

System Requirements and Specifications

for a

Customer Engagement Platform and the Customer Experience Equipment

for the implementation of the JEA Residential Demand Rate

April 11, 2018

JEA Customer Solutions



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Scope of Work

JEA is implementing a pilot program that focuses on testing customer engagement to a residential demand rate. JEA seeks an experienced Company to design, install, implement, maintain, and manage a system that enables information transfer from JEA's Landis+Gyr metering components to a Data Management Platform Solution that enables the Customer Experience Functionality described further below. A general description of the pilot program and generic architecture expectations have been outlined below.

General Description

This first phase of the rollout of the JEA residential demand rate focuses on testing:

- 1) The customer's ability to understand and accept a demand rate, and
- 2) The customer's ability to benefit from a demand rate by managing their electric demand.

This first phase of testing will focus on a small group of program participants (approximately 250). A portion of these customers will be provided with access to near real time information about their electric demand and, a second group will have automated demand management equipment installed in their house. In addition to managing demand, JEA will create a customer engagement program that will provide high fidelity meter data and provide a platform to access multiple and varied informational and convenience services. This document will address the primary components of the solution:

- Customer Engagement
- Platform for Data Management
- Customer Experience

Generic Architecture

The drawing shown below is intended to provide an understanding how the system will work from a logical basis; it is not intended to define the actual or physical design that must be followed by the proposed Solution.



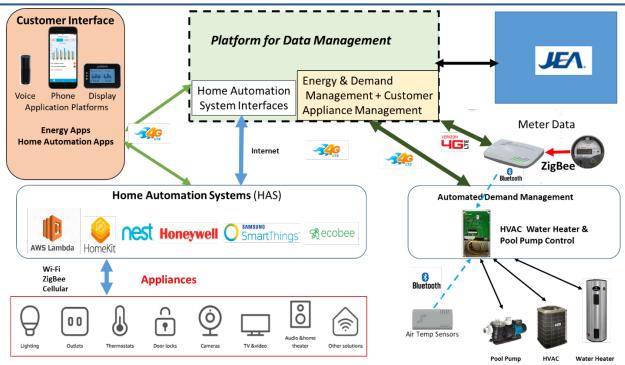


Figure 1: Conceptual Schematic Overview of JEA Customer Data Ecosystem

General Requirements

- Device which communicates to JEA L&G Focus meter via Zigbee to obtain usage, demand, voltage and other read only access information which may be available in 1 minute intervals.. Gateway Device can communicate to appliance devices for data retrieval and then transport obtained data to Cloud based data for ETL to JEA determined warehouse for analysis and review via Cellular wireless network.
- Provide UI for JEA Utility applications on a customers smartphone (Android & IOS) platform. Software application must be able to allow customer to monitor their usage, set demand control thresholds and manage demand to that threshold. Application will allow for and bidder will reasonably support JEA and/or other third party functions (e.g. 60/90 secs custom video messaging, PDF bill images, historical billing information, etc.) to be delivered on their platform in a convenient manner. Device will be data and PII secure compliant.
- Bidder is to provide control switches on HVAC and Hot Water Heater appliances with the ability to monitor on/off duty cycle within the appliance (component level where possible) on 1 minute or less intervals. The data will be communicated to the gateway device and transfered to a central server for analysis. The switch will also have the ability to sense and adaptively manage negative comfort events (i.e. loss of hot water from demand curtailment, hot/cold space conditioning events).
- During the term of the Program, Bidder agrees to maintain its platform and systems to a commercially reasonable level, provide complimentary timely repair of material deficiencies, and provide limited unobtrusive updates and software revisions during the term.



- During the term of the Program, Bidder agrees to support its platform and systems to a commercially reasonable level with customer service available from 9 a.m. to 5 a.m. eastern standard time.
- Respondent's solution shall be registered on the Zigbee Alliance approved product website within 90 days of contract award.

