

Heritage Southwest

Intermediate School District

Learning For All...Whatever It Takes

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May 25, 2021

Heritage Southwest Intermediate School district (formerly Lewis Cass Intermediate School District) is looking to procure a generator in the event of a power outage.

- * Provide and install (1) 40KW Cummins Generator or equivalent
- * Provide and install (1) custom concrete pad for generator
- * Provide and install (1) NEMA 1 Rated Transfer Switch
- * Provide and install (1) Step Down Transformer
- * Provide and install (1) Square D Panelboard for Generator Loads
- * Provide and install conduit and wire from Generator to building
- * Provide excavation, backfill and compaction
- * Electrical Permit
- * Start up and owner training

Excluded

- * LP Gas Service, Tank or Generator Connection
- * Utility Costs

All proposals must be submitted electronically by June 14, 2021 to jennifer.lim@lewiscassisd.org. Jennifer is available for on-site walk through on June 8, 2021 from 9 a.m.-Noon. Bids must be good through July 01, 2021. Bidders must see the site before proposals will be accepted. Please see additional details below.

**Heritage Southwest ISD (formerly Lewis Cass ISD)
Propane Generator for data and phones at Admin
Bldg**

61682 Dailey Rd, Cassopolis, MI 49031

Posted: May 26, 2021

Deadline for Submission of Questions: June 11,2021

Bid Response Due: June 14, 2021 at 12:00 P.M. EST

Introduction

Heritage Southwest ISD (formerly Lewis Cass ISD) requires a propane generator at its Administration Building to maintain data and phones during power outages. The generator must be capable of remote monitoring. See attached drawing for further details.

1. All responses to this RFP should be submitted via email no later than the date indicated at the top of the page and clearly marked “**Heritage Southwest ISD Propane Generator for 61682 Dailey RD RFP 2021**” in the subject line. Bids must be submitted to Jennifer Lim– Technology Director @ jennifer.lim@lewiscassisd.org. It is the Contractor’s responsibility to verify the receipt of the proposal before the due date and time.
2. It is the sole responsibility of the contractor to ensure that their responses arrive in a timely manner. Late proposals will not be accepted; they will be returned unopened to the bidder.
3. Oral or telephone bids will not be considered, nor will modifications of proposals by such communication be considered.
4. All inquiries must be submitted via e-mail to Jennifer Lim – Technology Director of Heritage SW ISD (formerly Lewis Cass ISD). The last day for all inquiries is indicated at the top of this page. Heritage SW ISD will not respond to any inquiries, all communications must be through the above contact.
5. Heritage SW ISD (formerly Lewis Cass ISD) reserves the right to reject any or all proposals and select the proposal that offers the best overall benefit to the school district and its schools. Along with price, special consideration will be given to proposals of components that match current district network equipment brand and specifications.
6. Any interpretation, correction, or change of the RFP will be made by ADDENDUM.
7. This RFP does not commit any of the organizations involved to award a contract, pay costs incurred in preparation of the proposal or to procure a contract for services or supplies. The contractor may be required to participate in negotiations and to submit any price, technical or other revisions of their proposal as may result from negotiations.
8. Project Due Date:
 - a. Contractor must complete the project by October 1, 2021.

- b. Heritage Southwest ISD (formerly) Lewis Cass ISD shall enforce a liquidated damages penalty if the Contractor does not complete the project by the Project Due Date: **October 1, 2021**. The penalty shall be in the amount of 0.20% (two tenths of one percent) per day of the cost of the original award.
9. A five percent (5%) Bid Security for the total amount of Base Bid is required.
10. A one hundred percent (100%) Performance Bond for the total amount of the Base Bid is required.
11. Lewis Cass ISD is exempted from the Michigan Use Tax Act, and sales to Lewis Cass ISD are exempt as per the Michigan Sales Tax Act.
12. Each bid shall be accompanied by a sworn and notarized statement disclosing any familial relationship that exists between the owner or any employee of the contractor and any Lewis Cass ISD board members or Lewis Cass ISD superintendents and must be filled out and returned with the contractors response.
 - a. **All Contractors must complete and submit the “Familial Disclosure Affidavit” (Attachment A) to confirm compliance.**
13. ”Public Act 517 of 2012 (effective December 31, 2012) enacted the “Iran Economic Sanctions Act”, which prevents “Iran linked businesses” from bidding on a school district or ISD’s request for proposals (“RFP”). This law requires that persons submitting bids certify that they are not an “Iran linked business,” which is defined as either:
 - i. A person engaging in investment activities in the energy sector of Iran, including a person that provides oil or liquefied natural gas tankers or products used to construct or maintain pipelines used to transport oil or liquefied natural gas for the energy sector of Iran; or
 - ii. Financial institution that extends credit to another person, if that person will use the credit to engage in investment activities in the energy sector of Iran.
- b. **All Contractors must complete and submit the “Affidavit of Compliance – Iran Economic Sanctions Act” (Attachment B) to confirm compliance.**
14. All contractors must be currently licensed in the State of Michigan.
15. Any necessary permits will be filed by the contractor.

