



City Hall • 333 West Ellsworth Street • Midland, Michigan 48640-5132 • 989.837.3300 • 989.835.2717 Fax • www.midland-mi.org

INVITATION TO BID
BID NO. 3248
STANDBY ELECTRICAL GENERATOR

Sealed bids will be accepted at the City Clerk's Office, City Hall, 333 West Ellsworth Street, Midland, Michigan 48640-5132, until 2:00 PM, Tuesday, **March 23, 2010** for the supply of a 200 HP Standby Electrical Generator per the attached specifications. Technical questions about this bid shall be directed to Steve Smith, Wastewater Supervisor, at (989) 837-3504.

Invitation to Bid and all its pages, documents and attachments, including those added subsequently by written notice, submitted and properly executed, shall constitute the contract between the City of Midland and the successful vendor when approved and accepted by the City.

The City reserves the right to accept or reject all or any parts of any and all bids, to waive irregularities and to award in the best interests of the City of Midland.

Mike Meyer, CPPB, C.P.M.

Purchasing Agent

Midland, Michigan

LANDFILL GAS COMPRESSOR BUILDING GENERATOR SPECIFICATIONS

STANDBY ELECTRIC GENERATOR

- A. The standby electric generator system shall consist of a packaged diesel engine generator, cooling system, fuel system, and unit-mounted muffler. System shall start up and restore power within 10 seconds of any power failure. Load calculations shall be based on one step application of one 200 hp fixed speed, methane gas compressor 225 amps 1450 LRA on VFD, Plus 20KW Lighting, 25KW Misc. receptacle load, one 40hp flare blower, 4 x 3HP Fans, 1 x 1HP Pump, 1 x 5HP Pump, 1 x 5HP Fan, 1 x 50HP Compressor, 1 x 25HP Bldg Air compressor, 1 x 3/4HP Pump, 1 x 5HP condenser fan, 4 x 1-1/2HP pumps. Overall loading of the gen set package with the above loads on one step shall be 85% or less, with maximum voltage dip not to exceed 21%. The existing utility electrical system is an underground Delta 3 wire. The generator shall be a grounded "Y" system with a 277/480 volts solidly grounded system.
- B. Standby electric generator shall be rated at a minimum of 400 KW, at 1800 RPM, 480/277 volts, 3 phase, 4 wire, .8 PF designed for standby duty at these ratings. These ratings must be substantiated by manufacturer's standard published curves. Equipment package shall meet the following minimum requirements: 14.9L Engine, rated at minimum 755HP full output to 104 Degrees F radiator, alternator shall be oversized, a minimum of 600KW @ 130 Rise, with 2208SKVA. Package shall not derate below 8325 Feet Altitude and 104 Degrees F. Performance of this generating set series shall be certified by an independent testing laboratory as to the set's full power ratings, stability and voltage and frequency regulation. The unit shall be factory assembled and tested by the generator manufacturer and shipped to the job site by his authorized dealer having a parts and service facility in the area. The engine-generator set shall be of the latest design and manufacture and shall consist of all new and unused materials, equipment and parts.
- C. This standby electric power system, furnished complete by the manufacturer, shall be warranted for a period of five years from the date of installations. One full set of spare oil and air filter elements shall be provided with the generator. The five year extended warranty shall be from one manufacturer and fully cover both the generator set package and the ATS. The warranty shall be comprehensive, to include all parts, labor, and travel time and mileage for the five year period.
- D. A generator mounted totally enclosed main line molded case circuit breaker shall be installed as a load circuit interrupting and protection device. It shall operate both manually for normal switching function and automatically during overload and short circuit conditions. Provide an 800 amp UL Thermal Magnetic breaker on the gen set.
- E. The unit shall be furnished with a factory weather protective, sound attenuating housing which allows the generator set to operate at full rated load in the ambient conditions previously specified. The enclosure shall reduce the sound level of the generator set while operating at full rated load to a maximum of 75 dba at any

location seven meters from generator set in a free field environment. No foam materials shall be used unless they can be demonstrated to have the same durability and life as fiberglass. The enclosure shall be heavy gauge reinforced sheet steel. Enclosure shall be prototype tested. Enclosure shall be sized to allow ample working space for servicing and repairs of the generator set. Access shall be provided to the engine, generator, and control panel. Generator supplier shall submit layout drawings with his bid for the proposed generator set and enclosure including: outline dimensions, weights, and mounting details. The enclosure shall be painted a color to be determined by the owner. Exhaust silencer shall be factory installed interior to the enclosure with no part of the silencer exposed. Provide rain collar and rain cap.