Customer Engagement

Customer engagement will be achieved through three (3) basic physical interfaces – (1) mobile phone, (2) in home display, and (3) voice interaction (like Alexa, Google Home, etc.). The platform is intended to deliver a customer engagement solution that provides capabilities such as the following:

- Optimized messaging and content management for energy and demand information (i.e. high bill, outage, billing info, etc.).
- Online Home and individual appliance monitoring and audit for energy and demand. This
 may be performed by measuring each device's load profile or by using a disaggregation
 algorithm based on whole house energy data. If disaggregation is used, the system
 must also be capable of obtaining the energy data from the customer's home. Most JEA
 meters do have ZigBee functionality that could be used to obtain this data. The
 granularity of the meter data that is obtained from the existing meter is fixed by the
 meter's capability so any solution using that data must accept it as it is. The data
 specifications will be provided on request.
- Customized bill disaggregation messaging that can provide information about causes of high bills, appliance performance degradation etc. Examples include:
 - o HVAC: dirty air filters, low Freon
 - Hot Water Heater: heater element failure
 - o Overall home energy efficiency health, etc.
- Billing Information
 - o 7-Day rolling bill forecast
 - Comparison of current bill to last month's and last year's bill for that month.
 - o Customer's bill in pdf format with the potential to facilitate payment
- Recommend Solutions
 - Individual customer recommendations for applicable energy and demand reduction programs and products showing hyperlink access if available.
- Energy forecast showing the weather's predicted impact on energy and demand costs.
- Show financial impact of HVAC temperature set.
- Provide Environment feedback based on actions taken or relative set points, i.e. temperature (air, hot water, etc.) in the form of carbon footprint impacts, for example.



- Provide information on how the customer's energy and demand compares to similar homes; allow for goal setting, gaming among participants, etc.
- Provide the ability to deliver personalized video messaging, energy alerts, energy summary reports, and monthly emails to the customer.

Platform for Data Management

Figure 2: HEM, Cloud and JEA System Data Interface

The platform for data management and system operation is intended to be a global platform that can provide the customer engagement functionality shown above, interface with JEA core data systems, as well as perform the analytics required to balance a customer's energy cost and comfort preferences based on the Residential Demand Rate. This new rate design includes two primary billing determinants:

- The customer's highest monthly demand which is defined as the highest energy consumption during any 15 minute interval¹ during the month, and
- The customer's highest on peak monthly demand. This demand value is also based on the highest rate of energy consumption during any 15 minute interval during on-peak timeframes, which occur from 12 Noon until 7 PM weekdays during the summer months (April October) and 6 to 9 AM during the winter months (November March).
- The rate still has a fixed connection charge
- The rate still contains a fuel charge based on kWh

A technological solution is required that gives the customer information and control capability needed to manage demand control thresholds while maintaining comfort to optimize the customer's energy usage in light of the new residential demand rate. This may be delivered in the form of information only or an automated solution that attempts to limit customer demand to their selected value by performing customer directed appliance load control. The Platform for Data Management will manage both of these customer demand management activities.

• For the basic information only solution, the customer needs to know, in real time, what their electric demand is so they can react to it. This information can be displayed on a tablet type device located at the customer residence, mobile phone, on site voice

¹ The fifteen minute interval is based on each quarter hour, one from the top of the hour to 15 minutes after, one from 15 minutes to 30 minutes after the top of the hour, one from 30 minutes to 45 minutes after the top of the hour and one from 45 minutes to 60 minutes after the top of the hour. The intervals are not rolling; only 4 per hour as described above.



activated response, etc. An additional alert notice of new peak demand event is desirable via self-selected medium text, phone, Alexa, etc.

• For the automated demand management solution, the system needs to be able to limit the customer's real time demand to a customer selected level. In this scenario, the system must monitor the customer's demand 24/7 and control customer loads when the preselected demand level is exceeded. The system will control loads in accordance to customer preferences which will be input to the system at time of commissioning. Normally, HVAC, Water Heater, Clothes Dryer, Pool Pump and Pool Heater are the target appliances.

Platform for Data Management Solution Vision

Ease of Use

Automation technology is required for the customer to effectively manage demand thresholds. This system must provide insight into their near real time (at that moment) energy consumption and focus the potential interval demand, so they will have time to make energy consumption decisions. This capability requires that the energy monitoring system have the ability to monitor, accumulate, calculate and display their actual energy consumption in near real time. Energy consumption time intervals should be at least in one minute increments to customer give adequate response time to affect their billing demand (based on the current 15 minute interval).

The near real time measurement and presentation of customer demand requires that the intelligence to calculate and present this information be at a remote server which is connected to the customer via a very fast and low latency communications network. The preferred communications link for this connectivity is the cellular network; no reliance on customer broadband will be accepted. A tablet, mobile phone or voice actuated type of device could be used to provide the real time demand values.

