provide details.	Y	1 yr on labor 3 yrs on parts		One Year
Support and Maintenance Agreement – Provide users unlimited technical support by software support specialist through a support and maintenance agreement	Y	Premium PSA can be	N	1st year - warranty issues dealt with as needed. Support only given to trained personnel.
Additional functionality provided by the proposed software:				
Run Conditions – Scheduled: The unit shall run according to a user definable time schedule in the following modes:				
• Occupied Mode: The unit shall maintain				
A 74°F (adj.) cooling setpoint				
A 70°F (adj.) heating setpoint				

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<ul style="list-style-type: none"> Unoccupied Mode (night setback): The unit shall maintain <ul style="list-style-type: none"> A 85°F (adj.) cooling setpoint A 55°F (adj.) heating setpoint 	y		Existing controllers. Rochester Hills can adjust set points.
Alarms shall be provided as follows:			
A. High Zone Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.)			
B. Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.)	y		Customer to determine alarms
Zone Setpoint Adjust: The occupant shall be able to adjust the zone temperature heating and cooling setpoints at the zone sensor	y		Existing System
Zone Optimal Start: The unit shall use an optimal start algorithm for morning start-up. This algorithm shall minimize the unoccupied warm-up or cool-down period while still achieving comfort conditions by the start of scheduled occupied period.	y		Will be installed
Zone Unoccupied Override: A timed local override control shall allow an occupant to override the schedule and place the unit into an occupied mode for an adjustable period of time. At the expiration of this time, control of the unit shall automatically return to the schedule.	y	If the existing stats have that function	Existing System
Supply Fan: The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime	y		Existing System
Alarms shall be provided as follows:			
<ul style="list-style-type: none"> Supply Fan Failure: Commanded on, but the status is off Supply Fan in Hand: Commanded off, but the status is on Supply Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.) 	y		To be discussed in customer meeting
Cooling Stage: The controller shall measure the zone temperature and stage the cooling to maintain its cooling setpoint. To prevent short cycling, the stage shall have a user definable (adj.) minimum runtime.			
The cooling shall be enabled whenever:			
<ul style="list-style-type: none"> Outside air temperature is greater than 60°F (adj.) And the economizer (if present) is disable or fully open And the zone temperature is above cooling setpoint And the supply fan status is on And the heating is not active 	y		Existing
Gas Heating Stage: The controller shall measure the zone temperature and stage the heating to maintain its heating setpoint. To prevent short cycling, the stage shall have a user definable (adj.) minimum runtime.			
The heating shall be enabled whenever:			
<ul style="list-style-type: none"> Outside air temperature is less than 65°F (adj.) And the zone temperature is below heating setpoint 			

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<ul style="list-style-type: none"> And the supply fan status is on And the cooling is not active 	Y		Existing
Economizer: The controller shall measure the zone temperature and modulate the economizer dampers in sequence to maintain a setpoint 2°F less than the zone cooling setpoint. The outside air dampers shall maintain a minimum adjustable position of 20% (adj.) open whenever occupied	Y		Existing
The economizer shall be enabled whenever:			
<ul style="list-style-type: none"> Outside air temperature is less than 65°F (adj.) And the outside air enthalpy is less than 22% (adj.) And the outside air temperature is less than the return air temperature And the outside air enthalpy is less than the return air enthalpy 			
<ul style="list-style-type: none"> And the supply fan status is on 	Y		Existing
The economizer shall close whenever:			
<ul style="list-style-type: none"> Mixed air temperature drops from 45°F to 40°F (adj.) Or on loss of supply fan status Or freezestat (if present) is on 			
The outside and exhaust air dampers shall close and the return air damper shall open when the unit is off. If optimal start up is available, the mixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to fully closed.	Y		Existing
If optimal start up is available, the mixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to fully closed.	Y		Existing
Minimum Outside Air Ventilation – Fixed Percentage: The outside air dampers shall maintain a minimum position (adj.) during building occupied hours and be closed during unoccupied hours	Y		Existing
Supply Air Temperature: The controller shall monitor the supply air temperature	Y		Existing
Alarms shall be provide as follows:			
<ul style="list-style-type: none"> High Supply Air Temp: If the supply air temperature is greater than 120°F (adj.) Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.) 	Y		Customer to define alarms
Alarms shall be provided as follows:			
High Zone Temp: If the temperature is greater than user defined setpoint (adj.)			
Low Zone Temp: If the temperature is lower than user defined setpoint (adj.)	Y		Customer to define alarms

