

**1410329248 APPENDIX A – TECHNICAL SPECIFICATIONS
FY21 PURCHASE OF FIXED DIESEL PUMPS FOR JEA LIFT STATIONS FOR RESILIENCY**

1. SCOPE OF WORK

The purpose of this Request for Quote (the "RFQ ") is to purchase three (3) fixed diesel pumps (also referred to as the "Work" or "Services"). The Company shall furnish three (3) self-contained, automatic standby pony pump systems as specified herein and according to established JEA Standards. The self-contained emergency system shall consist of a motor and pump unit, which shall start and stop automatically utilizing float switches in the wet well. The Company shall furnish fuel tank, sound attenuated aluminum pony pump set enclosure, and all accessories necessary for a complete and operable installation. All materials shall be new unless specifically called for otherwise. Diesel engine driven pony pump shall be of the latest commercial type and design with all necessary equipment and shall be in accordance with all applicable sections of JEA's Water and Wastewater (W/WW) Standards. All Standards are available on jea.com.

The following manufacturers have been approved to supply the pony pump set per JEA W/WW Standards:

- Godwin Pumps of America Inc.
- Holland Pump Company
- Thompson Pump & Mfg. Co Inc.

2. MANUFACTURER PRODUCT DATA SUBMITTALS:

The Manufacturer shall be required to submit product data describing unit, auxiliary equipment required, including switches, engine, pump and motor shall be included.

- **Pump selection will be made by the manufacturer utilizing the provided design point and run out condition information included in the table in Appendix – C. Manufacturer should select the pump that has a curve which most efficiently meets the design and run out conditions provided.**

3. TECHNICAL SPECIFICATIONS AND JEA STANDARDS.

Diesel Engines shall comply with JEA Water and Wastewater Standards as listed on JEA.com.

The following items shall be included in the solicitation in addition to, or in clarification of, the JEA Water and Wastewater Pump Standards located at the link below:

https://www.jea.com/engineering_and_construction/water_and_wastewater_standards/

The following sections of JEA Water and Wastewater Standards, Section 470, Emergency Pump Engines, shall be amended as follows :

- A. II.5. Engine shall be provided with suitable safety controls to automatically provide warnings and stop the unit when low oil pressure, low coolant level, water temperature or engine speed exceeds safe limits. Pilot lights shall be provided to visually indicate faults and warnings. Pilot lights and controls shall operate off battery circuit and shall be on pump-engine control panel. Provide contacts for remote engine failure annunciation and warnings. The unit will also have a display that can read the last thirty-two (32) fault warning events with time stamps that also indicates the date.
- B. II.15.5 Battery charger shall perform diagnostics on the battery. It shall provide Battery Charger Fail, Low Battery Voltage and Low Cranking Voltage
- C. II.15.5. The service powered battery charger shall provide the following features at a minimum.
 - i. Charger shall be 120v single phase.
 - ii. Intelligent Battery Charger with microprocessor based technology to provide accurate charging and monitoring of various battery types.
 - iii. AC input under/over voltage to protect the charger and provide alarm in the event of an AC input failure.
 - iv. Intelligent three & four stage charging profiles. Provides safe and complete charging and charge maintenance of various battery types.
 - v. Adjustable current limit. Output current can be adjusted to suit alternative battery sizes and prevent overcharging on custom curves.

**1410329248 APPENDIX A – TECHNICAL SPECIFICATIONS
 FY21 PURCHASE OF FIXED DIESEL PUMPS FOR JEA LIFT STATIONS FOR RESILIENCY**

- vi. Manual & automatic boost. Provides a faster charging cycle and automatically maintains a full charge.
 - vii. Low output ripple/excellent line regulation. Safe charging of both sealed and vented battery types.
 - viii. Customizable charging curves. Provides the flexibility to charge battery types not available in the standard curve library.
 - ix. Auto self-test function. The battery charger self-diagnosis at regular intervals, providing advance warning of any internal fault. Provides a warning if a battery is not connected or has been disconnected. Provides warning in the event that the battery voltage is low and may not be charging.
 - x. Output short circuit and inversion polarity with auto recovery. Protects the charger in the event of a short circuit or crossed polarity with automatic charger on correction of the fault.
 - xi. Auto power de-rating at high ambient temperatures. Prevents damage to the battery and charger caused by overcharging in warm climates. Remote display for monitoring of the battery charging and charger status from a remote location.
- D. IV.3.3.5. The controller shall be microprocessor based. It shall have onboard relays that are programmable to output desired parameter on display and to be used as dry-contacts for communication with JEA SCADA system, all via the keypad without changing relays, chips, printed circuits, or any hardware or software.
- E. IV.3.3.6. Standard components shall consist of (24) digital inputs, (7) analog inputs, (1) magnetic pick-up input, (8) 20-amp form “C” relays, (1) RS485 port, (1) J1939 port, and (1) Full graphic LCD display with backlight.
- F. IV.3.3.7. The industrially-hardened Controller shall be conformal coated to withstand 10ppm H2S, Vibration of 3 g, 3 axis, frequency swept 10-1000 Hz, in an operating temperature Range of 4 to 176F (-20 to 80C) and an operating humidity range of 0-95% Non-Condensing.
- G. IV.3.3.8. Controller shall be capable of communicating all status and control via Pony Pump Distribution I/O Panel. Supply a wiring diagram and connection points for connecting the controller to the Distribution I/O panel. See appendix A - Drawings for reference. The following information will be communicated with SCADA as required.

