



REQUEST FOR COMPETITIVE PROPOSALS
DADE COUNTY - GEORGIA
BOARD OF COMMISSIONERS
PHONE # 706-657-4625

PURCHASE OF ENGINE GENERATORS & SWITCHES

RFP #2016-07

ISSUE DATE: July 7, 2016

Governor Nathan Deal announced on April 11, 2016 that the Georgia Office of Homeland Security ~ Georgia Emergency Management Agency awarded Dade County, Georgia a Hazard Mitigation Grant Program (HMGP). This grant will be used to acquire four fixed generators and four portable generators and all applicable automatic switches to ensure continuity of critical water and wastewater services to the community. The Board of Commissioners of Dade County, Georgia, solicits competitive sealed proposal bids from qualified vendors to acquire four (4) fixed engine generators, four (4) portable engine generators and fifteen (15) automatic switches further described under the scope of work.

Proposals will be received until 12:00 p.m. on Thursday, July 28, 2016 in the Dade County Board of Commissioners Office located in the Dade County Administrative Building, 71 Case Avenue, Suite 243, Trenton, Georgia 30752. Any proposal received after this time and date will not be accepted.

A public bid opening will be held at 2:00 p.m. on Thursday, July 28, 2016 in the office of the County Clerk of the Dade County Board of Commissioners located in the Dade County Administrative Building, 71 Case Avenue, Suite 243, Trenton, Georgia 30752.

All contract procurement shall be conducted in a manner providing full and open competition in compliance with Federal, State and local procurement regulations. FEMA/Federal standards classify Dade County's HMGP as a large project per the Sandy Recovery Improvement Act of 2013 (P.L.113-2). Dade County, Georgia has identified the scope of work and requests cost estimates for this large project to be provided by qualified vendors.

Dade County, Georgia and its *contractors/vendors* hired for this project shall comply with all Federal, State and local regulations. These regulations include, but are not limited to, the Hazard Mitigation Grant Program Grantee-Subgrantee Agreement (exhibit "A" displays estimated funding and has been retracted from this document); Assurances – Construction Programs (marked as exhibit "B"); Project Administration Guidelines: Financial Assistance (marked as exhibit "C"); Certification Regarding Drug Free Workplace Requirements (marked as exhibit "D"); Certification Regarding Lobbying (marked as exhibit "E") herein attached to this request for proposal document. (Exhibits F, G and H have been removed from this proposal document). All contractors/vendors shall meet the criteria outlined under the section titled "Required Qualifications" enclosed herein attached to this request for proposal document.

Questions regarding this proposal should be addressed to Mr. Alex Case, Director of Emergency Services for Dade County, Georgia by calling 706-657-4111, no later than five (5) working days prior to bid opening date. A pre-proposal conference will be held Tuesday, July 19, 2016 beginning at 9:00 a.m. in the Commission Meeting Room located inside the Dade County Administrative Building, 71 Case Avenue, Trenton, Georgia 30752. Any follow-up questions received after the pre-proposal conference shall be made in writing, and shall be answered

accordingly in writing. Questions requiring written information must be submitted no later than ten (10) working days prior to bid opening date and mailed to Dade County Commission, Attention: County Clerk, P.O. Box 613, Trenton, GA 30752-0613. Telephone inquiries must be made between the hours of 9:00 a.m. and 2:00 p.m. eastern daylight time Monday through Friday.

Proposals must be typed or submitted in black ink. All proposals must include six (6) copies of the official proposal form, non-collusion statement, and any supporting documentation. Proposals should be enclosed in a sealed envelope or container with the following information clearly marked on the outside of the envelope or container.

**REQUEST FOR PROPOSAL (RFP# 2016-07)
PURCHASE FOUR FIXED & FOUR PORTABLE GENERATORS
DADE COUNTY BOARD OF COMMISSIONERS
DUE JULY 28, 2016 AT 12:00 P.M. (NOON)**

The envelope or container must be mailed or delivered to:

If by courier or hand delivery:

Dade County Commission
Attention: Don Townsend, County Clerk
Dade County Administrative Building
71 Case Avenue, Suite 243
Trenton, GA 30752-2429

If by U.S. mail:

Dade County Commission
Attention: Don Townsend, County Clerk
P.O. Box 613
Trenton, GA 30752-0613

Proposals received after the announced time and date due, whether mailed or delivered, will be returned unopened. Nothing herein is intended to exclude any responsible vendor or in any way restrain or restrict competition among vendors. Selection criteria will include an evaluation of the scope of services proposed, experience, references and price. Vendors are encouraged to be specific as to their understanding of the task to be performed and their proposed procedures for implementation.

The Board of Commissioners of Dade County, Georgia reserve the right to award in part or in whole or to reject any or all proposals, to waive technicalities or require additional information prior to award. Enclosed is a "Proposal Requirement and Non-Collusion Statement" that shall be signed and returned with the proposal.

All vendors submitting a proposal will be notified in writing of award.

Respectfully Submitted,

Ted Rumley, Chairperson/County Executive
Board of Commissioners
Dade County, Georgia

GENERAL TERMS AND CONDITIONS FOR SUBMITTING REQUEST FOR PROPOSAL TO DADE COUNTY, GEORGIA

1. Awards shall be made on the proposal that best meets the needs of Dade County, Georgia (hereafter referred to as "**County**") for specifications, cost and compatibility.
2. The County reserves the right to accept or reject any or all bids. The right is also reserved to waive any minor irregularities in this bid, and to award the bid to the bidder whose offer is most advantageous to the County from the standpoint of suitability to purpose, quality of service, previous experience and price, and to accept the bid that is in the best interests of the County.
3. Minimum specifications are designed as a requirement of the bid. Minimum specifications are outlined to provide for a particular need or use by the County, and are not meant to eliminate any particular vendor. If a particular minimum specification is unable to be met by the vendor, then the bidder, prior to the opening of the bid, shall contact the Dade County Clerk in writing to determine if a particular specification may be altered or accepted.
4. The bidder hereby declares that all statements and representations made in the bid proposal are true and correct, and are made under the penalty of perjury under the laws of the State of Georgia.
5. Insurance coverage for proposed services shall include general liability and workers' compensation, which shall include automobile liability insurance in a combined single limit of not less than \$1 million dollars, unless specified otherwise in the specifications.
6. The selected firm shall provide, within 10 days after the notice of award is issued, a copy of their existing liability insurance certificate naming Dade County, Georgia and its officers and employees as an additionally named insured on said policies. Such insurance coverage shall be maintained in full force and effect for the duration of the Contract and must be in a form satisfactory to the County.
7. The vendor will provide references, including current clients.
8. The vendor will be asked to sign an agreement that substantially includes all of the specifications in this proposal.

