

**Q&A Addendum
Enterprise Energy Management System
RFP 600989**

Posted May 11, 2016

This document provides question and answer information pertaining to the above captioned RFP and will be updated as necessary.

REMINDER: It is the Respondent's responsibility to thoroughly examine and read the entire RFP document and any appendices and addenda to this RFP.

NOTE: We received a variety of duplicate questions, therefore the following Q&A format is intended to address *all* questions received to date, in addition to the spreadsheet provided as a component of this Addendum.

GENERAL QUESTIONS – Timing, Commercial Terms, Schedule

Question: Given that the RFP response is due on 5/12/16, please let me know when to expect responses to the questions.

Answer: *Unless the selection committee decides to extend the proposal due date past 5/12/16, then we anticipate releasing responses to all questions via Q&A Addendum by 4:00 on May 6th. If an extension is decided then we will post that notice as well.*

An extension was released on 5/6/16 listing the new deadline for proposals set for 5/19/16 at 2:30 PM CST.

1. With regards to Respondent Interviews / Presentations – are there any tentative dates as of now?

Not at this time. The number of offered proposals will impact how quickly a short list can be developed and notifications made. It is highly unlikely the on-site presentations would occur before June 30.

2. Section 7 – Contract term – is there a minimum contract term? The RFP documents list a maximum term of 72 months

This procurement is expected to be a sizeable investment of time and resources on the part of both the UA and the selected contract partner. As such the University would like to develop a relationship with the selected respondent for no less than a minimum 5 year period. These types of procurements are typically renewed on an ongoing basis as long as the UA continues to receive good value for its investment.

3. What is implementation expectation in terms of timing and roll out?

UA understands that this is not a small project and that it will take time to develop and deploy. As a part of the phase 2 short list activities, the selected respondents will be asked to provide an implementation plan and schedule. UA does not expect any accelerated implementation schedule. Rather UA would prefer a realistic schedule that can be adequately supported so that stated milestones can be achieved.

DASHBOARD QUESTIONS

4. Is your intent to purchase Dashboard Software?

UA acknowledges that potential respondents' native applications may offer capabilities requested in the RFP. UA has no objection to respondent making use of those inherent functionalities. Respondent should do so with the understanding that they are still expected to comply with all requirements of the RFP.

5. Is there a complete building inventory available, with breakdowns including square footage, BMS and metering?
6. Can you provide a building inventory providing square footage and listing installed meters by resource?
7. Can you provide specific detail about where additional metering infrastructure is required - with specific regard to necessary installation?
8. Can we get a list of existing meters (electric, water, gas, steam) and data points that need to be monitored as part of the RFP?
9. How many total end points of service or meters does UA wish to track? This should include purchased utility meters, submeters, chargeback meters, splits, and virtual meters.
10. Can you provide a breakdown of the number of each commodity to be tracked (electric, natural gas, water, sewer, steam, chilled water, waste, recycling, etc.)? If tracking water and sewer, do you separate these two commodities or are they combined on bills? Are there any other aspects of your water bills that you need to pay special attention to such as irrigation or fireline?

For 5-10 above, UA will provide a spreadsheet showing the following:

- *Building Name*
- *Building Square Footage*
- *Source Utilities (electric, water/sewer, gas, chilled water, steam/hot water)*

Please note that the spreadsheet contains some missing data, generally related to building area, and is intended for informational purposes and to provide a scope of the number, size, and complexity of campus buildings.

It is expected that all buildings that have service entrance metering will be available through the dashboard application. The type of dashboard functionality will be dependent on the available underlying data stream, i.e. is the data only from monthly utility bills or does it have active UA metering telemetry.

See below for more information on application location of data, sampling rates, availability, etc.

11. Does UA plan on performing bill entry or are you seeking the selected vendor to provide this service? If the latter, in what formats are you currently receiving your utility bills (paper, PDF, CSV, EDI, etc.)? And what are the totals for each format?