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		Johnson Controls Inc		K & S Ventures Inc
Run Conditions – Scheduled:				
The unit shall run according to a user definable time schedule in the following modes:				
Occupied Mode: The unit shall maintain				
A 74°F (adj.) cooling setpoint				
A 70°F (adj.) heating setpoint				
Unoccupied Mode (night setback): The unit shall maintain				
A 85°F (adj.) cooling setpoint				
A 55°F (adj.) heating setpoint	Y			Adjustable by Rochester Hills
Alarms shall be provided as follows:				
High Zone Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.)				
Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.)	Y			Customer to define alarms
Zone Setpoint Adjust: The occupant shall be able to adjust the zone temperature heating and cooling setpoints at the zone sensor	Y			Limited to existing controller
Zone Optimal Start: The unit shall use an optimal start algorithm for morning start-up. This algorithm shall minimize the unoccupied warm-up or cool-down period while still achieving comfort conditions by the start of scheduled occupied period	Y			Implemented per Air Handler
Zone Unoccupied Override: A timed local override control shall allow an occupant to override the schedule and place the unit into an occupied mode for an adjustable period of time. At the expiration of this time, control of the unit shall automatically return to the schedule	Y		Y	Existing
Supply Fan: The supply fan shall run anytime the unit is commanded to run, unless shut down on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime	Y			Existing
Alarms shall be provided as follows:				
Supply Fan Failure: Commanded on, but the status is off				
Supply Fan in Hand: Commanded off, but the status is on				
Supply Fan runtime exceeded: Status runtime exceeds a user definable limit (adj.)	Y			Customer to define alarms
Cooling State: The controller shall measure the zone temperature and stage the cooling to maintain its cooling setpoint. To prevent short cycling, the stage shall have a user definable (adj.) minimum runtime	Y			Existing
The cooling shall be enable whenever:				
Outside air temperature is greater than 60°F (adj.)				
And the economizer (if present) is disable or fully open				
And the zone temperature is above cooling setpoint				
And the supply fan status is on				

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And the heating is not active	y		Adjustable
Gas Heating Stage: The controller shall measure the zone temperature and stage the heating to maintain its heating setpoint. To prevent short cycling, the stage shall have a user definable (adj.) minimum runtime	y		Existing
The heating shall be enabled whenever:			
Outside air temperature is less than 65°F (adj.)			
And the zone temperature is below heating setpoint			
And the supply fan status is on			
And the cooling is not active	y		Existing
Economizer: The controller shall measure the zone temperature and modulate the economizer dampers in sequence to maintain a setpoint 2°F less than the zone cooling setpoint. The outside air dampers shall maintain a minimum adjustable position of 25% (adj.) open whenever occupied	y		Existing
The economizer shall be enabled whenever:			
Outside air temperature is less than 65°F (adj.)			
And the outside air enthalpy is less than 22% (adj.)			
And the outside air temperature is less than the return air temperature			
And the outside air enthalpy is less than the return air enthalpy			
And the supply fan status is on	y		Existing
The economizer shall close whenever:			
Mixed air temperature drops from 45°F to 40°F (adj.)			
Or on loss of supply fan status			
Or freezestat (if present) is on	y		Existing
The outside and exhaust air dampers shall close and the return air damper shall open when the unit is off. If Optimal Start Up is available, the mixed air damper shall operate as describe din the occupied mode except that the outside air damper shall modulate to fully closed	y		Existing
Minimum Outside Air Ventilation-Fixed Percentage: The outside air dampers shall maintain a minimum position (adj.) during building occupied hours and be closed during unoccupied hours	y		Existing
Supply Air Temperature: The controller shall monitor the supply air temperature	y		y
Alarms shall be provided as follows:			
High Supply Air Temp: If the supply air temperature is greater than 120°F (adj.)			
Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.)	y		Customer to define alarms
Type of Organization; established; years in business		Corporation, established 1885, 128 years in business	Corporation; established 1990; 23 years in business
Vendor Name		Johnson Controls Inc	K & S Ventures Inc
Vendor is Prime Contractor? Y/N		Yes	Yes