9. Pursuant to O.C.G.A. § 36-60-13 - Multiyear lease, purchase, or lease purchase contracts - each county or municipality in this state shall be authorized to enter into multiyear lease, purchase, or lease purchase contracts of all kinds for the acquisition of goods, materials, real and personal property, services, and supplies, provided that any such contract shall contain provisions for the following:
 - a. The contract shall terminate absolutely and without further obligation on the part of the county or municipality at the close of the calendar year in which it was executed and at the close of each succeeding calendar year for which it may be renewed as provided in this Code section;
 - b. The contract may provide for automatic renewal unless positive action is taken by the county or municipality to terminate such contract, and the nature of such action shall be determined by the county or municipality and specified in the contract;
 - c. The contract shall state the total obligation of the county or municipality for the calendar year of execution and shall further state the total obligation which will be incurred in each calendar year renewal term, if renewed; and
 - d. The contract shall provide that title to any supplies, materials, equipment, or other personal property shall remain in the vendor until fully paid for by the county or municipality.

10. Provider acknowledges and agrees to comply with the requirements of O.C.G.A. § 13-10-90 and 13-10-91. Provider further agrees to use the federal work authorization program commonly known as E-Verify or any subsequent replacement program, throughout the term of this agreement, and that the Provider will execute the Contractor Affidavit adopted by the State of Georgia and other such affidavits or other documents as may reasonably be required to comply with the terms of this statute.

For general bid information, contact Don Townsend, County Clerk, Dade County Board of Commissioners at (706) 657-4625.



COMPETITIVE PROPOSAL REQUIREMENTS AND NON-COLLUSION STATEMENT

My signature certifies that the proposal as submitted complies with all Terms and Conditions as set forth. My signature also certifies that the accompanying proposal is not the result of, or affected by, any unlawful act of collusion with another person or company engaged in the same line of business or commerce, or any act of fraud punishable under Georgia law. Furthermore, I understand that fraud and unlawful collusion are crimes under the Georgia Frauds Act. The Georgia Bid Rigging Act, and Georgia Antitrust Act, and Federal Law, and can result in fines, prison sentences, and civil damage awards.

I hereby certify that I am authorized to sign as a Representative for the Firm:

Name of Vendor: _____

Address: _____

Signature: x _____

Name (type/print): _____

Title: _____

Telephone: _____

Date: _____



HMPG REQUIRED CONTRACTOR QUALIFICATIONS

DADE COUNTY BOARD OF COMMISSIONERS FOUR FIXED & FOUR PORTABLE GENERATORS RFP No: 2016-07

Contractors are required to have the following qualifications:

1. Must be a licensed contractor in the State of Georgia.
2. Must have minimum of 5 years' experience installing generators.
3. Must have experience installing 100kw units and above.
4. Must be able to respond to down time situation within 30 minutes.
5. Must be able to have technician on site for repairs within two hours 24/7.
6. Must have available parts in stock at local warehouse.
7. Must be an installer and servicing dealer.
8. Must comply with all local, state and federal guidelines.
9. Must have all permits and inspections as required by the state or local government.
10. Must provide warranty for all equipment and installations.

Special Notation: This requirement is intended for the contractor who installs the switches onto generators, not necessary for anyone interested in selling the actual generators and/or switches to Dade County, Georgia.



OFFICIAL COMPETITIVE PROPOSAL FORM

DADE COUNTY BOARD OF COMMISSIONERS PURCHASE FOUR FIXED & FOUR PORTABLE GENERATORS RFP No: 2016-07

The undersigned party hereby proposes the following costs associated with the purchase of four (4) fixed generators; four (4) portable generators; and fifteen (15) automatic switches to ensure continuity of critical water and wastewater services to the community.

- Site Location of Generator _____
(if listing individually provide name of site, otherwise write "ALL")

- Cost of Generator \$ _____
 - Manufacture _____
 - Model _____

- Cost of Automatic Transfer Switch(es) \$ _____
 - Manufacture _____
 - Model _____

PROPOSED AMOUNT: \$ _____ DOLLARS

The Dade County Commission reserves the right to reject any and all bids/proposals and to waive any and all technical defects in the execution of any informality in the submission of any bid.

Name: _____
(Print or Type Company or Individual Name)

Signature: x _____

Address: _____

Phone No: _____
(Office Phone, Home Phone, Cell Phone, Fax Number)



OFFICIAL PROJECT SPECIFICATIONS

DADE COUNTY BOARD OF COMMISSIONERS FOUR FIXED & FOUR PORTABLE GENERATORS RFP No: 2016-07

See attached specification guide for the installation of four (4) fixed generators, four (4) portable generators and fifteen (15) automatic transfer switches to ensure continuity of critical water and wastewater services to the community.

- **Generator One:**
 - **FIXED** ~ City of Trenton Sewer Treatment Facility
 - **KW Size:** 550
 - **Phase:** 3
 - **Voltage:** 480/277
 - **Fuel Type:** Diesel
 - **Transfer Switch Size:** 800 Amp
 - **Pump Size:** 4 Pumps (variable ~ contact project specialist)
 - **Starting Amps:** 316.5
 - **Running Amps:** A 89 / B 87 / C 84
 - **Provider:** Georgia Power
 - **Meter #:** 10637595
 - **Starting:** VFD

- **Generator Two:**
 - **FIXED** ~ Dade County Covenant Pump Station
 - **KW Size:** 125
 - **Phase:** 3
 - **Voltage:** 240/120
 - **Fuel Type:** Diesel
 - **Transfer Switch Size:** 225 Amp
 - **Pump Size:** Fire Pump + 2 Pumps (only one running)
 - **Starting Amps:** 52.2
 - **Running Amps:** A 15.5 / B 16 / C 15.5
 - **Provider:** Georgia Power
 - **Meter #:** 10637595
 - **Starting:** VFD

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- Generator Three:
 - **FIXED** ~ Dade County Sand Mountain Pump Station
 - **KW Size:** 500
 - **Phase:** 3
 - **Voltage:** 480/277
 - **Fuel Type:** Diesel
 - **Transfer Switch Size:** 1200 Amp
 - **Pump Size:** 2 Pumps (only one running)
 - **Starting Amps:** 12
 - **Running Amps:** A 175 / B 174 / C 186
 - **Provider:** Georgia Power
 - **Meter #:** 10637595
 - **Starting:** VFD

- Generator Four:
 - **FIXED** ~ Dade County Water Treatment Facility
 - **KW Size:** 1500
 - **Phase:** 3
 - **Voltage:** 480/277
 - **Fuel Type:** Diesel
 - **Transfer Switch Size:** 1600 Amp
 - **Pump Size:** 300, 20, 150, 75, 50, 50
 - **Starting Amps:** Variable (contact project specialist)
 - **Running Amps:** A 570 / B 595 / C 612
 - **Provider:** Georgia Power
 - **Meter #:** 10637595
 - **Starting:** VFD/Starter

- Generator Five:
 - **PORTABLE** ~ Lift Stations: Glenbrook; Hwy 136 East; Hwy 11 North
 - **KW Size:** 60
 - **Phase:** 3
 - **Voltage:** 240/120
 - **Fuel Type:** Diesel
 - **Transfer Switch Size:** Three (3)~200 Amp
 - **Pump Size:** 15, 15 at each
 - **Starting Amps:** 125
 - **Running Amps:** A 38 / B 37 / C 38
 - **Provider:** Georgia Power
 - **Meter #:** Unavailable - (Power Permit required to be pulled)
 - **Starting:** Starter