UA receives bills through Excel spreadsheet, PDF, and physically mailed paper. UA already makes use of a bill entry application, therefore this functionality is a low priority

for the current RFP. However, we will consider an application that improves upon what is currently in use as long as the total solution also addresses other needs.

12. Specification 8.4.1: Please provide an example of using loaded utility rates.

The purpose of the question is to understand the level of complexity the application can support with respect to both internal and purchased utility rates. For instance, the most simple would be unit cost rates for Internal AR markups, such as debt service, vehicle depreciation, etc. Moderate rates structures would include both fixed and variable rate elements in the same billing, percent allocations of taxes and fees, weather normalization adjustments, etc. More complex rates would include demand and energy billing, allocation of demand ratchet costs across the customer base, time of use and seasonal rates, standby or supplemental power charges, etc.

13. Specification 13.1.3: Does 5 year history of weather data exist on site (in a historian perhaps)?

Yes, but not the intent of the question. The intent is to determine if and how the respondent's offering can make use of historical weather data from the third party providers (e.g. NOAA) discussed in 13.1, for instances when data is required to be analyzed longitudinally and/or is required to be weather normalized.

14. 2.1.1 Can you elaborate on what your goals or desired achievements are for "significant engagement functionality"?

The goal for "occupant engagement functionality" is to provide operating data and feedback to an occupant to inform them about their building's state of operation. UA would like to avoid a situation where someone feels like they have no effect on how a building runs, rather than they are an integral part of comfort conditions and overall system performance.

15. Can you provide more detail about "disparate data sources" mentioned on P. 2?

Currently there are different pieces of software and databases which track and store building information. Each has its own platform, user interface, login and password. The intent behind this solicitation is to find software which can pull data from these locations and display it in a single view.

16. In Section 2. Scope of Work, you mention the ability to interface with "UA's disparate data sources". Please describe the specific type of system and vendor associated with each of the systems. (e.g. accounting system, BAS, metering system, etc.)

Examples if data sources used for building management include Johnson Controls Metasys, Schneider Structureware Power Monitoring (SPM), Emerson Process Management DELTA V DCS Utility Plant Process DCS & SCADA, IDS Energy Witness, FAMIS, BASIS, and RUSS, and report it in one view.

17. Please describe in further detail the intent of Question 3.5.3. We do not understand the desired use of normalization by time of day.

Time of day normalization is based on expected building performance at a given time period. For example UA has a thermostat setback policy implemented during nights and weekends. A building might be set to Occupied mode between 8:00am and 5:00pm Monday through Friday, Unoccupied mode the rest of the time. We should know what to expect relative to energy consumption during those times. If we see a spike in, say, steam usage at 11:00pm, when the system is not calling for heat, we would know something is not working as intended.

18. Please describe in further detail the intent of Question 3.5.4. We do not understand the desired use of normalization by day of week.

Same as the previous question. Given a building's schedule we should know what to expect as far as building performance. If consumption goes out of expected range, either high or low, we know there is something we should investigate.

19. Please describe in further detail the intent of Question 4.6.1. Please provide detailed description or definition of Coincident demand.

Coincident demand is electric demand (kW) for a building at the same time the campus has reached its monthly peak demand. The intent is to understand which buildings, including chiller plants, contribute the most to campus peak. Additionally, Facilities Management intends to bill customers on the main campus grid based on both consumption and coincident demand. Both forms of electric usage are necessary to implement such a billing approach.

FAULT DETECTION AND BUILDING DIAGNOSTICS

20. Is your intent for your software to do automated analysis and fault detection of the data collected?

Yes. At a minimum, this is functionality that we want the native application or through some additional module or enhancement, to be able to perform. The UA may not choose to execute this element of the project in this initial deployment, but we need to know that the overall solution proposed by the respondent can show both through application demonstration and customer references that the product solution supports building diagnostics and automated fault detection.

21. If automatic fault detection is required, can we get a list of the HVAC equipment, existing control points and sequences that will be utilized as part of this RFP?