B. SUBMITTALS

1. The vendor shall provide the following documentation and service:
 - a) Shop drawing that shall include the manufacturer’s specification sheets, including all component parts.
 - B) As-built drawings that includes up-to-date drawings including any changes made to the system during installation. Circuit diagrams and other information necessary for the proper operation and maintenance of the system shall be included.
2. All material and/or equipment necessary for the proper operation of the system, even though not specifically mentioned in the contract documents, shall be deemed part of this contract.

C. OPERATION AND MAINTENANCE DATA

1. Include operator instructions for each required mode of operation, routine troubleshooting

procedures, manufacturer's operation and maintenance manual for each item of equipment and accessory, and routine cleaning methods and materials.

Generator Specification

1.1 MANUFACTURERS

A. Manufacturers: The basis for this specification is Cummins Power Generation equipment. **No alternates accepted.**

1.2 ENGINE-GENERATOR SET

A. **Factory-assembled and -tested**, engine-generator set.

B. **Mounting Frame:** Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.

1. Rigging Information: Indicate location of each lifting attachment, generator-set center of gravity, and total package weight in submittal drawings.

C. Capacities and Characteristics:

1. Power Output Ratings: Electrical output power rating for Standby operation of not less than 200.0, at 80 percent lagging power factor, 120/208, Parallel Wye, Three phase, 3 -wire, 60 hertz.

2. Alternator shall be capable of accepting maximum 250.0 kVA in a single step and be capable of recovering to a minimum of 90% of rated no load voltage. Following the application of the specified kVA load at near zero power factor applied to the generator set.

3. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component. The engine-generator nameplate shall include information of the power output rating of the equipment.

D. Generator-Set Performance:

1. Steady-State Voltage Operational Bandwidth: 0.5 percent of rated output voltage from no load to full load.

2. Transient Voltage Performance: Not more than 20 percent variation for 50 percent

stepload increase or decrease. Voltage shall recover and remain within the steady-state operating band within 5 seconds. On application of a 100% load step the generator set shall recover to stable voltage within 10 seconds.

3. Steady-State Frequency Operational Bandwidth: 0.25 percent of rated frequency from no load to full load.

4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.

5. Transient Frequency Performance: Not more than 15 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within 5 seconds. On application of a 100% load step the generator set shall recover to stable frequency within 10 seconds.

6. Output Waveform: At full load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for any single harmonic. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50.

7. Sustained Short-Circuit Current: (For engine-generator sets using a PMG-excited alternator) For a 3-phase, bolted short circuit at system output terminals, system shall supply a minimum of 300 percent of rated full-load current for not less than 8 seconds without damage to generator system components. For a 1-phase, bolted short circuit at system output terminals, system shall regulate both voltage and current to prevent overvoltage conditions on the non-faulted phases.

8. Start Time: Comply with NFPA 110, Level 1, Type 10, system requirements.

9. Ambient Condition Performance: Engine generator shall be designed to allow operation at full rated load in an ambient temperature under site conditions, based on highest ambient condition. Ambient temperature shall be as measured at the air inlet to the engine generator for enclosed units, and at the control of the engine generator for machines installed in equipment rooms.

