



## **Potential Requirement: Design-Build Energy Management and Control System (EMCS)**

**Potential vendors: Please write “Design-Build Energy Management and Control System (EMCS)” in the subject line.**

JPL is reviewing options concerning the following Statement of Work (SOW):

### **SUMMARY DESCRIPTION**

This task is to upgrade the existing Energy Management and Control System (herein after referred to as “EMCS”) in buildings on a 177-acre site at the JPL campus located in Pasadena, CA.

### **WAGE DETERMINATION**

General Wage Determinations Issued Under the Davis-Bacon and Related Acts Volume VII, U.S. Department of Labor, Employment Standards Administration Wage and Hour Division, as applicable to Los Angeles County applies to this Project.

### **OBJECTIVES**

Provide an upgrade of building and HVAC control systems to a centralized Niagara4 based EMCS utilizing Vykon JACEs and Distech controllers, including custom Graphical User Interfaces and Energy Dashboards for all buildings. The Proposed system and new equipment must comply with the JPL Facility Design Standards (FDS) which will be provided at the issuance of the Request for Proposal.

Analyze current HVAC control systems and recommend potential upgrades and Niagara4 integration scenarios for optimizing short and long-term goals that could include future growth of the Niagara Framework to additional building systems.

Controls shall be linked between buildings via Ethernet using a JPL furnished, configured, and maintained Ethernet zone/segment within the JPL network infrastructure. The Control Network/Fieldbus within buildings between controllers and devices shall be ASHRAE SSPC 135, BACnet. Where existing and/or no other means are available wireless, LON or Modbus may be used after written approval by JPL.

Integrate building level energy metering and sub-metering including Water, Gas, Electric and BTU meters into the existing Niagara4 Supervisor and existing Niagara Analytics including energy usage reporting graphics, fault detection diagnostics, reporting, and dashboards for all buildings.

Energy Management and Analysis software and configuration for consideration shall include HVAC control algorithms to optimize energy savings and operational efficiency, i.e., optimized start/stop for chillers, boilers, air handling equipment and all associated equipment, and Feed-Forward controls based on predicted weather patterns.

The proposed system shall include measuring of key points in building systems to monitor part-load operation and adjust system set points to match system capacity to load demands.

Provide the capability for Maintenance and Operations and Building Staff to measure energy consumption and monitor performance critical to overall system well-being. Electrical values such as volts, amperage, watts, KVA, KVAR, kWh, kVARh, frequency, power factor, and %THD; Natural Gas consumption in ft<sup>3</sup>; and water in gallons consumed should all be considered for measured values. Current (Live) watts, kWh, gas, and water consumptions at a minimum shall be reported for each building.

Provide energy management measurements in instantaneous, totalized, and interval-based samples for chillers, boilers, air-handling units, pumps, and other HVAC equipment. Provide the ability to convert the collected data to standard database and spreadsheet format and transmit to a designated PC. Energy points are those points that are monitored to ensure compliance with ASHRAE Standard 90.1.

**There is no commitment or guarantee on the part of JPL to move forward with an RFI or RFP at this time.**