RFP-RH-13-002 Energy Management System	Johnson Controls Inc	K & S Ventures Inc
Year in business installing Energy Management Systems	1950	Since 1990
Closest support facility/sales office:	2875 High Meadow Circle, Auburn Hills, MI	2653 Auburn Road, Auburn Hills MI 48326
Where is company headquarters?	507 E Michigan Street, Milwaukee, WI 53202	2653 Auburn Road, Auburn Hills MI 48326
List New Energy Mgmt Systems installations in previous 3-years: 2010	\$12.8 Billion	9
2011	\$14.8 Billion	7
2012	14.7 Billion	11
How long has current energy mgmt system been in production?	2002	7-years
Are all items FOB delivered, freight prepaid & allowed?	Yes	Yes
As part of hosted system, all periodic enhancements/system upgrades to the software will be provided at no extra charge?	No	No
Average response time (hours) for a telephone response to a service call?	Two Hours	Less than 30 minutes
How often are product upgrades or enhancements released?	Fifteen Months	Annually
What operating system does the Energy Management System software operate on?	Windows 7	All Windows and MAC based operating systems
What is the query tool and report writer?	Built in Johnson Controls Software	BQL
What is the hourly rate for implementation assistance <i>beyond</i> that which is included in the Vendor proposal by skill-set?	\$165/hr High Level Metasys Programming Technician	\$85/hr - General Service & Installation; \$115/hr - Programming
Can the Contractor provide a true Turnkey Solution, including: Energy Management System	y	y
Energy Management System Software	y	y
Design	y	y
Installation/Labor	y	y
Software Implementation	y	y
Training (on-site)	y	y
On-going support & maintenance for software application	y	y
Maintenance contract for equipment/system	y	y
Are any of the implementation services provided by third parties?	No	No
If some services are provided by third party vendors, list which ones:		
Describe the security in the system	Windows Compatible Software	Complex system of usernames & passwords
Will the vendor contractually agree to: Provide on-site staff for training and implementation.	y	y
Meet insurance requirements	y	y
One year warranty, during which the annual support and maintenance conditions apply.	y	y
Support and Maintenance Agreement available after expiration of Warranty	y	y
Provide a work plan including timeline from the date of award:	Upon Award and acceptance of the project this will be provided. Total project time - approximately three months.	See attached Timeline. 1)Uploads programming & database from existing Metasys system (approx 1-week). 2) Complete engineering & design of both systems (approx 1-week). 3) Build new database for upgraded systems (approx. 2-weeks). 4. Programs upgraded system & confirms new logic for upgraded systems (approx 1-week). 5)Install

RFP-RH-13-002 Energy Management System	Johnson Controls Inc	K & S Ventures Inc
		front end supervisory controllers for building mgmt systems (1-2 days). 6) Provide system start up & check out (1-day). 7) Provides operator training (12 hrs spread over the course of 1-year)
What are qualifications of your staff to be assigned to this project including the primary contract to be assigned?	All of our Installation Technicians are factory trained.	Provided
Who in your firm responsible for RH projects, submit copies of licenses, etc and educational background:	Resumes attached at the end of the RFP.	6-names provided
How many clients has your company served w/the type of services in RFP & include names/and phone numbers:	Listed 2 companies	Numerous customers; municipalities & school districts and private sector. See references.
List outside contractors/subcontractors you propose to use on this project:	None	None
Provide information on warranties:	One Year on Labor and Three Years for Product Date Code.	Manufacturer warranty as described per item. Also K & S Warrants all installation and workmanship for one year from date of work completion.
How many employees full time & part time:	Johnson Controls has a global team of more than 142,000 employees	15 full time; 5 part time
Have you been involved in litigation during the past 5-years?	Refer to proposal	No
What are your billing procedures?	Material billed up front; progressive billing; net payment terms 30-days.	Monthly billing on net 60 terms
COST PROPOSAL FORM:	OPTION 1: Turnkey Price \$111,800 ADX server located in City of RH IT room communicating to municipal bldg & through owner provided connection to Oakland County Sheriff Dept. R5.2 ADX Turnkey Rack Mount Solution (for 10 to 25 users) for the MSEA Application and Data Server. Dell Power Edge R410, Xeon 2.26GHz/2x500GB-RAID1/6GB/DVDRW/dual GB nci/universal rails/no mouse or keyboard/3 yr on-site warranty. Includes Windows 2008 Standard Server R2 SP1 64-bit, SQL Server 2008 - 1 processor (unlimited CALs), SEP and ADX software: ADXTK-M-5.2-RN.....Medium-10 Users	EQUIPMENT/SOFTWARE FX-70 Supervisory controller, Johnson Controls, 1 @ \$6,000 FX-60 Supervisory controller, Johnson Controls, 1 @ \$4,050 FX-20 Supervisory controller, Johnson Controls, 1 @ \$2,750 RS-485 Expansion card, Johnson Controls, 1 @ \$300 Incidental material, (wire, connectors, etc) 1 @ \$1,500 Server Software (optional), Johnson Controls, 1 @ \$5,750 Server Station (optional), Dell (or other), 1 @ \$3,000
		SERVICES:

RFP-RH-13-002 Energy Management System			
	Johnson Controls Inc	K & S Ventures Inc	
		Design, K & S Ventures, \$680/\$1,020	
	OPTION 2: Turnkey Price \$91,300	Installation Contractor, K & S Ventures, \$680/\$1,020	
	ADS Desktop, Rel 5.2 ADS Turnkey (for 5 Users) for the MSEA Application	Database, K & S Ventures, \$4,080/\$5,440	
	and Data Server. This is a desktop, Includes Windows 7, SQL Express 2008,	Graphics, K & S Ventures, \$5,440/\$8,160	
	ADS Software & SEP anti-virus software. 5-Users. Dell Optiplex XE, Core 2 Duo	Networking, K & S Ventures, \$2,380/\$3,740	
	2.8GHz/2x500GB-Raid1/3GB/DVDRW/nic/Win 7 Pro SP1 32-bit, IE9/Keyboard	Miscellaneous troubleshooting, K & S Ventures, \$3,060/\$4,420	
	& Mouse/3-year on-site warranty		
	OPTION 3: Turnkey Price \$91,320	SOFTWARE TRAINING PROFESSIONAL:	
	Johnson Controls FX Web supervisor Stand alone. The FX Server includes a	K & S Ventures, End User Training, \$1,020/\$1,020	
	graphical user interface & configuration tool you can access w/a Web browser.	K & S Ventures, 1 on 1 Training, \$3,400/\$3,400	
	Multiple users can concurrently connect to the FX Server.		
	User security and presentation preferences are managed through	HOSTED SOFTWARE SERVICES:	
	user profiles, logon IDs, and passwords. Remote access is easily achieved	K & S Ventures, Yearly, \$1,000/year	
	from an Internet, intranet.		
	Equipment/Software:	ANNUAL MAINTENANCE CONTRACT:	
	Turnkey Project	1st year \$600 - Future Years: \$600	
		ANNUAL SOFTWARE MAINTENANCE & SUPPORT CONTRACT:	
	Services:	1st year \$1,200 - Future Years: \$1,200	
	Turnkey Project: Design, Installation contractor, Implementation Contractor.	K & S Ventures to include server upgrade if chosen	
	Identify reimbursable: None	TOTAL COST BREAKDOWN	Option 3
	Detail any other expenses not included above: Turnkey Project		Option 1
	Cost to add additional buildings? Would have to understand building		Web Based
		Equipment/Materials	BMS Server
	equipment & function:	Software/Hardware/Hosted Software	
	Can you meet Insurance Requirements: Y	Services	\$14,600
	Can you meet bond requirements: Y	Design Engineer	\$23,350
	Any exceptions/alternates to the specifications: None-Turnkey Project	Installation/Labor Contractor	\$1,000
	Provide 5-references: Yes-provided	Training	\$1,000
		Annual Equipment Maintenance	\$680
		Annual Software Support & Maintenance	\$15,640
			\$4,420
			\$4,420
			\$600
			\$600
			\$1,200
			\$1,200
	PLANNED SERVICE PROPOSAL:	TOTAL PROJECT COST	\$38,140
	Schedule A:		\$54,390
	Service agreement for 3-years - starting 7/1/2013 and ending 6/30/2016	Reimbursables: None	
	Year one - \$15,356.00; year two \$15,356.00; year three \$15,356.00		
	As a manufacturer of both mechanical and controls systems, Johnson	Expenses NOT included above:	
	Controls has the expertise & resources to provide proper maintenance &	Note that if a server option is selected, the FX-70 can be switched	
	repair services for your facility.	to an FX-60 resulting in savings of almost \$2,000. Though it is also	
	Refer to pages 10 and 11 for Schedule A - note references made to Providence	acceptable to stay with the FX-70. It is also expected that the City's	
	Park Hospital...not Rochester Hills....	IT Department will be instrumental in setting up any server options.	
		If outside IT assistance is required, there may be additional expense	
		incurred.	

RFP-RH-13-002 Energy Management System		
	Johnson Controls Inc	K & S Ventures Inc
		What would be the cost to add additional buildings?
		This would depend on the scope of work required at each additional
		building. However, the solution being proposed is very scalable and
		can easily grow to accommodate additional locations being
		integrated into the building management system as well.
		Can you meet the City's Insurance Requirements? Yes
		Can you meet the bond requirements? Yes
		Exceptions/alterations:
		References: Provided.