A key technical requirement that comes from this functionality is that the system must be able to communicate directly with the JEA smart meter in order to obtain, in real time, the customer's energy consumption data. The JEA smart meters broadcast the energy data by communicating via the Landis+Gyr implementation of ZigBee communications and protocol.

Lastly JEA would like to have access to the JEA's meter's data for operational needs, further analysis and disaggregation. For example, JEA's T&D group may need to obtain additional meter information (e.g. secondary voltage, sag/surge information, outage counts, etc.). The data received from JEA Landis+Gyr meters should be easily accessible to JEA and ideally transferable to either JEA or third party middleware analytic applications. The intent is to use this gateway + cellular transferred data for higher order analysis and low latency Utility data use cases.

Two Versions of Customer Functionality

Information Only

There will be two instances of this system deployed. The first is a basic system which is information only. An In Home Display, mobile phone, or voice response system may be appropriate for this application. It would provide the energy consumption and cost information as described above, with warnings, alarms, notifications, etc. based on customer preferences.



Automatic Demand Management

The second version, most likely an enhanced version of the Information Only version, will provide an automated response to high energy demand. These responses are automatic and are based on the customer's prior selection, i.e. turn the temperature up 2 degrees, reduce the appliance run time, etc., if the demand exceeds 6 kW (summer). This system must operate autonomously and not require dispatching from the electric utility.

Whole House Metering

JEA has deployed a large number of smart meters which have the capability of providing real time energy consumption data to this system. The meter data can be accessed via a ZigBee RF connection. The Landis+Gyr system uses the standard ZigBee protocol.

Customer Experience



Figure 3: Home Energy Management (HEM) Environment

As discussed previously the system must communicate with JEA's meters via a meter data gateway that can retrieve the meter data necessary to perform the desired system functionality.

Customer Experience Functionality

The customer experience is intended to include the delivery of the following connected home functionality to the customer via a smartphone app.

- Allow customers to monitor, set limits and manage their 15-minute interval demand by using a smartphone app.
- Autonomously manage the demand of at least two (2) major customer loads based on customer preferences. These two loads are typically the HVAC and electric water heater. The customer preferences consist of selecting the desired billing demand limit and in conjunction with that setting, the customer should have the ability to set comfort impacts such as maximum inside temperature. In order to maintain customer comfort the system must have the ability to monitor in near real time the inside temperature and reduce load reduction if the customer's temperature set point is being exceeded. The system should also offer the ability to stop the load control of the electric water heater if it is determined that the customer has used enough hot water to put them at risk of running out, i.e. turn the water heater back on when this situation is identified. Of course, the customer can select managing billing demand as the higher priority and therefore not allow the water heater to run, regardless of the risk of running out of hot water.



- Provide comparison of current day, monthly and historical energy usage.
- Allow a smartphone app to receive targeted message presentment (video, pdf and text) based on customer preferences and usage patterns. This information should be delivered via JEA's chosen message broadcast provider.
- Support a pre-pay and post-pay functionality
- Support basic communication with Home Automation Systems (e.g. Amazon Alexa, Google Home, etc.).
- Capture, manage and deliver customer's electric meter data for JEA use (e.g. 1 min kW, kWh, voltage, etc.) to a robust and secure cloud based service [JEA Customer Data Protection Standards].

Customer Site Device Functional Specifications

In Home iPad/Tablet Display or Mobile Phone

The iPad/Tablet type display is normally located inside the home in a convenient location like the family room, kitchen, or main hallway, the mobile phone is of course mobile in that it can be any ware the customer prefers at that specific time. These devices can be used to set or change system settings, monitor system operation and operate an audible alarm to indicate that the demand limit is about to be exceeded. A digital display provides system information and the current time of day. The display device controls all functions and settings of the system. They also manage the operation of the system and, depending on which functionality is chosen, either provides real time energy consumption information only or communicates with the central server to manage the control of connected loads.

In auto control mode, commands to control loads originate in the server and are based on the customer's previously established demand limit as it is compared to the actual demand as measured by the system. The connected loads are managed based upon the load control strategies the customer programmed into the system during installation commissioning.

Automated Demand Management

The automated system turns certain appliances completely off (water heater) or reduces the natural run time (HVAC) when necessary to keep the home's peak demand below a preset limit. Appliances controlled usually include the HVAC, water heater, or any other appropriate load. In a typical all-electric home, the winter morning control strategy should include:

- HVAC
 - o Individual control of inside Air Handler
 - o Individual control of outdoor condenser unit
 - Individual control of heat strips (second stage heat for heat pumps). For safety, the control of Air Handler shall always invoke the control of the electric strips. This safety feature should be implemented within the control device firmware and shall also be hardwired so that there is a mechanical interlock that causes the heat strips to be shed anytime the air handler is turned off.