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- Generator Six:
 - **PORTABLE** ~ Lift Stations: Cora Circle; Sells Lane; McKaig Road #1; McKaig Road #2
 - **KW Size:** 60
 - **Phase:** 3
 - **Voltage:** 240/120
 - **Fuel Type:** Diesel
 - **Transfer Switch Size:** Four (4)~200 Amp
 - **Pump Size:** 15, 15 at each
 - **Starting Amps:** 125
 - **Running Amps:** A 38 / B 37 / C 38
 - **Provider:** Georgia Power
 - **Meter #:** Unavailable - (Power Permit required to be pulled)
 - **Starting:** Starter

- Generator Seven:
 - **PORTABLE** ~ Lift Station: Woolbright
 - **KW Size:** 100
 - **Phase:** 3
 - **Voltage:** 240/120
 - **Fuel Type:** Diesel
 - **Transfer Switch Size:** One (1)~200 Amp
 - **Pump Size:** 27, 27
 - **Starting Amps:** 390
 - **Running Amps:** A 119 / B 119.6 / C 119.7
 - **Provider:** Georgia Power
 - **Meter #:** Unavailable - (Power Permit required to be pulled)
 - **Starting:** VFD

- Generator Eight:
 - **PORTABLE** ~ Lift Stations: Hwy 11 North; Hwy 11 South; Head River
 - **KW Size:** 100
 - **Phase:** 3
 - **Voltage:** 240/120
 - **Fuel Type:** Diesel
 - **Transfer Switch Size:** Three (3)~200 Amp
 - **Pump Size:** 75.75
 - **Starting Amps:** 12
 - **Running Amps:** A 32.7 / B 29.2 / C 33.2
 - **Provider:** Georgia Power
 - **Meter #:** Unavailable - (Power Permit required to be pulled)
 - **Starting:** VFD

Dade County Water and Sewer Generators

Site #	Location	fixed	Portable	KW SIZE	Phase	Voltage	Fuel Type	Transfer Switch Size	Pump Size	Starting Amps	Running Amps	Provider	Meter #	Starting
1	City of Trenton Sewer Treatment Facility	X		550	3	480/277	Diesel	800 Amp	4 pumps	316.5	A 89 / B 87 / C 84	Georgia Power	10637595	Starter
2	Covenant Pump Station	X		125	3	240/120	Diesel	225 Amp	fire pump + 2 pumps only one running	52.2	A 15.5 / B 16 / C 15.5	EPB	656065	VFD
3	Sand Mountain Pump Station	X		500	3	480/277	Diesel	1200 Amp	2 Pumps only one running	12	A 175 / B 174 / C 186	Georgia Power	7115941	VFD
4	Water Treatment Facility	X		1500	3	480/277	Diesel	1600 Amp	300,20,150,75,50,50	Variable	A 570 / B 595 / C 612	Georgia Power	3224488	VFD/Starter
5	Lift Stations Portable X 3 Glenbrook, Highway 136 East, Highway 11 North		X	60	3	240/120	Diesel	3= 200 Amp Docking	15, 15 at each	125	A 38 / B 37 / C 38	Georgia Power	unavailable	Starter
6	Lift Stations Portable X 4 Cora Circle, Sells Lane, McKaig Rd. #1, and #2		X	60	3	240/120	Diesel	4 =200 Amp Docking	15, 15 at each	125	A 38 / B 37 / C 38	Georgia Power	unavailable	Starter
7	Lift Station Portable X 1 Woolbright		X	100	3	240/120	Diesel	1= 200amp Docking	27, 27	390	A 119 / B 119.6 / C 119.7	Georgia Power	unavailable	VFD
8	Lift Station Portable X 3 Highway 11 North, Hwy 11 South, Head River		X	100	3	240/120	Diesel	3= 200amp Docking	75.75	12	A 32.7 B 29.2 / C 33.2	Georgia Power	unavailable	VFD

Generator Amp Rating

- 60kw 3phase 240/120v = 180amp
- 100kw 3phase 240/120v = 301amp
- 125kw 3phase 240/120v = 376amp
- 500kw 3phase 480/277v = 752amp
- 550kw 3phase 480/277v = 827amp
- 1500kw 3phase 490/277v = 2255amp

Dade County Emergency Management

Series 300 Service Entrance Rated Automatic Transfer Switches

PART 1 GENERAL

1.01 Scope

- A. Furnish and install automatic transfer switches (ATS) with number of poles, amperage, voltage, and withstand current ratings as shown on the plans. Each automatic transfer shall consist of an inherently double throw power transfer switch unit and a microprocessor controller, interconnected to provide complete automatic operation. All transfer switches and control panels shall be the product of the same manufacturer.
- B. Furnish an enclosure for the ATS that is for service entry. It shall provide all of the proper disconnecting, protection, grounding and bonding required for service entrance equipment.

1.02 Acceptable Manufacturers

Service Entrance Automatic transfer switches shall be ASCO Series 3AUS. Any alternate shall be submitted to the consulting engineer in writing at least 10 days prior to bid. Each alternate bid must list any deviations from this specification.

1.03 Codes and Standards

The automatic transfer switches and accessories shall conform to the requirements of:

- A. UL 1008 - Standard for Automatic Transfer Switches
- B. NFPA 70 - National Electrical Code
- C. NFPA 110 - Emergency and Standby Power Systems
- D. IEEE Standard 446 - IEEE Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications
- E. NEMA Standard ICS10-1993 (formerly ICS2-447) - AC Automatic Transfer Switches
- F. NEC Articles 700, 701, 702
- G. International Standards Organization ISO 9001
- H. UL 891 According to this UL standard the equipment shall be labeled: "Suitable for use only as service equipment."
- I. UL 508 Industrial Control Equipment

PART 2 PRODUCTS

2.01 Mechanically Held Transfer Switch

- C. The transfer switch unit shall be electrically operated and mechanically held. The electrical operator shall be a single-solenoid mechanism, momentarily energized. Main operators which include overcurrent disconnect devices will not be accepted. The switch shall be mechanically interlocked to ensure only one of two possible positions, normal or emergency.

- D. The switch shall be positively locked and unaffected by momentary outages so that contact pressure is maintained at a constant value and temperature rise at the contacts is minimized for maximum reliability and operating life.
- E. All main contacts shall be silver composition. Switches rated 600 amperes and above shall have segmented, blow-on construction for high withstand current capability and be protected by separate arcing contacts.
- F. Inspection of all contacts shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors. A manual operating handle shall be provided for maintenance purposes. The handle shall permit the operator to manually stop the contacts at any point throughout their entire travel to inspect and service the contacts when required.
- G. Designs utilizing components of molded-case circuit breakers, contactors, or parts thereof which are not intended for continuous duty, repetitive switching or transfer between two active power sources are not acceptable.
- H. Where neutral conductors must be switched, the ATS shall be provided with fully-rated neutral transfer contacts.
- I. Where neutral conductors are to be solidly connected, a neutral terminal plate with fully-rated AL-CU pressure connectors shall be provided.