- F. On completion of the installation, a factory-trained, full time distributor power generation field service technician shall perform system start-up. The technician shall be fully authorized for the genset and the ATS. The supplier shall furnish three (3) sets of operation, maintenance and parts manuals covering all components of the generator set and ATS equipment. These manuals shall be specific to the generator supplied not generic to all lines offered. If ATS is not manufactured by the Gen Set Equipment Manufacturer the ATS manufacturer's field service technician shall be present at the start up and the warranty must be comprehensive as detailed above.
- G. The engine shall be diesel fueled, four-cycle, water-cooled with mounted radiator, fan, water pump and muffler. It shall have 6 cylinders and a minimum displacement of 912 cubic inches, with a minimum rating of 755 bhp at its maximum operating speed of 1800 rpm. Intake and exhaust valves shall be heat resisting alloy steel, free rotating. Exhaust valve seat inserts shall be provided. Full pressure lubrication shall be supplied by a positive displacement lube oil pump. The engine shall have air cleaner, fuel and oil filters with replaceable elements, lube oil cooler and a fuel transfer pump. Engine speed shall be governed by an electronic governor to maintain isochronous frequency no-load to full-load and +/- .25% steady state. The engine shall have a 24-volt, 35 Amp battery charging DC, alternator with a transistorized voltage regulator. Remote, 2 wire, starting shall be by a 24-volt, solenoid shift, electric 24-volt starter. The engine shall have a coolant heater (120/240 V, 1500W) to aid winter starting. Fill engine-cooling system with a solution of 50% ethylene glycol. The engine instrument panel shall contain an oil pressure gauge, coolant temperature gauge and battery charge rate ammeter.
- H. Provide a UL and Michigan DEQ double wall secondary containment subbase fuel tank sized for a minimum of 24Hours at 100% rated nameplate load on the gen set. Tank shall have all MI DEQ required accessories, including: Normal and emergency venting of the tank and basin, alarms for low fuel, leak and high fuel, high fuel audible visual alarm panel located at the fill port, weatherproof, lockable fill/spill containment fill port, elevated off the pad, SS fuel flex supply and return lines, conduit stub up area with removable access panel.
- I. The generating set shall contain a complete programmable microprocessor controller which starts engine on closing contact and stops engine on opening contact. A cranking limiter shall be provided to open the starting circuit in approximately 45 to 90 seconds if the engine is not started within that time. The engine controls shall also

include a 3-position selector switch with the following positions: RUN-STOP-REMOTE. High engine temperature, low oil pressure, and over-speed shutdown with signal light and alarm terminal shall also be provided. Controller shall meet NFPA-110 code requirements.

- J. The alternator shall be oversized, minimum 600 KW at 130 Degree rise, 4-pole, revolving field design with temperature compensated solid-state voltage regulator and brushless PMG exciter system. The stator shall be directly connected to the engine flywheel housing, and the rotor shall be driven through a semi-flexible driving flange to insure permanent alignment. The insulation system shall be Class H rated at class F rise. The three phase, broad range alternator shall be 12-lead, reconnectible. Voltage regulator and PMG exciter for SCR type loads.
- K. Frequency regulation shall be isochronous from no load to rated load. Voltage regulation shall be within plus or minus $\pm 0.5\%$ percent of rated voltage, from no load to full rated load. The instantaneous voltage dip shall be less than 20 percent of rated voltage when full, 3 phase, load and rated power factor is applied to the alternator. Recovery to stable operation shall occur within 2.0 seconds. Stable or steady state operation is defined as operation with terminal voltage remaining constant within plus or minus 1 percent of rated voltage. Provide a minimum of plus or minus 5 percent voltage adjustment from rated value digital adjustment. Temperature rise shall be within NEMA MG1-22.40 definition for class F rise at full nameplate load.
- L. The alternator instrument panel shall be wired, tested and shock mounted on the generating set by the manufacturer of the alternator. It shall contain panel lighting; manual reset circuit breaker; three phase metering for: voltage, amperage, frequency; Kilowatts and power factor plus running time meter; emergency stop, full engine and alternator protection, three phase monitoring including single phase faults.
- M. A generator control panel mounted pre-alarm module shall be provided. It shall provide individual conditions, visual alarm warning on fault shutdown for the following:
 - Run (green light)
 - Overcrank Shutdown (red)
 - Overspeed Shutdown (red)
 - High Coolant Temperature Shutdown (red)
 - Low Oil Pressure Shutdown (red)
 - Pre-warning for High Coolant Temperature (yellow)
 - Pre-warning for Low Oil Pressure (yellow)
 - Low Coolant Temperature (yellow light – coolant heater failure)
 - Switch Off (flashing red – indicates generator not in automatic start mode)
 - Low Fuel (yellow)
 - Oil in Fuel Rupture Basin
 - Two customer selected faults (red)

A normally closed dry contact will open in the situation of any alarm; additionally a normally open dry contact shall close upon generator operation. These contact points

shall be pre-wired by manufacturer and pre-wired to a terminal block for electrical contractors connections.