22. Can we get access to controls schematics/drawings?

23. Can we get access to a detailed points list?

24. Can UofA fill out the attached spreadsheet for all buildings included in the Enterprise Energy Management System Scope of Work?

For 21-24 above, the provided spreadsheet requested a high level of detailed building level information, such as building equipment inventory and sizing, building O&M documentation & as-built facility A&E information, detailed points lists, etc.

UA understands that to implement this type of application, that data is required. As discussed elsewhere, this level in investigation and information is not appropriate at this point in the RFP process. Additional information will be provided to the short listed proposals to refine the final offer. Also this type and level of data collection would likely be done as a part of the project development and implementation services package after a provider was selected and a contract developed.

Pricing implications of this position by UA are discussed elsewhere.

HARDWARE AND DATABASE RELATED QUESTIONS

25. Specification 1.1.6: Is UA is looking for a solution that is hosting locally on UA owned and maintained VM hardware, or for a cloud based solution which is hosted professionally on professionally owned and maintained VM hardware?

It is the UA's intention to allow the respondent to propose what they see as the best overall and cost effective solution, given their product offering. The University is open to either

hardware alternative, which in the opinion of the provider, offers the best overall value and life cycle cost implications. Campus Utilities currently hosts a number of applications in the local UA VM environment. However we are also aware that a number of providers offer cloud based or remote hosted solutions. Ultimately, the solution could be some combination of the two if that is what is recommended by the respondent.

It is the UA's intention to allow the respondent to propose what they see as the best overall solution, given their product offering, industry expertise and their experience in the marketplace as a provider of these types of products and systems.

26. Specification 1.1.7: Can UA provide more details (hardware and software, including firmware) on the Enterprise database application that UA would like our system to work with?

The intent of the Question in the RFP is to determine if the proposed solution can make use of the UA's enterprise instance of MS SQL. That is to say, that if the respondent's solution is to be a locally hosted solution residing in the UA VM environment, does respondent's solution require its own stand-alone instance of its preferred database application (which would have to be a part of the comprehensive solution and associated costs provided by the respondent).

Conversely the question is can the respondent's solution can make use of the existing open standard UA Enterprise instance of MS SQL, which is available for use by the responder at essentially no out of pocket cost to the University. We have both types of applications currently in service for Campus Utilities.

A third possible alternative is that the solution is a hosted one and thus this is not applicable. The answer to the RFP entry would be "NO", and the comment would be that it is not required as it is a hosted solution.

27. Specification 1.1.8: Can UA provide more details (hardware and software, including firmware) on UA's local database environment?

The University currently runs SQL Server 2012 in a VMWare environment. We are running Windows Server 2012R2. We use AlwaysOn availability groups. We have a shared environment and the vendor will not be allowed to have any users with SA permissions. We are currently at 192GB of RAM on our SQL Servers, but have the ability to increase CPU and Memory if necessary.

EXISTING CAMPUS ENERGY APPLICATIONS AND DATA SOURCES

28. What are the standard protocols your existing meter infrastructure
29. For the buildings with installed meters, can you provide information as to the
- a. Protocol of installed meters
 - b. The systems that these meters are communicating with (i.e. control system or databases)?
30. 14.1.1 & 2 Does the university have any preferred methods of data collection via Modbus, pulse, or existing data software systems?
31. What protocols are used for the BAS systems? How much of the campus is standardized on BACnet?
32. Specification 1.1.11: Please provide all details possible (meter data acquisition hardware/software, formats the meter data is available in, meter data monitoring software vendor/product/firmware, etc.) on all metering and data gathering solutions UofA would like us to work and integrate with.

For 28-32 above, the University currently operates four (4) primary platforms that “create” and/or “manage” utility or operational data streams. They are:

JOHNSON CONTROLS, Milwaukee, WI – METASYS – BAS platform that manages and controls the vast majority of the HVAC systems on campus. Also serves as the platform for building thermal energy measurement and monitoring. The UA Metasys server is housed in the UA VM environment, using the VM instance of MS Server OS, with its own instance of MS SQL. Uses BACNet and Metasys N2 bus communications to field devices. Network communications is BACNet over IP.