2.02 Group 'G' Controller with Integrated User Interface Panel

- A. The controller shall be connected to the transfer switch by an interconnecting wiring harness. The harness shall include a keyed disconnect plug to enable the controller to be disconnected from the transfer switch for routine maintenance.
- B. The controller shall direct the operation of the transfer switch. The controller's sensing and logic shall be controlled by a built-in microprocessor for maximum reliability, minimum maintenance, inherent serial communications capability, and the ability to communicate via the Ethernet through optional communications module
- C. A single controller shall provide single and three phase capability for maximum application flexibility and minimal spare part requirements. Voltage sensing shall be true RMS type and shall be accurate to $\pm 1\%$ of nominal voltage. Frequency sensing shall be accurate to $\pm 0.1\text{Hz}$. Time delay settings shall be accurate to $\pm 0.5\%$ of the full scale value of the time delay. The panel shall be capable of operating over a temperature range of -20 to + 70 degrees C, and storage from -55 to + 85 degrees C.
- D. The controller shall be enclosed with a protective cover and be mounted separate from the transfer switch unit for safety and ease of maintenance. Sensing and control logic shall be provided on printed circuit boards.
- E. The controller shall meet or exceed the requirements for Electromagnetic Compatibility (EMC) as follows:
 - 1. IEEE C37.90
 - 2. IEC 60947 – 6 - 1, 61000-4
 - a. IEC 61000 – 4 - 2 Electrostatic Discharge Immunity
 - b. IEC 61000 – 4 - 3 Radiated RF Field Immunity
 - c. IEC 61000 – 4 - 4 Electrical Fast Transient/Burst Immunity

d. IEC 61000 – 4 - 5 Surge Immunity

e. IEC 61000 – 4 – 6 Conducted RF Immunity

3. CISPR 11 – Conducted RF Emissions and Radiated RF Emissions

2.03 Enclosure

- A. The ATS shall be furnished in a NEMA type 1 enclosure unless otherwise shown on the plans.
- B. Provide strip heater with thermostat for Type 3R enclosure requirements.
- C. The complete assembly shall be degreased, and thoroughly cleaned through a five-stage aqueous process. The finish shall be ANSI-61, light gray, electrostatically-charged polyester powder paint over a phosphate coating, at a minimum of 2.0 mils in density. Finish shall be suitable for indoor and outdoor environments.
- D. For those automatic transfer switches that are less than 1000 amperes, the connection between the normal disconnecting device and the ATS shall be made with the appropriate size cable. For those automatic transfer switches that are greater than 1000 amperes, the connection between the normal disconnecting device and the ATS shall be made with the appropriate size bus. Bus shall be silver plated copper rated no less than 1000 amps per square inch.
- E. A pressure disconnect link shall be provided to disconnect the normal source neutral connection from the emergency and load neutral connections for 4-wire applications. A ground bus shall be provided for connection of the grounding conductor to the grounding electrode. A pressure disconnect link for the neutral to ground bonding jumper shall be provided to connect the normal neutral connection to the ground bus.
- F. Control wiring shall be rated for 600 volt, UL 1015. Wires shall be placed in wire duct or harnessed, and shall be supported to prevent sagging or breakage from weight or vibration. All wiring to hinged doors shall be run through door terminal blocks or connection plugs.

2.04 Disconnecting and Overcurrent Protection Device

- A. For those automatic transfer switches less than 1000 amperes, the normal connection shall be provided with a 3 pole, molded case circuit breaker with current ratings as shown on the plans. It shall have a thermal magnetic trip unit.
- A. For those service entrance automatic transfer switches rated 1000 to 3000 amps, the normal connection shall be provided with a, stationary mounted circuit breaker with current ratings as shown on the plans. The circuit breaker shall be provided with instantaneous and ground fault trip settings. The circuit breaker shall trip open when the ground fault setting is exceeded.

PART 3 OPERATION

3.01 Controller Display and Keypad

A. A 128*64 graphical LCD display and keypad shall be an integral part of the controller for viewing all available data and setting desired operational parameters. Operational parameters shall also be available for viewing and limited control through communications port. The following parameters shall only be adjustable via DIP switches on the controller.

1. Nominal line voltage and frequency
2. Single or three phase sensing on normal, and single phase sensing on emergency
3. Transfer operating mode configuration, (open transition, or delayed transition)

All instructions and controller settings shall be easily accessible, readable and accomplished without the use of codes, calculations, or instruction manuals.

3.02 Voltage and Frequency Sensing

A. Voltage and frequency on both the normal and emergency sources (as noted below) shall be continuously monitored, with the following pickup, dropout, and trip settings capabilities (values shown as % of nominal unless otherwise specified).

<u>Parameter</u>	<u>Sources</u>	<u>Dropout/Trip</u>	<u>Pickup/Reset</u>
Undervoltage	N & E	70 to 98%	85 to 100%
Overvoltage	N & E	102 to 115%	2% below trip
Undervoltage	N & E	85 to 98%	90 to 100%
Overfrequency	N & E	102 to 110%	2% below trip

- B. Repetitive accuracy of all settings shall be within 1% at +25C
- C. Voltage and frequency settings shall be field adjustable in 1% increments either locally with the display and keypad or remotely via serial communications port access.
- D. Source status screens shall be provided for both normal & emergency to provide digital readout of voltage on all 3 phases, and frequency.
- E. The backlit 128*64 graphical display shall have multiple language capability. Languages can be selected from the user interface.

3.03 Time Delays

- A. A time delay shall be provided to override momentary normal source outages and delay all transfer and engine starting signals, adjustable 0 to 6 seconds. It shall be possible to bypass the time delay from the controller user interface.
- B. A time delay shall be provided on transfer to emergency, adjustable from 0 to 60 minutes 59 seconds for controlled timing of transfer of loads to emergency. It shall be possible to bypass the time delay from the controller user interface.

- C. A generator stabilization time delay shall be provided after transfer to emergency adjustable 0 or 4 seconds.
- D. A time delay shall be provided on retransfer to normal, adjustable 0 to 9 hours 59 minutes 59 seconds. Time delay shall be automatically bypassed if emergency source fails and normal source is acceptable.
- E. A cooldown time delay shall be provided on shutdown of engine generator, Adjustable 0 to 60 minutes 59 seconds.
- F. All adjustable time delays shall be field adjustable without the use of special tools.
- G. A time delay activated output signal shall also be provided to drive an external relay(s) for selective load disconnect control. The controller shall have the ability to activate an adjustable 0 to 5 minutes 59 seconds time delay in any of the following modes:
 - 1. Prior to transfer only.
 - 2. Prior to and after transfer.
 - 3. Normal to emergency only.
 - 4. Emergency to normal only.
 - 5. Normal to emergency and emergency to normal.
 - 6. All transfer conditions or only when both sources are available.
- H. In the event that the alternate source is not accepted within the configured Failure to Accept time delay, the common alert indication shall become active.
- I. The controller shall also include the following built-in time delay for delayed transition operation.
 - 1. A time delay for the load disconnect position for delayed transition operation adjustable 0 to 5 minutes 59 seconds.