1.3 ENGINE

A. **Fuel: Propane**

B. **Rated Engine Speed: 1800RPM.**

C. **Lubrication System:** The following items are mounted on engine or skid:

1. Lube oil pump: shall be positive displacement, mechanical, full pressure pump.
2. Filter and Strainer: Provided by the engine manufacturer of record to provide adequate filtration for the prime mover to be used.
3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.

D. **Engine Fuel System:** The engine fuel system shall be installed in strict compliance to the engine manufacturer's instructions

E. **Main Fuel Pump:** Mounted on engine. Pump ensures adequate primary fuel flow under starting and load conditions.

F. **Governor:** Adjustable isochronous, with speed sensing. The governing system dynamic capabilities shall be controlled as a function of engine coolant temperature to provide fast, stable operation at varying engine operating temperature conditions. The control system shall actively control the fuel rate as appropriate to the state of the engine generator. Fuel rate shall be regulated as a function of starting, accelerating to start disconnect speed, accelerating to rated speed, and operating in various isochronous states.

G. **Cooling System:** Closed loop, liquid cooled

1. The generator set manufacturer shall provide prototype test data for the specific hardware proposed demonstrating that the machine will operate at rated standby load in an outdoor ambient condition of 40 deg C.
2. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
3. Size of Radiator overflow tank: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
4. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gage glass and petcock.
5. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
6. Duct Flange: Generator sets installed indoors shall be provided with a flexible radiator duct adapter flange.

H. **Muffler/Silencer:** Selected with performance as required to meet sound requirements of the application, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements. For generator sets with outdoor enclosures the silencer shall be inside the enclosure.

I. **Air-Intake Filter:** Engine-mounted air cleaner with replaceable dry-filter element and restriction indicator.

J. **Starting System:** 12 or 24V, as recommended by the engine manufacturer; electric, with negative ground.

1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in Part 1 "Project Conditions" Article.
2. Cranking Cycle: As required by NFPA 110 for level 1 systems.
3. Battery Cable: Size as recommended by engine manufacturer for cable length as required. Include required interconnecting conductors and connection accessories.
4. Battery Compartment: Factory fabricated of metal with acid-resistant finish.
5. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation. The battery charging alternator shall have sufficient capacity to recharge the batteries with all parasitic loads connected within 4 hours after a normal engine starting sequence.

6. Battery Chargers: Unit shall comply with UL 1236, provide fully regulated, constant voltage, current limited, battery charger for each battery bank. It will include the following features:

- a. Operation: Equalizing-charging rate based on generator set manufacturer's recommendations shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
- b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 20 deg C to plus 40 deg C to prevent overcharging at high temperatures and undercharging at low temperatures.
- c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
- d. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall

close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.

e. Provide LED indication of general charger condition, including charging, faults, and modes. Provide a LCD display to indicate charge rate and battery voltage. Charger shall provide relay contacts for fault conditions as required by NFPA110.

f. Enclosure and Mounting: NEMA, Type 1, wall-mounted cabinet.

1.4 FUEL STORAGE

- A. Contractor to assist with sizing of new LP Tank. Generator must have sufficient fuel supply for 48 hours of run time.
- B. LP service provided by others.

1.5 CONTROL AND MONITORING

- A. Engine generator control shall be microprocessor based and provide automatic starting, monitoring, protection and control functions for the unit.
- B. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of generator set. When mode-selector switch is switched to the on position, generator set starts. The off position of same switch initiates generator-set shutdown. (Switches with different configurations but equal functions are acceptable.) When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of the local (generator set-mounted) and/or remote emergency-stop switch also shuts down generator set.
- C. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts generator set. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of the local (generator set-mounted) and/or remote emergency-stop switch also shuts down generator set.
- D. Configuration: Operating and safety indications, protective devices, system controls, engine gages and associated equipment shall be grouped in a common control and monitoring panel. Mounting method shall isolate the control panel from generator-set vibration. AC output power circuit breakers and other output power equipment shall not be mounted in the control enclosure.
- E. Indicating and Protective Devices and Controls: As required by NFPA 110 for Level 1 system, and the following:
 1. AC voltmeter (3-phase, line to line and line to neutral values).
 2. AC ammeter (3-phases).
 3. AC frequency meter.
 4. Ammeter-voltmeter displays shall simultaneously display conditions for all three phases.
 5. Emergency Stop Switch: Switch shall be a red "mushroom head" pushbutton device complete with lock-out/tag-out provisions. Depressing switch shall cause the generator set to immediately stop the generator set and prevent it from operating.