- HVAC will be controlled by connecting to the thermostat control wires coming from the thermostat so that control actions mimic thermostat control.
- Water Heater
 - Water Heater control is usually performed by simply turning it off and not duty cycled.
 - Water Heater control must also have a means of detecting when the customer has consumed a large amount of hot water and is at risk of running out of hot water, while the control event is in effect. When this status is detected, the system will either terminate control of this specific water heater therefore allowing the water heater to begin recovery, or continue the control event should the customer opt for maximum energy savings.

Automated demand management is accomplished by measuring the amount of power being used by the home as the customer goes about their daily business and it recognizes when the preset demand limit is about to be exceeded. It waits a few minutes to see if these loads are going to turn off by themselves while it carefully calculates the average demand of the home. If the power consumption continues to exceed the demand limit, it begins to turn off or turn down loads. The system will be programed to turn off the least important load first, using the load control strategy that the customer selected at startup. As the power consumption drops, the system allows the most important loads to come back on first. There are several optional load control strategies. A typical strategy might provide power to a higher priority load such as the HVAC or the water heater, while the lower priority load is left off. During these control events it is possible that the system could simply reschedule when the loads run during the hour so that they actually run the same amount of time, but not at the same 15 minute interval. The end result is that the customer may have used the same amount of energy over the hour but reduced energy consumption/demand during any one 15 minute period.

Specific Demand Management Requirements

- Minimum run time for HVAC systems to prevent short cycling
- Minimum off time for HVAC systems to prevent short cycling.
- Load priority assignment
- Daylight Savings Time
- Holiday/Weekend exclusions available
- Variable Effort (customer may select operational strategies that would allow higher than desired demands under certain conditions)
- Appliance State Monitoring:
 - o HVAC
 - The system shall have the ability to monitor the on/off duty cycle of each component of the HVAC system, i.e. compressor, fan and heat strips. The time interval should not be longer than one minute. This duty cycle data shall be recorded 24/7 and sent to the central server for analysis at least once an hour or on demand. The measure data shall include:



- Thermostat status: Is the thermostat calling for the compressor to run, calling for the fan to run, calling for the heat strips to run
- Has the load control device actually controlled the load
 - This shall be documented during a control event by detecting the status of the voltage drop across each of the control relay contacts. This will confirm that load control is working as well as detecting all bypass or tampering conditions.
- o Water Heater
 - The water heater status or duty cycle shall be recorded in one minute intervals and this data shall be reported, either on demand or on a delayed basis, to the central server for analysis.
 - This data will be used to establish a normal "base line" operation for each connected water heater. This "base line" shall be used to identify when the lower element of the water heater has failed. When this occurs the system shall remove this water heater from load control and a message shall be sent to the customer informing of this problem.
 - During a control event, the load control system shall have the ability to sense when the water heater is at risk of running out of hot water. When this state is detected, the water will be automatically released from control. Bidder shall describe how their system will accomplish functionality.

Communications Technology

- Customer owned and managed broadband technologies such as Wi-Fi and customer internet service shall not be used.
- Premises to Central Server

The preferred communications technology from the customer's premises and the central server is 4G LTE Cellular. JEA is aware of multiple types of 4G LTE systems that can be used and is open to proposals that use any of those systems.

• Electric Meter to Central Server

The meter data will be broadcast locally using the Landis+Gyr implementation of ZigBee wireless communications. That information shall be received by a gateway or load control device and then relayed to the central server via 4G LTE cellular infrastructure.

Housing Types

The system shall be designed to function for single family homes, mobile homes or multifamily homes such as apartment buildings and condominiums. For multifamily buildings with remote meter rooms, the system must have the ability to receive ZigBee



meter data from meters located in the meter room and then route that data to the central server for storage and analysis using a version of 4G LTE cellular communications.

Appendix B - Minimum Qualification Form #94578 Residential Electric Demand Rate Pilot

GENERAL

THE MINIMUM QUALIFICATIONS SHALL BE SUBMITTED ON THIS FORM. IN ORDER TO BE CONSIDERED A QUALIFIED BIDDER BY JEA YOU MUST MEET THE MINIMUM QUALIFICATIONS LISTED BELOW, AND BE ABLE TO PROVIDE ALL THE SERVICES LISTED IN THIS SOLICITATION.