3.04 Additional Features

- A. The user interface shall be provided with test/reset modes. The test mode will simulate a normal source failure. The reset mode shall bypass the time delays on either transfer to emergency or retransfer to normal.
- B. A set of contacts rated 2 amps, 30 VDC shall be provided for a low-voltage engine start signal. The start signal shall prevent dry cranking of the engine by requiring the generator set to reach proper output, and run for the duration of the cool down setting, regardless of whether the normal source restores before the load is transferred.
- C. Auxiliary contacts, rated 10 amps, 250 VAC shall be provided consisting of two contacts, closed when the ATS is connected to the normal source and two contacts closed when the ATS is connected to the emergency source.
- D. A single alarm indication shall light up the alert indicator and de-energize the configured common alarm output relay for external monitoring.
- E. LED indicating lights shall be provided; one to indicate when the ATS is connected to

the normal source (green) and one to indicate when the ATS is connected to the emergency source (red).

- F. LED indicating lights shall be provided and energized by controller outputs. The lights shall provide true source availability of the normal (green) and emergency (red) source, as determined by the voltage sensing trip and reset settings for each source.
- G. LED indicating light shall be provided to indicate switch not in automatic mode (manual); and blinking (amber) to indicate transfer inhibit.
- H. LED indicating light shall be provided to indicate any alarm condition or active time delay (red).

The following features shall be built – in to the controller, but capable of being activated through keypad programming or the serial port only when required by the user:

- I. Provide the ability to select “commit/no commit to transfer” to determine whether the load should be transferred to the emergency generator if the normal source restores before the generator is ready to accept the load.
- J. A variable window inphase monitor shall be provided in the controller. The monitor shall control transfer so that motor load inrush currents do not exceed normal starting currents, and shall not require external control of power sources. The inphase monitor shall be specifically designed for and be the product of the ATS manufacturer. The inphase monitor shall be equal to ASCO feature 27.
- K. An engine generator exercising timer shall be provided to configure weekly and bi-weekly automatic testing of an engine generator set with or without load for 20 minutes fixed. It shall be capable of being configured to indicate a day of the week, and time weekly testing should occur.

The following feature shall be built – into the controller, but capable of being activated through keypad programming, communications interface port, or additional hardware.

- L. Terminals shall be provided for a remote contact to signal the ATS to transfer to emergency. This inhibit signal can be enabled through the keypad or serial port.
- M. System Status - The controller LCD display shall include a “System Status” screen which shall be readily accessible from any point in the menu by depressing the “ESC” key. This screen shall display a clear description of the active operating sequences and switch position. For example,

***Normal Failed
Load on Normal
TD Normal to Emerg
2min15s***

Controllers that require multiple screens to determine system status or display “coded” system status messages, which must be explained by references in the operator’s manual are not permissible.

- N. **Self Diagnostics** – The controller shall contain a diagnostic screen for the purpose of detecting system errors. This screen shall provide information on the status input

signals to the controller which may be preventing load transfer commands from being completed.

- O. **Communications Interface** – The controller shall be capable of interfacing, through an optional serial communication port with a network of transfer switches, locally (up to 4000 ft.). Standard software specific for transfer switch applications shall be available by the transfer switch manufacturer. This software shall allow for the monitoring, control, and setup of parameters.
- P. **Data Logging** – The controller shall have the ability to log data and to maintain the last 300 events, even in the event of total power loss. The following events shall be time and date stamped and maintained in a non – volatile memory.

1. Event Logging

1. Data and time and reason for transfer normal to emergency
2. Data and time and reason for transfer emergency to normal
3. Data and time and reason for engine start
4. Data and time engine stopped
5. Data and time emergency source available
6. Data and time emergency source not available

2. Statistical Data

1. Total number of transfers
2. Total number of transfers due to source failure
3. Total number of day's controller is energized
4. Total number of hours both normal and emergency sources are Available
5. Total time load is connected to normal
6. Total time load is connected to emergency
7. Last engine start
8. Last engine start up time
9. Input and output status

4.01 **Optional Features** *(The following section is optional and should be deleted if not required)*

A. Accessory Package - An accessory bundle shall be provided that includes:

1. A fully programmable engine exerciser with seven independent routines to exercise the engine generator, with or without load on a daily weekly, bi – weekly, or monthly basis.
2. Event log display that shows event number, time and date of events, event type, and reason (if applicable). A minimum of 300 events shall be stored.
3. RS – 485 communications port enabled.
4. Common alarm output contact.

(This feature shall be equal to ASCO accessory 11BE, and shall be capable of being activated for existing switches through optional accessory dongle).

B. Controller Power Supply - A backup power UPS shall be provided to allow controller to run for 3 minutes minimum without AC power. (This feature shall be equal to ASCO accessory 1UP, and shall be capable of being added to existing

switches without modification).

- C. Expansion Module** - A relay expansion module (REX) is a standard feature when delayed transition transfer is specified. A REX module shall also be provided for open transition transfer that includes one form C contact for source availability of the normal (18G) and emergency (18B) sources. Additional output relay shall be provided to indicate a common alarm. The REX module shall have the capability of being daisy chained for multiple sets of contacts. (This feature shall be equal to ASCO accessory 18RX, and shall be capable of being added to existing switches without modification).
- D. Current Sensing Card** - A load current metering card shall be provided that measures either single or three phase load current. It shall include current transformers (CT's) and shorting block. Parameters shall be able to be viewed via the user interface. (This feature shall be equal to ASCO accessory 23GA (single phase), 23GB (three phase), and shall be capable of being added to existing switches without modification).
- E. Communication Interface** - A Quad – Ethernet module shall be provided to allow several different serial devices that communicate at different baud rates and with different protocols to a common Ethernet media. The module shall be used to connect Series 300 and ASCO ATS Annunciators to the standard Ethernet network. It shall include (2) RJ – 45, (2) RS – 485, (2) TTL, and (2) CAN ports. The module shall be designed to communicate with multiple clients such as Web Browsers, and *PowerQuest®* systems simultaneously over the Ethernet connection. (This feature shall be equal to ASCO accessory 72EE, and shall be capable of being added to existing switches without modification).
- F. Transfer Alarm** - An audible alarm with silencing feature shall be provided to signal each time transfer to emergency occurs. (This feature shall be equal to ASCO accessory 62W).
- G. Load Shed Circuit (Contact)** – A load shed shall be initiated by opening of customer supplied contact to match generator set capacity to the load. Relay de-energization opens emergency contactor (CE) disconnecting the load from the emergency source. If the normal source is acceptable, normal source contactor (CN) is closed to connecting the load to the normal source. When the load is reconnected to normal the control panel is reset in readiness for the next normal source failure. (This feature shall be equal to ASCO accessory 30A).

Load Shed Circuit (Voltage) – A load shed shall be initiated by the removal of the control voltage to a relay to match generator capacity to the load. Relay de-energization opens emergency contactor (CE) disconnecting the load from emergency source. If the normal source is acceptable, normal source contactor (CN) is closed connecting the load to the normal source. When the load is reconnected to normal the control panel is reset in readiness for the next normal source failure. (This feature shall be equal to ASCO accessory 30B*).