- N. One set of starting batteries with cable and steel battery rack shall be included. Batteries shall be heavy-duty lead acid type, rated 800 cold cranking amps at 0 degrees F. Batteries are to be located within weather protective housing.
- O. A 10 amp auto float/equalize type battery charger shall be supplied to maintain the starting batteries at full charge with charge rate ammeter. The charger shall be mounted in the gen set enclosure. Provide minimum 4 charger alarms.
- P. The type of muffler shall be a residential-type silencer, mounted internally to the generator set enclosure, not exposed to weather.
- Q. A training session of 8 hours shall be presented by a fully qualified, trained representative of the equipment manufacturer who is thoroughly knowledgeable of the specific installation. It shall be given to Owners personnel responsible for operating the system and representatives of the local Fire Department.
- R. The complete emergency generator set shall meet all spec requirements above and be manufactured by Cummins Power Generation, Kohler, Caterpillar (not Olympian) or approved. No vendor shall bid any package which has not been pre-approved. Requests for consideration of other makes and models for pre-approval shall include full marked up literature detailing the exact proposed equipment, showing that it meets the specified performance, HP, KW, Starting KVA, Temperature and altitude deration requirements and distributor support requirements.
- S. Units assembled in the field will not be acceptable.

AUTOMATIC TRANSFER SWITCH

- A. Automatic load transfer switches shall be industrial, 600VAC contactor based, spec grade, manufactured by the gen set equipment manufacturer and fully supported by the gen set distributor for all levels of service, parts and warranty support. ATS shall be 4 pole, 3 phase, 4 wire as indicated and be 1200 amp and 480 volt for GFI protected service. Minimum withstand Current Rating shall be 85KAIC for the ATS.
- B. The transfer switch shall be double throw, actuated by a single motor operator, momentarily energized from the source to which load is being transferred, and connected to the transfer mechanism by a simple overcenter type linkage, with a total transfer time not to exceed ½ second. The transfer switch shall be capable of transferring successfully in either direction with 70% of rated voltage applied to the switch terminals.
- C. The normal and emergency contacts shall be positively interlocked mechanically and electrically to prevent simultaneous closing. Switch failure shall not permit a neutral position. Main contacts shall be mechanically locked in position in both the normal and emergency positions without use of hooks, latches, magnets, or springs, and shall be silver-tungsten alloy. Separate arcing contacts with magnetic blowouts shall be

provided on the transfer switch. Interlocked molded case circuit breakers or contactors are not acceptable.

- D. The transfer switch shall be equipped with permanently attached safe manual operator designed to prevent injury to operating personnel. The manual operator shall provide same contact-to-contact transfer speed as the electrical operator to prevent a flash over from switching the main contacts slowly.
- E. Provide a programmable exerciser clock that sets the day, time and duration of the generator exercise period, including a with/without Load Selector Switch.
- F. Transfer switches shall be completely factory wired internally with all wiring brought out to terminal blocks for Electrical Contractor's connections.
- G. The complete switch assembly shall be listed under UL-1008 for use on emergency systems. The automatic transfer switch shall be Russelectric Model RMT, ASCO 7000-series with program transition or equal and be housed in a NEMA 1 lockable wall mounted enclosure.
- H. The automatic transfer switch shall perform the following functions:
 1. Engine starting contacts shall be provided to start generator should the voltage of the normal source drop below 70% on any phase after adjustable time delay of 1-3 seconds.
 2. The transfer switch shall transfer to emergency when the generating plant has reached 90% of the rated voltage frequency.
 3. After restoration of normal power on all phases to 90% of rated voltage, an adjustable motor driven time delay of 0-30 minutes, shall delay re-transfer to normal to allow stabilization of normal power. If the emergency power source should fail during this time delay period, the switch shall automatically return to the normal source. After re-transfer to normal, the engine generator shall be allowed to operate at no load for an adjustable period of time of 0-5 minutes.
 4. A test switch shall be included to simulate normal power failure. The ATS will function identically to that of a real power failure.
 5. The ATS shall have green and red indicating lights on the front of the enclosure to indicate the switch being in either the normal or emergency position.
 6. Four auxiliary contacts shall be mounted on the main shaft, two closed on normal, two closed on emergency, for remote pilot lights or remote annunciation uses.
 7. The automatic transfer switch shall be set up to be monitored by the Energy Management/Building Monitor System in the future. Provide a dry alarm contact that is open in the normal mode and closed in the emergency mode for this.