6. Fault Reset Switch: Supply a dedicated control switch to reset/clear fault conditions.
7. DC voltmeter (alternator battery charging).
8. Engine-coolant temperature gauge.
9. Engine lubricating-oil pressure gauge.
10. Running-time meter.
11. Generator-voltage and frequency digital raise/lower switches. Rheostats for these

functions are not acceptable. The control shall adjustment of these parameters in a range of plus or minus 5% of the voltage and frequency operating set point (not nominal voltage and frequency values.) The voltage and frequency adjustment functions shall be disabled when the paralleling breaker is closed.

12. AC Protective Equipment: The control system shall include over/under voltage, reverse kVAR over current, loss of voltage reference, and over excitation shut down protection.

There shall be a overload warning, and overcurrent warning alarm.

13. Status LED indicating lamps to indicate remote start signal present at the control, existing shutdown condition, existing alarm condition, not in auto, and generator set running.

14. A graphical display panel with appropriate navigation devices shall be provided to view all information noted above, as well as all engine status and alarm/shutdown conditions (including those from an integrated engine emission control system). The display shall also include integrated provisions for adjustment of the gain and stability settings for the governing and voltage regulation systems.

15. Panel lighting system to allow viewing and operation of the control when the generator room or enclosure is not lighted.

16. Data Logging: The control system shall log the latest 20 different alarm and shut down conditions, the total number of times each alarm or shutdown has occurred, and the date and time the latest of these shutdown and fault conditions occurred.

17. DC control Power Monitoring: The control system shall continuously monitor DC power supply to the control, and annunciate low or high voltage conditions. It shall also provide an alarm indicating imminent failure of the battery bank based on degraded voltage recover on loading (engine cranking).

1.6 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

A. Comply with NEMA MG 1.

B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.

C. Electrical Insulation: Class H

D. Temperature Rise: 120 / Class H environment.

E. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, over speed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.

F. Enclosure: Drip-proof.

G. Voltage Regulator: SCR type, Separate from exciter, providing performance as specified. The voltage regulation system shall be microprocessor-controlled, full wave rectified, and provide a pulse-width modulated signal to the exciter. No exceptions or deviations to these requirements will be permitted.

H. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.

I. Subtransient Reactance: 15 percent maximum, based on the rating of the engine generator set.

1.7 OUTDOOR GENERATOR-SET ENCLOSURE

A. Description: Weather Steel housing. Multiple panels shall be lockable and provide adequate access to components requiring maintenance. Instruments, control, and battery system shall be mounted within enclosure.

B. Construction:

1. Hinged Doors: With padlocking provisions. Restraint/Hold back hardware to prevent door to keep door open at 180 degrees during maintenance. Rain lips over all doors.

2. Exhaust System:

a. Muffler Location: Within enclosure.

3. Hardware: All hardware and hinges shall be stainless steel.

4. Mounting Base: Suitable for mounting on sub-base fuel tank or housekeeping pad.
5. A weather protective enclosure shall be provided which allows the generator set to operate at full rated load with a static pressure drop equal to or less than 0.5 inches of water.

C. Engine Cooling Airflow through Enclosure: Housing shall provide ample airflow for engine generator operation at rated load in an ambient temperature of 40 deg C.

1. Louvers: Fixed-engine, cooling-air inlet and discharge.

D. Sound Performance: Reduce the sound level of the engine generator while operating at full rated load to a maximum of 87 dBA measured at any location 7 m from the engine generator in a free field environment.

E. Site Provisions:

1. Lifting: Complete assembly of engine generator, enclosure, and sub base fuel tank (when used) shall be designed to be lifted into place as a single unit, using spreader bars.

1.8 VIBRATION ISOLATION DEVICES

A. Vibration Isolation: Generators installed on grade shall be provided with elastomeric isolator pads integral to the generator, unless the engine manufacturer requires use of spring isolation.