* User control voltages: 12, 24, 32, 48, 120 Vdc, and 120 Vac.

- J. Enclosure Heater** - A 125 watt enclosure heater with transformer and thermostat (adjustable from 30° to 140 ° F) shall be provided for outdoor installations where type 3R, 4, are specified. (This feature shall be equal to ASCO accessory 44G, and shall be capable of being added to existing switches).
- K. Surge Suppression** – A TVSS with a surge current rating of 65kA shall be provided with individually matched fused metal oxide varistors (MOVs). It shall include LED status indication of normal operation, under voltage, power loss, phase loss or component failure. Shall include form C dry contacts for external alarm or

monitoring. The unit shall be enclosed in a Noryl housing rated NEMA 4, 12, and 4X. Shall comply with UL 1449 3rd edition (This feature shall be equal to ASCO accessory 73, and shall be capable of being added to existing switches).

L. Power Meter (This feature shall be equal to ASCO accessory 135L).

1. Furnish Power Meters at locations shown to monitor all functions specified below.
2. The Power Meters shall be listed to UL3111-1, CSA, CE Mark, and industrially rated for an operating temperature range of -20°C to 60°C.
3. The Power Meter shall be accurate to 1% measured, 2% computed values and display resolution to 1%. Voltage and current for all phases shall be sampled simultaneously to assure high accuracy in conditions of low power factor or large waveform distortions (harmonics).
4. The Power Meter shall be capable of operating without modification at nominal Frequencies of 45 to 66Hz and over a control power input range of 9 – 36VDC.
5. Each Power Meter shall be capable of interfacing with an optional communications module to permit information to be sent to central location for display, analysis, and logging.
6. The Power Meter shall accept inputs from industry standard instrument transformers (120 VAC secondary PTs and 5A secondary CTs). Direct phase voltage connections, 600 VAC and under, shall be possible without the use of PTs.
7. The Power Meter shall be applied in single, 3 phase, or three & four wire circuits. A fourth CT input shall be available to measure neutral or ground current.
8. All setup parameters required by the Power Meter shall be stored in non – volatile memory and retained in the event of a control power interruption.
9. The following metered readings shall be communicated by the Power Meter, via serial communication, when equipped with optional serial communications module.
 - a) Current, per phase RMS and neutral (if applicable)
 - b) Current Unbalance %
 - c) Voltage, phase – to – phase and phase – to – neutral
 - d) Voltage Unbalance %
 - e) Real power (KW), per phase and 3 – phase total
 - f) Apparent power (KVA), per phase and 3 – phase total
 - g) Reactive power (KVAR), per phase and 3 – phase total
 - h) Power factor, 3 – phase total & per phase
 - i) Frequency
 - j) Accumulated Energy, (MWH, MVAH, and MVARH)
 - k) Total Harmonic Distortion

The following energy readings shall be communicated by the Power Meter:

- a) Accumulated real energy KWH
- b) Accumulated reactive energy KVAH
- c) Accumulated apparent energy KVARH

Note: For real reactive energy reported values, separate total for energy flow from each source shall be stored, including the arithmetic sum.

PART 5 ADDITIONAL REQUIREMENTS

5.01 Withstand and Closing Ratings

- A. The ATS shall be rated to close on and withstand the available RMS symmetrical short circuit current at the ATS terminals with the type of overcurrent protection shown on the plans. WCR ATS ratings shall be as follows when used with specific circuit breakers:

ATS Size	Withstand & Closing Rating MCCB (480v/60hz)	W/CLF
30	10,000A	100,000
70 - 200	22,000A	200,000
230	22,000A	100,000
260 – 400	42,000A	200,000
600	50,000A	200,000
800 – 1200	65,000A	200,000
1600 – 2000	85,000A	200,000
2600 – 3000	100,000A	200,000

5.02 Tests and Certification

- A. The complete 3ATS shall be factory tested to ensure proper operation of the individual components and correct overall sequence of operation and to ensure that the operating transfer time, voltage, frequency and time delay settings are in compliance with the specification requirements.
- B. Upon request, the manufacturer shall provide a notarized letter certifying compliance with all of the requirements of this specification including compliance with the above codes and standards, and withstand and closing ratings. The certification shall identify, by serial number(s), the equipment involved. No exceptions to the specifications, other than those stipulated at the time of the submittal, shall be included in the certification.
- C. The ATS manufacturer shall be certified to ISO 9001: 2008 International Quality Standard and the manufacturer shall have third party certification verifying quality assurance in design/development, production, installation and servicing in accordance with ISO 9001: 2008.

5.03 Service Representation

- A. The ATS manufacturer shall maintain a national service organization of company-employed personnel located throughout the contiguous United States. The service center's personnel must be factory trained and must be on call 24 hours a day, 365 days a year.
- B. The manufacturer shall maintain records of each switch, by serial number, for a minimum of 20 years.
- c. For ease of maintenance, the transfer switch nameplate shall include drawing numbers and serviceable part numbers.

SECTION 263213

ENGINE GENERATORS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes packaged engine-generator sets with the following features:
 - 1. Diesel engine.
 - 2. Unit-mounted cooling system.
 - 3. Unit-mounted control and monitoring.
 - 4. Performance requirements for sensitive loads.
 - 5. Outdoor enclosure.
- B. Related Sections include the following:
 - 1. Division 26 Section "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine-generator sets.

1.2 DEFINITIONS

- A. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

1.3 PERFORMANCE REQUIREMENTS

- A. Overcurrent Protective Device Coordination: All overcurrent protective devices proposed for inclusion in the Work shall be selected to be selectively coordinated with the overcurrent protective devices installed on their supply side such that an overcurrent event (overload, short-circuit, or ground-fault) occurring at the lowest level in the system (branch circuit) cannot cause the feeder protective device supplying the branch circuit panelboard to open. This coordination shall be carried through each level of distribution for all branches of normal and emergency power. Refer to Division 26 Section "Overcurrent Protective Device Coordination Study" for additional requirements.
- B. System Function: The engine generator system shall include the capability of being automatically controlled. After starting, the unit shall attain rated speed and voltage, and accept rated load. Generator set speed shall be controlled by the engine governor, while generator output voltage regulation shall be a function of the generator automatic voltage regulator. Manual adjustment of generator speed and voltage shall be provided.

1.4 ACTION SUBMITTALS

- A. Specification Compliance Certification: Submit a Specification Compliance Certification in accordance with Division 26 Section "Common Work Results for Electrical".
- B. Submit product data and shop drawings in accordance with Division 01 and Division 26 Section "Common Work Results for Electrical" for products specified under PART 2 - PRODUCTS.