SCHNEIDER ELECTRIC – STRUCTUREWARE POWER MONITORING (SPM) – Campus electrical power measurement and grid status monitoring. Uses Modbus RTU for secondary device communication and Modbus TCP/IP for network communications.

INTERVAL DATA SYSTEMS, Boston, MA - ENERGY WITNESS – Utility Accounting Application for accounts payable and receivable. Houses combined utility metering data, rate schedules, billing accounts, etc. Uses direct MS SQL over campus Ethernet to perform data pulls from native trend data to application data historian in each application. Does not directly pull data from meters or field devices.

EMERSON PROCESS MANAGEMENT, Round Rock, TX - DELTA V DCS – Utility Plant Process DCS & SCADA. Source of utility production data. Uses proprietary field device communications. Data is accessible via JCI Metasys, as systems are connected using Delta V OPC client mapped to BACNet objects in Metasys.

Currently these applications share data at two levels:

Database Level – using standard SQL data structures and query applications, the platforms share data sets as needed for their particular end purpose, based on the necessary parameters (sample frequency, reporting requirements, reporting frequency, etc.)

Device Level – In limited circumstances, data is passed between applications in real time, using expected industry standard integration technologies and communication protocols such as BACNet, Modbus, and/or OPC. Only critical high frequency I/O requirements utilize direct connected/mirrored I/O.

The University also operates other small site data-generating equipment, which is addressed by sections 5.3 and 5.4.

For the purpose of pricing the response, the RFP respondent should not expect any surprises, nor is this response meant to be evasive. Our applications support typical industry standard data interchange formats, along with applications one would expect to see on typical enterprise database applications. Likewise the UA would expect the respondent to provide and use various software or hardware integration technologies or strategies for specific instances requiring higher frequency or higher resolution data requirements.

UA's position is that active technology providers in this market space would have experience with most of the technologies and applications used at the University. What one would find on the UA campus should not be unexpected.

33. What historian functions do you currently use for the BAS system? How much data is currently trended (15 minute intervals? Most points?)? How much historical data is stored (2 months? 1 year?, etc.)
34. Are there any known networking or communication issues with the BAS?
35. Does the university's in-house FM team maintain the controls network or does a 3rd party perform controls maintenance work?
36. Do you have details on the systems that need to be integrated?
37. How are different BAS systems integrated on campus? Is all data integrated to the same front end?
38. Specification 14.1.2: Data exchange between multiple software vendors is usually possible at the software level without the requirement of any additional hardware. To confirm, please provide technical details (API, web services information) about the multiple software vendors that UofA would like our solution to exchange data with.

For 33-38 above, the general minimum required applications which are expected to provide data to the dashboard application on the UA campus are identified in (#4) above. Again UA would expect that the successful respondents would have "been there, done that" with respect to large campus installations, given the size and complexity of the RFP solicitation.

At this point in the RFP process, it would not be reasonable for UA to provide nor for UA to expect respondents to analyze every combination and permutation of interface, data structure, sampling rates, etc. It is the intent of UA that those proposals that are selected for further development prior to best and final pricing, will have the opportunity to review the applications in more detail and be provided next level granularity of information to refine the final RFP submission.

Through this iterative RFP process, UA desires ultimately to identify a competitive, competent and experienced partner who can demonstrate their success in accomplishing similar projects of like size and scope.

39. Will UofA be responsible for any modifications and/or upgrades required in order to allow the successful vendor to integrate with UofA's building automation systems?
UA will provide any upgrades necessary on the existing systems to enable integration. This would include upgrades to UA application operating system, UA server capacity, database software, etc. UA would provide primary network points of connection for devices furnished by the respondent that need to connect into the campus general network. However UA will not furnish necessary hardware if that hardware is to create discrete mirrored I/O connections, additional JCI network engines needed to create duplicative I/O point mapping locations, etc. That type of hardware and/or related software would be the responsibility of the respondent as it is a function of the product offering and its approach to meeting the RFP requirements.