1.9 FINISHES

A. Indoor and Outdoor Enclosures and Components: Powder-coated and baked over corrosionresistant pretreatment and compatible primer. Manufacturer's standard color or as directed on the drawings.

1.10 SOURCE QUALITY CONTROL

A. Prototype Testing: Factory test engine-generator set using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.

1. Tests: Comply with NFPA 110, Level 1 Energy Converters. In addition, the equipment engine, skid, cooling system, and alternator shall have been subjected to actual prototype tests to validate the capability of the design under the abnormal conditions noted in NFPA110. Calculations and testing on similar equipment which are allowed under NFPA110 are not sufficient to meet this requirement.

B. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Test engine generator set manufactured for this Project to demonstrate compatibility and functionality.
2. Full load run.
3. Maximum power.
4. Voltage regulation.
5. Steady-state governing.
6. Single-step load pickup.
7. Simulated safety shutdowns.
8. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.

PART 2 – EXECUTION

2.1 INSTALLATION

A. Comply with packaged engine-generator manufacturers' written installation, application, and alignment instructions and with NFPA 110.

B. Equipment shall be installed by the contractor in accordance with final submittals and contract documents. Installation shall comply with applicable state and local codes as required by the authority having jurisdiction. Install equipment in accordance with manufacturer's instructions and instructions included in the listing or labeling of UL listed products.

C. Installation of equipment shall include furnishing and installing all interconnecting wiring between all major equipment provided for the on-site power system. The contractor shall also perform interconnecting wiring between equipment sections (when required), under the supervision of the equipment supplier.

D. Equipment shall be installed on concrete housekeeping pads. Equipment shall be permanently fastened to the pad in accordance with manufacturer's instructions and seismic requirements of the site.

E. Equipment shall be initially started and operated by representatives of the manufacturer. All protective settings shall be adjusted as instructed by the consulting engineer.

F. All equipment shall be physically inspected for damage. Scratches and other installation damage shall be repaired prior to final system testing. Equipment shall be thoroughly cleaned to remove all dirt and construction debris prior to initial operation and final testing of the system.

G. On completion of the installation by the electrical contractor, the generator set supplier shall conduct a site evaluation to verify that the equipment is installed per manufacturer's recommended practice.

2.2 ON-SITE ACCEPTANCE TEST

A. The complete installation shall be tested to verify compliance with the performance requirements of this specification following completion of all site work. Testing shall be conducted by representatives of the manufacturer, with required fuel supplied by Contractor. The Engineer shall be notified in advance and shall have the option to witness the tests. The generator set manufacturer shall provide a site test specification covering the entire system. Tests shall include:

B. Prior to start of active testing, all field connections for wiring, power conductors, and bus bar connections shall be checked for proper tightening torque.

C. Installation acceptance tests to be conducted on site shall include a "cold start" test, a two hour full load (resistive) test, and a one-step rated load pickup test in accordance with NFPA 110. Provide a resistive load bank and make temporary connections for full load test, if necessary.

D. Perform a power failure test on the entire installed system. This test shall be conducted by opening the power supply from the utility service, and observing proper operation of the system for at least 2 hours. Coordinate timing and obtain approval for start of test with site personnel.

2.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

2.4 SERVICE AND SUPPORT

A. The generator set supplier shall maintain service parts inventory for the entire power system at a central location which is accessible to the service location 24 hours per day, 365 days per year. The inventory shall have a commercial value of \$3 million or more. The manufacturer of the generator set shall maintain a central parts inventory to support the supplier, covering all the major components of the power system, including engines, alternators, control systems, paralleling electronics, and power transfer equipment.

B. The generator set shall be serviced by a local service organization that is trained and factory certified in generator set service. The supplier shall maintain an inventory of critical power system replacement parts in the local service location. Service vehicles shall be stocked with critical replacement parts. The service organization shall be on call 24 hours per day, 365 days per year. The service organization shall be physically located within 100 miles of the Lewis Cass ISD, Administration Building, 61682 Dailey Rd, Cassopolis, MI 49031.

C. The manufacturer shall maintain model and serial number records of each generator set provided for at least 20 years.

D. Generator will be new or never used, purchased from a qualified Cummings dealer. Factory warranty will be included.