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- C. Simultaneous Action Submittals: Engine Generator Product Data submittal shall be made in conjunction with action submittals required under Division 26 Section "Overcurrent Protective Device Coordination Study." The release of electrical equipment submittals (panelboards, engine generators, switchgear, etc.) is dependent on the receipt of a complete and accurate overcurrent protective device coordination study. The Architect and Engineer require a full submittal review period as delineated in Division 01 Section "Submittal Procedures" to adequately review the OCPD study against the submitted electrical components prior to release of submittals for equipment procurement. The submittal schedule required by Division 01 requirements shall provide for this review time in the action submittal process. Delay claims arising due to Contractor's failure to coordinate simultaneous action submittals will not be considered by the Owner.
- D. Product Data: For each type of packaged engine generator indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. In addition, include the following:
1. Thermal damage curve for generator.
 2. Time-current curves for each generator overcurrent protection device. Include hardcopy of characteristic curve and TCC Number for use with Power Tools by SKM Systems Analysis, Inc. Indicate available setting points and selectable ranges for each type of adjustable circuit breaker.
 3. Fuel System:
 - a. Fuel consumption at: 50-percent rated load, 75-percent rated load and 100-percent rated load.
 - b. Fuel flow at 100-percent rated load.
 - c. Manufacturer Safety Data Sheet for fuel oil
 4. Electrical Characteristics:
 - a. Power rating at 0.8 power factor lagging
 - b. Motor starting, maximum kVA at 90-percent sustained voltage
 - c. Fault current, 3-phase symmetrical
 - d. Number of Poles
 - e. Per Unit Impedance, positive (X'' and X/R ratio)
 - f. Per Unit Impedance, negative (X'' and X/R ratio)
 - g. Per Unit Impedance, zero (X'' and X/R ratio)
 - h. Resistance Stator resistance measured at dc current (R_a)
 - i. Resistance, positive sequence short circuit resistance (r_g)
 - j. Resistance, zero sequence short circuit resistance. (r_o)
 - k. Reactance, subtransient reactance saturated value. 1- to 5-cycle reactance. (X_d'')
 - l. Reactance, transient reactance saturated value. 5- to 200-cycle reactance (X_d')
 - m. Reactance, synchronous reactance saturated value. Above 200 cycles (X_d)
 - n. Reactance, zero sequence short circuit reactance (x_o)
 - o. Time Constant, subtransient time constant (T_d'')
 - p. Time Constant, transient time constant (T_d')
 - q. Time Constant, DC time constant (T_{dc})
 - r. Time Constant, armature short circuit time constant (T_a)
 - s. Field current at given load. Actual pre-fault amperes at the initial loading conditions (I_f)
 - t. Field current at no load rated volts (I_{fg})
 - u. Impedance, neutral Impedance R
 - v. Impedance, neutral Impedance X
 - w. Reactance, Quadrature axis subtransient reactance (saturated) of synchronous machines. (X_q'')
 5. Coolant System:

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- a. Total airflow required including, but not limited to, combustion air, alternate cooling air and radiator cooling air in supply cfm.
- b. Maximum static airflow restriction of the system in inches of water column.
6. Exhaust System:
 - a. Maximum allowable exhaust backpressure.
 - b. Exhaust gas flow rate.
 - c. Exhaust stack temperature.
 - d. Record of Exhaust Emissions tests for compliance with EPA TIER requirements for the project location.
- E. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 1. Dimensioned outline plan and elevation drawings of engine-generator set and other components specified.
 2. Total weight of system including, but not limited to, generator, alternator, engine, base, supports, sub-base fuel tank filled with fuel, radiator and enclosure.
 3. Vibration Isolation Base Details: Signed and sealed by a qualified professional engineer. Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include base weights.
 4. Wiring Diagrams: Power, signal, and control wiring.
 5. Exhaust pipe connection and size.

1.5 INFORMATIONAL SUBMITTALS

- A. Finish Samples for Verification: Nominal 3-inch by 3-inch metal squares, factory finished for all standard finishes and colors available; indicate specified finish with unique tag or marker.
- B. Manufacturer Seismic Qualification Certification: Submit certification that engine-generator set, batteries, battery racks, accessories, and components will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems".
- C. Qualification Data: For installer and manufacturer.
- D. Source quality-control test reports.
 1. Certified summary of prototype-unit test report.
 2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
 3. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
 4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
 5. Report of sound generation.
 6. Report of exhaust emissions showing compliance with applicable regulations.
 7. Certified Torsional Vibration Compatibility: Comply with NFPA 110.
- E. Extended Maintenance Offer: Priced service contract for Owner's consideration specified in this Section.
- F. Method of Procedure for Field Quality Control Tests.
- G. Field quality-control test reports.

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1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - 1. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.
 - 2. Operating Instructions with description and illustration of the engine-generator set, engine and generator controls and any other controls and indicators.
 - 3. Parts Books that illustrate and list all assemblies, subassemblies and components, except standard fastening hardware (nuts, bolts, washers, etc.).
 - 4. Preventative Maintenance Instructions on the complete system that cover daily, weekly, monthly, biannual, and annual maintenance requirements and include a complete lubrication chart.
 - 5. Routine Test Procedures for all electronic and electrical circuits and for the main AC generator.
 - 6. Troubleshooting Chart covering the complete engine-generator set showing description of trouble, probable cause, and suggested remedy.
 - 7. Wiring Diagrams and Schematics showing function of all electrical components.
- B. Warranty: Special warranty specified in this Section.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Fuses: One for every ten of each type and rating installed. Furnish at least three of each type.
 - 2. Indicating Lights: one for every ten of each type and rating installed. Furnish at least one of each type.
 - 3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
 - 1. Maintenance Proximity: Maintain a service center available on a 24-hour a day, 365 days a year, on-call basis, via a toll-free call center, capable of dispatching training, parts, and emergency maintenance repairs from the Installer's local or regional maintenance facility. Installer's maintenance facility shall have a response period of less than four hours normal travel time from Installer's place of business to Project site from time of notification. Maintain records of each generator set, by serial number, for service purposes.
 - 2. Engineering Responsibility: Preparation of data for vibration isolators of engine skid mounts, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Manufacturer Qualifications: A qualified manufacturer. Maintain, within 50 miles of Project site, a service center capable of providing parts and emergency maintenance repairs. Maintain records of each generator, by serial number, for service purposes.

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- C. Source Limitations: Obtain packaged generator sets and auxiliary components through one source from a single manufacturer.
 - 1. Breaker Manufacturer: Manufacturer for generator breaker shall be the same as the manufacturer of other breakers proposed for other portions of the Work.
 - D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - E. Comply with ASME B15.1.
 - F. Comply with NFPA 37.
 - G. Comply with NFPA 70.
 - H. Comply with NFPA 99.
 - I. Comply with NFPA 110 requirements for Level 1 emergency power supply system.
 - J. Comply with IEEE 43, Recommended Practice for Insulation Testing of Large AC Rotating Machinery
 - K. Comply with IEC 34
 - L. Comply with UL 2200.
 - M. Engine Exhaust Emissions: Comply with applicable federal, state and local government requirements.
 - N. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by generator set including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.
 - 1. Sound level measured at a distance of 10 feet (3 m) from exhaust discharge after installation is complete shall be 85 dBA or less.
- 1.9 DELIVERY, STORAGE, AND HANDLING
- A. Prepare equipment for shipment.
 - 1. Provide suitable crating, blocking, and supports so equipment will withstand expected domestic shipping and handling shocks and vibration.
 - B. Protect equipment from exposure to dirt, fumes, water, corrosive substances, and physical damage.
 - C. Handle equipment components according to manufacturer's written instructions. Use factory-installed lifting provisions.
- 1.10 PROJECT CONDITIONS
- A. Environmental Conditions: Engine-generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:

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1. Ambient Temperature: Outdoor Unit: 5 to 123.6 deg F (Minus 15 to plus 50 deg C).
2. Altitude: Sea level to 700 feet.