8. ATS shall have full metering set on the face for Volts, Amps, Frequency, KW and PF for use by facility personnel.
9. All parameters shall be adjustable from the face of the ATS or with a plug in tool. Generator set manufacturer shall be fully authorized to perform start up, training, and any level of programming, service or warranty repairs to the ATS.
10. If the Gen Set vendor does not manufacture an ATS that meets the specifications they shall include one of the specified ATS's and the ATS supplier's technician shall be included in pricing to perform system start up service for the ATS.
11. The ATS shall have a five year comprehensive extended warranty covering parts, labor, travel time and mileage.

ON-SITE ACCEPTANCE TEST

- A. The complete installation shall be tested for compliance with the specification following completion of all site work. Representatives of the manufacturer shall conduct testing, with required fuel supplied by Owner.
- B. Installation acceptance tests to be conducted on-site shall include a "cold start" test, a two-hour full load 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.
- C. 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 two hours. Coordinate timing and obtain approval for start of test with site personnel.

**CITY OF MIDLAND, MICHIGAN
STANDARD INSTRUCTIONS TO BIDDERS**

1. Receipt and Opening of Bids: Sealed bids will be accepted and date/time stamped upon receipt in the office of the City Clerk, City Hall, 333 West Ellsworth, Midland, MI 48640-5132, until the time indicated on the attached Invitation to Bid for goods or services listed in the specifications and will be publicly opened and read aloud.
2. Form of Bid: Bids shall be submitted on the enclosed form with any exceptions, deviations or modifications to the published requirements clearly noted and explained.
3. Submission of Bids:
 - A) Envelopes containing bids shall be sealed and clearly marked on the outside of the envelope with the name and address of the bidder, the title and bid number of the project, and the date and time of the scheduled bid opening.
 - B) Any bid received after the scheduled opening time will not be accepted and will be returned unopened.
 - C) Any bidder may withdraw their bid response by written request at any time prior to the scheduled bid opening.
 - D) Telephonic or faxed bids will not be accepted and telephonic, telegraphic, or faxed amendments to bids or withdrawals will not be accepted under any circumstances.
 - E) Unless otherwise specified, no bid may be withdrawn, changed, or modified in any way for a period of sixty (60) calendar days from the date of the bid opening.
 - F) Negligence on the part of the bidder in preparing the bid confers no rights for the withdrawal of the bid after opening.
 - G) Bids received prior to the time of bid opening will be securely kept unopened. No responsibility will attach to any officer or employee of the City for the premature opening of a bid not properly addressed or identified.
 - H) In case of a discrepancy between unit prices and their extensions, the unit price bid shall govern.
4. Brand Names: Wherever in the specifications or proposal form brand names, trade names, manufacturer, or catalog numbers are called, it is for establishing a grade or quality level only and the phrase "or equal" is deemed to follow unless a prequalified list or the term "only", "no exceptions", or similar phrase is included.
5. Taxes: The City of Midland is exempt from State and Federal taxes. However, property purchased by a contractor to be used in the construction, alteration, repair, or improvement of property owned by the City is taxable to the contractor. Therefore, the price bid for contracts other than construction contracts must be exclusive of taxes and will be so construed. Construction contracts will be construed to include all applicable taxes unless the contract specifies otherwise.
6. Acceptance of Bids: The City will award to the lowest, responsive, responsible vendor that meets the functional requirements and needs expressed by the specifications. Tie bids will be awarded based on the most favorable terms for payment and/or delivery schedule or other costs associated with the award process. Receipt of a purchase order or properly executed contract covering the materials or services as described in the bid will indicate the award of bid and contract of purchase.
7. City's Rights: The City reserves the right to accept or reject any or all bids, to waive irregularities or defects, to award on a split-order or lump-sum basis, and accept other than the low bid when deemed to be in the City's best interests.
8. Delivery: Bids shall include all delivery charges with terms of Freight Prepay - FOB Midland, MI.
9. Laws: The laws of the State of Michigan shall govern the rights, obligations, and remedies of the Parties under this bid and any agreement reached through this process. The City of Midland is a Michigan municipal corporation.
10. Disclosure: All of the information included in your bid response is subject to the "Freedom of Information Act" and may be disclosed in its entirety after the formal, public bid opening has been completed. Bid tabulations will be available at our website, www.midland-mi.org in the Purchasing section of the Fiscal Services Department under the City Government tab.
11. Independent Price Determination: By submission of this proposal, the bidder certifies that the pricing structure offered has been arrived at independently without consultation, communication, or agreement of such prices for the purpose of restricting competition with any other bidder or competitor.
12. Acceptance of Materials: All components used in the manufacture or construction of materials, supplies, and equipment, and all finished goods, shall be new, the latest make/model, of the best quality, and highest grade workmanship. In the event the delivered material is found to be defective or does not conform to specifications, the City reserves the right to cancel the order upon written notice to the bidder and return the materials to the bidder at the bidder's expense.