THE BIDDER MUST COMPLETE THE BIDDER INFORMATION SECTION BELOW AND PROVIDE ANY OTHER INFORMATION OR REFERENCE REQUESTED. THE BIDDER MUST ALSO PROVIDE ANY ATTACHMENTS REQUESTED WITH THIS MINIMUM QUALIFICATIONS FORM.

PLEASE SUBMIT THE ORIGINAL AND THREE COPIES OF THIS FORM AND ANY REQUESTED ADDITIONAL DOCUMENTATION WITH THE BID SUBMISSION.

BIDDER INFORMATION

COMPANY NAME:
BUSINESS ADDRESS:
CITY, STATE, ZIP CODE:
TELEPHONE:
FAX:
E-MAIL:
PRINT NAME OF AUTHORIZED REPRESENTATIVE:
SIGNATURE OF AUTHORIZED REPRESENTATIVE:
NAME AND TITLE OF AUTHORIZED REPRESENTATIVE:

MINIMUM QUALIFICATIONS:

- Respondent shall provide client references to demonstrate the successful completion of two (2) similar Demand Rate Pilot contracts similar to the scope and complexity as contained in this Solicitation within the last three (3) years of the Solicitation due date.
 - One (1) of the two (2) client references shall demonstrate successful completion of Zigbee SEP data connectivity to JEA's Landis + Gyr GSME axr or similar metering components using ZigBee SEP 1.1 firmware (stack). The examples should be able to demonstrate that the Proposer's experience and knowledge qualify them to complete the necessary work in a successful manner.

Appendix B - Minimum Qualification Form #94578 Residential Electric Demand Rate Pilot

SIMILAR DEMAND RATE PILOT CONTRACT 1

This contract should demonstrate successful completion of Zigbee SEP data connectivity to Landis + Gyr's GSME axr or similar metering components using ZigBee SEP 1.1 firmware (stack).

Reference Name
Reference Phone Number
Reference E-Mail Address
Contract Year/Amount
Project Title
Address of Work
Description of Project
SIMILAR DEMAND RATE PILOT CONTRACT 2
Reference Name
Reference Phone Number
Reference E-Mail Address
Contract Year/Amount
Project Title
Address of Work

Description of Project	

Appendix B - Minimum Qualification Form
#94578 Residential Electric Demand Rate Pilot



APPENDIX B - RESPONSE FORM #94578 Residential Electric Demand Rate Pilot

The Respondent shall submit one (1) original Proposal, three (3) duplicates (hardcopies), and one (1) CD. If there is a discrepancy between the electronic copy and hard copy, the hard copy will prevail. JEA will not accept Proposals transmitted via email.

RESPONDENT INFORMATION:

RESPONDENT'S COMPANY NAME:

BUSINESS ADDRESS:

CITY, STATE, ZIP CODE:_____

TELEPHONE:

FAX:_____

EMAIL OF CONTACT:

WEBSITE:

1.4.1 FINANCIAL RESPONSIBILITY

Maximum points for this criterion: 5 Points

At minimum, Respondent shall provide the following information to facilitate JEA's assessment of the financial status of the Respondent and its ability to devote the necessary financial resources to the project.:

- Form of business (i.e., proprietorship, partnership, corporation)
- Number of Years in Business
- Respondent's Annual Reports or certified financial statements that detail its Annual Revenues for the last three years

Respondent shall provide this information in its own format.

1.4.2 **QUOTATION OF RATES**

Maximum points for this criterion: 35 points

Respondent shall provide a firm-fixed price quote for all Work in this ITN by completing the enclosed Response Form. The prices shall include all profit, taxes, benefits, travel, and all other overhead items. Please note, that the Respondent's total price can not be increased during the BAFO process (if applicable).

Any percent mark-up for materials, consumables, subcontractors, and rental equipment shall not be subject to any adjustment during the Term of the Contract. The percent mark-up for rental equipment shall be all inclusive including the cost of fuel.

Please note, the prices quoted by Respondent on the Response Form must be firm-fixed prices, not estimates.