Pony Pump Controller output signal	Pony Pump Distributed I/O Input	To SCADA
Common Alarm	Common Alarm	Common Alarm
Not In Auto	Not In Auto	Not In Auto
Batt Charger Fail	Batt Charger Fail	Batt Charger Fail
Batt Fail	Batt Fail	Batt Fail
Batt Warning	Batt Warning	Batt Warning
Check Valve Fail	Check Valve Fail	Check Valve Fail
Run From Float	Run From Float	Run From Float
Fuel Level	Fuel Level	Fuel Level
High Coolant Temp	High Coolant Temp	High Coolant Temp
Low Coolant Level	Low Coolant Level	Low Coolant Level
Low Coolant Temp	Low Coolant Temp	Low Coolant Temp
Low Oil Level	Low Oil Level	Low Oil Level
Low Oil Press	Low Oil Press	Low Oil Press
Run	Run	Run

**1410329248 APPENDIX A – TECHNICAL SPECIFICATIONS
 FY21 PURCHASE OF FIXED DIESEL PUMPS FOR JEA LIFT STATIONS FOR RESILIENCY**

From SCADA	Pony Pump Distributed I/O output	Pony Pump Controller input signal
Remote start	Remote start	Remote start
Remote alarm ack	Remote alarm ack	Remote alarm ack

- H. VII.4.2.1. The steel tank shall be wrapped with a minimum of ¼ inch thick Styrofoam (foam) insulation and an impervious barrier of 30 MIL high density polyethylene membrane (poly). The 30 MIL poly shall provide containment for a fuel leak through the steel tank. A leak detector pipe terminating in the secondary containment shall provide positive-proof that the tank is not leaking. Contractor shall be responsible for installing and wiring the Fuel Level to the distributed I/O module for JEA SCADA.
- I. VII.4.5. Overfill Protection - The tank shall be provided with the following methods to protect against overfill:
 - (a) direct reading level gauge at the tank which is visible from fill pipe location, Greenleaf EFG 8000-I solar gauge with AC back up mounted on exterior of enclosure and 4-20m.A.1 data converter mounted in engine control panel;
 - (b) valve located within fill pipe access to close automatically at a specified fill level. Fuel level will be calibrated to tank size for proper 4-20ma scaling. Company will be required to provide a Greenleaf EFG 8000-I solar gauge with AC back up. Greenleaf Gauge to be installed by others.
- J. JEA requests a transducer capable controller. This gives JEA the option to run the pump using a transducer and pump controller. Stations may have a grease/solids layer that sometime causes the floats not to tip, which will be resolved by the transducer in addition to the float. Pump transducer will not be monitored by SCADA, but should cause a general alarm in the pump controller if transducer fails.
- K. An Equipment Schedule shall be provided and must include the following:
 - a. Manufacturer/Model Number
 - b. Operating Speed
 - c. Impeller Diameter
 - d. Duty Point
 - e. Shut-Off Head
 - f. Fuel Consumption
 - g. Fuel Tank Size
 - h. NPSH at both conditions (All Pumps On and Station Only)
- L. Additional Hydraulic Criteria shall be provided and must include the following:
 - a. Shut-Off Head at operating speed shall be less than 230 FT (100 PSI)
 - b. Head Rise to Shut-Off (HRSO) shall be greater than or equal to 15% [(shut-off head – design head)/shut-off head]
 - c. NPSH margin (defined as NPSHa/NPSHr) shall be greater than or equal to 110%
 - d. NPSH shall be calculated at both conditions

4. Additional Requirements:

The selected vendor (s) shall fill out an attribute worksheet for the provided equipment prior to final invoicing. The JEA Project Manager will provide the vendor (s) the attribute worksheet after PO issuance.