What follows are some illustrative examples that try to show what would and would not be the obligation of the University.

Example: OPC Connection

Respondent A requires a specific OPC application to create a data interconnection between two systems. Respondent A proposes a remote hosted solution. Then all costs associated with the OPC application, and any other software costs, remote hosting costs, etc. should be included in the RFP response proposal. Ongoing remote hosting costs would be included in any annual maintenance agreement. UA would have no obligations beyond providing remote secure network access.

Respondent B requires a specific OPC application to create a data interconnection between two systems. Respondent B requires its own server for that specific OPC application. In that case, Respondent B's proposal should include all costs associated with the OPC application, and any other software costs. It should also include the cost of the physical server and any operating system software required to deliver a fully operating system. UA would provide an appropriate location for the respondent provided hardware and network access.

Respondent C requires a specific OPC application to create a data interconnection between two systems. Respondent C plans on installing the OPC application in the UA hosted VM environment. In that case, Respondent C's proposal should include all costs associated with the OPC application, and any other software costs directly needed for the application. The RFP response would state the intent to use the UA VM for hosting the application. The response would state what recommended VM resources would be required with respect to allocated memory, disk capacity and CPU resources. Any costs to set up and maintain that VM instance would be UA responsibility, not that of the proposal respondent – only those direct costs related to the OPC application.

In general, the RFP response should define as clearly as possible, what is - and more importantly what is not included in the respondent's proposal and therefore is not provided for as a part of respondent's solution or the cost of the offer, and is expected to be furnished by others. If hardware, software, or any other materials or resources required for the respondent to deliver a complete operating system are not EXPLICITLY excluded, then UA assumes they are provided for in the proposal and are included in the final contract price.

40. Please describe in more detail exactly what the expectation is for pricing. Section 1. “Description and Overview of RFP” indicates that pricing is for (a) campus new construction and (b) renovation/retrofit of existing projects. So, should pricing be provided on a “per building” basis for only future building projects? Or, is the intent for pricing to include adding an EEMS to all of the existing facilities on campus.
41. In order to provide pricing for existing facilities, the number of HVAC units per building is needed. This is primarily needed to accurately price the analytic & reporting tools. Pricing can fluctuate greatly depending on the size and complexity of the building and systems. Obviously a building with only a few HVAC units would not be as expensive as a large research facility on campus. Currently there is no direction in the RFP explaining how to propose pricing for existing buildings, and there is not much information on specific buildings on campus if the intent is to add the EEMS to existing facilities.
42. In order to provide pricing for future facilities, can the University please provide an example of a baseline building? (i.e. 1 chilled water system, 1 heating water system, 2 utility meters, 1 electric meter, 4 air handling units, 80 VAV boxes, 8 exhaust fans, etc.) This will give all bidders a common building / system type in which to price against. Again, pricing can fluctuate greatly depending on the size and complexity of the building and systems. As it

- stands, the RFP does not give much information at all with respect to a sample building to price toward.
43. If the above information cannot be obtained, how should we base our pricing – Average Cost per Sq. Ft. and/or based on a similar project?
 44. Should project pricing be based on an implementation on the entire 500,000 control points or is the implementation to be limited to the number of meters (490) listed in Q&A Addendum posted on April 29, 2016?

For 40-44 above, the questions above open the general discussion of pricing methodology for the RFP response. Each respondent must evaluate the requirements of the RFP, and formulate a pricing strategy that works for their specific product offering and cost structure. With that said, UA can offer guidance based on our market research of product offerings in this market space which helped to shape the RFP.

First and foremost the Qualification Questionnaire offers a structure from which to formulate the RFP pricing.

Sections 2.0 & 3.0 essentially capture the optimal desired functionality of the Dashboard application.

For dashboard and visualization, the implementation can be limited to the number of meters. Fault detection and diagnostics would include as many control points as needed for the system to function as intended. It is the respondent's responsibility to advise the University of the most effective arrangement of metering and control points for the proposed solution.