This Amount Should Be Transferred From Appendix B – Response Workbook

Item	Description	Non Road Electrification Drogram
No.	Description	Non-Road Electrification Program

1.4.3 PROFESSIONAL STAFF EXPERIENCE

Maximum points for this criterion: 15 points

The firm shall provide resumes of all professional staff to be assigned to this engagement. The professional staff shall include one (1) Project (Implementation) Manager - Lead, one (1) Senior Technical Advisor, and one (1) other Technical Advisor to be assigned to this engagement. Please clearly indicate which of the three persons correspond to the three professional staff roles. Persons whose resumes are submitted as professional staff to be assigned to this engagement must be able to perform the Work unless Company receives prior approval by the JEA Project Manager to use an alternate Team Member. Describe their primary responsibilities in brief paragraph.

Resumes are limited to two (2) pages, 8 ¹/₂" by 11" single sided. Resumes provided greater than two (2) pages will not be evaluated. At a minimum, the resume shall present the employee's name, location, title, years of service with the company, applicable professional registrations, education, and work experience. The resumes must identify experience conducting Demand Rate Pilot Program services. The resumes shall be no more than two (2) pages in length.

Respondent may provide this information in its own format.

1.4.4 PAST PERFORMANCE/COMPANY EXPERIENCE

Maximum score for this criterion: 15 Points

JEA shall evaluate the reference information submitted in Section 1.2.1 MINIMUM QUALIFICATIONS to score points for this Section. Respondent shall provide client references to demonstrate the successful completion of two (2) similar Demand Rate Pilot contracts similar to the scope and complexity as contained in this Solicitation within the last three (3) years of the Solicitation due date.

One (1) of the two (2) client references shall demonstrate successful completion of Zigbee SEP data connectivity to JEA's Landis + Gyr GSME axr or similar metering components using ZigBee SEP 1.1 firmware (stack). The examples should be able to demonstrate that the Proposer's experience and knowledge qualify them to complete the necessary work in a successful manner.

Respond where indicated below

SIMILAR DEMAND RATE PILOT CONTRACT 1

This contract should demonstrate successful completion of Zigbee SEP data connectivity to Landis + Gyr's GSME axr or similar metering components using ZigBee SEP 1.1 firmware (stack).

Address of Work	
Description of Project	
SIMILAR DEMAND RATE PILOT CONTRACT 2	
Reference Name	
Reference Phone Number	
Reference E-Mail Address	
Contract Year/Amount	
Project Title	
Address of Work	
Description of Project	

1.4.5 DESIGN APPROACH AND WORKPLAN

Maximum points for this criterion: 30 Points

Respondent shall include an assessment of the Respondent's ability to realize project goals, timetables, and quality control objectives; and the demonstrated general ability to bring about a successful completion of this scope of work under the Respondent's direction.

The Response should describe a work plan, including an explanation of the methodology, the financial requirements, and all compliance aspects of the engagement. Identify the tasks to be performed to complete the engagement and prepare a proposed timeline of how long it typically takes to complete an assessment per task assigned. The proposed overall schedule should include an on-site work schedule.

The Respondent should identify and describe any anticipated potential problems, the firm's approach to resolving these problems and any special assistance that will be requested from JEA.

Respondent shall also provide an organizational chart delineating company's personnel responsibilities and functions associated with the Work. If applicable, this chart shall also delineate any responsibilities and functions of other team members not identified in the submitted resumes.

Actual work examples are encouraged.

☐ I have read and understood the Sunshine Law/Public Records clauses contained within this solicitation. I understand that in the absence of a redacted copy my proposal will be disclosed to the public "as-is".

Respondent's Certification

By submitting this Response, the Respondent certifies (1) that it has read and reviewed all of the documents pertaining to this ITN and agrees to abide by the terms and conditions set forth therein, (2) that the person signing below is an authorized representative of the Respondent, and (3) that the Respondent is legally authorized to do business and maintains an active status in the State of Florida. The Respondent certifies that its recent, current, and projected workload will not interfere with the Respondent's ability to work in a professional, diligent and timely manner.

The Respondent certifies, under penalty of perjury, that it holds all licenses, permits, certifications, insurances, bonds, and other credentials required by law, contract or practice to perform the Work. The Respondent also certifies that, upon the prospect of any change in the status of applicable licenses, permits, certifications, insurances, bonds or other credentials, the Respondent shall immediately notify JEA of status change.

We have received addenda ______ through_____

Signature of Authorize Officer of Respondent or Agent

Date

Printed Name & Title

Phone Number