1.11 COORDINATION

- A. Coordinate size and location of concrete bases for package engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

1.12 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of switchgear and associated auxiliary components that fail in materials or workmanship within specified warranty period.
 1. Warranty Period: Two years from date of Substantial Completion.

1.13 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Offer for the Owner's consideration and evaluation at the time of Product Data Submittal, provide full inspection and maintenance by skilled employees of manufacturer's designated service organization during the Warranty period, including any special warranty period specified.
 1. Include routine preventive maintenance and adjusting as required for proper operation as recommended by manufacturer. Provide number of visits recommended by manufacturer; but no less than semi-annual inspection service.
 2. Provide parts and supplies same as those used in the manufacture and installation of the original equipment.
 3. The contractor performing the contract services shall be qualified and listed to maintain ongoing certification and listing of the completed system.
- B. Extended Maintenance Service: Offer for the Owner's consideration and evaluation at the time of Product Data Submittal, a priced inspection, maintenance, testing, and repair contract in compliance with the manufacturer's recommended routine preventive maintenance program.
 1. The services offered under this contract shall begin after the completion of the Initial Maintenance Service and Special Warranty Period.
 2. The Owner shall have the option of renewing for single or multiple years, up to five years, at the price quoted upon completion of the Warranty period.
 3. The contractor performing the contract services shall be qualified and listed to maintain ongoing certification and listing of the completed system.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Caterpillar; Engine Division, or a comparable product by one of the following:
 1. Cummins Power Generation
 2. Kohler Co.; Generator Division – with Detroit Diesel Engine.

2.2 ENGINE-GENERATOR SET

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

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- B. Comply with EPA Tier emissions requirements of CI NSPS for Stationary Emergency Engine Standards.
- C. Mounting Frame: Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.
 - 1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and generator-set center of gravity.
- D. Capacities and Characteristics: Suitable for application in 3-phase, 60-Hz system, unless otherwise indicated.
 - 1. Power Output Ratings: Nominal ratings as indicated.
 - 2. Nominal System Voltage: As indicated on the Drawings.
 - 3. Output Connections: Three-phase, four wire.
 - 4. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.
 - 5. Service Application: Standby/Emergency Service.
 - 6. Power rating shall be based on 130-degree C temperature rise when operated at rated load based on ambient conditions stated in PART 1 – "Project Conditions."
- E. Generator-Set Performance for Sensitive Loads:
 - 1. Oversizing generator compared with the rated power output of the engine is permissible to meet specified performance.
 - a. Nameplate Data for Oversized Generator: Show ratings required by the Contract Documents rather than ratings that would normally be applied to generator size installed.
 - 2. Steady-State Voltage Operational Bandwidth: 1 percent of rated output voltage from no load to full load.
 - 3. 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.
 - 4. Output Waveform: At no load, harmonic content measured line to neutral shall not exceed 2 percent total with no slot ripple. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
 - 5. Sustained Short-Circuit Current: For a single and 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 10 seconds and then clear the fault automatically, without damage to winding insulation or other generator system components.
 - 6. Excitation System: Performance shall be unaffected by voltage distortion caused by nonlinear load.
 - a. Provide permanent magnet generator (PMG) excitation for power source to voltage regulator.
 - 7. Subtransient Reactance: 12 percent.
 - 8. Reverse kVAR Performance: at least 0.15 per unit.
 - 9. Start Time: Comply with NFPA 110, Type 10, system requirements.

2.3 ENGINE

- A. Fuel: Fuel oil, Grade DF-2, Ultra Low Sulfur Diesel.
- B. Rated Engine Speed: 1800 rpm.
- C. Maximum Piston Speed for Four-Cycle Engines: 2250 fpm (11.4 m/s).

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- D. Lubrication System: The following items are mounted on engine or skid:
1. Filter and Strainer: Replaceable; Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
 2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
 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.
 4. Bypass Valve: Arranged to continue lubrication in the event of filter clogging. The bypass valve shall be integral with the engine filter base or receptacle.
- E. Engine Fuel System:
1. Main Fuel Pump: Mounted on engine. Pump ensures adequate primary fuel flow under starting and load conditions.
 - a. Variable displacement type to alter the volume of fuel delivered to the spray nozzles according to load demand.
 2. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.
 3. Fuel Filtration: Primary and Secondary system.
 - a. Primary fuel filter between the fuel tank and transfer pump to screen large contaminants.
 - b. Fuel/water separator system with isolation valves to protect the fuel system from water damage.
 4. Fuel Cooler: Provide as required for the engine to deliver its maximum horsepower to achieve its rated KW at project conditions. Cooler shall be capable of exchanging heat rejected at full load with the cooling medium, including 10% spare/reserve capacity to accommodate fouling.
- F. Coolant Jacket Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity. Compatible with 208V – 3-phase external circuit supplied.
- G. Governor: Electronic speed controller; Adjustable isochronous, with speed sensing.
1. Speed Adjustment: 0 to 10-percent from no load to full rated load.
 2. Provide magnetic pickup off the engine flywheel ring gear to sense speed.
 3. Provide provisions for remote speed adjustment.
 4. Provide provisions for limiting fuel during start-up, and included capability for actuator compensation adjustment.
 5. Provide protections from voltage spikes and reverse. In the event of a DC power loss, the forward acting actuator shall move to the minimum fuel position.
- H. Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine-generator-set mounting frame and integral engine-driven coolant pump.
1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
 2. Size of Radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition. Provide expansion Tank when required. Construct expansion tank of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gage glass and petcock.
 3. Fan: Driven by multiple belts from engine shaft.
 4. Pumps: Driven by multiple belts from engine shaft. Auxiliary coolant pumps where required for separate circuit after-cooling shall also be engine driven.

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5. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
 6. Isolation Valves: Provide isolation valves on top and bottom of the radiator tank to facilitate radiator and water pump maintenance.
 7. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, ultraviolet-, and abrasion-resistant fabric.
 - a. Rating: 50-psig (345-kPa) maximum working pressure with coolant at 180 deg F (82 deg C), and non-collapsible under vacuum.
 - b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.
 8. Maximum static airflow restriction of the system: 0.5inches of water column
 9. Radiator Capacity: Provide radiator to allow full rated operation at 123.6 deg F (50 deg C).
 10. Construction: Totally enclosed radiator and radiator fan assembly. Provision for a duct flange or perforated metal grill to protect the radiator core. The fan, fan drive, and fan belts shall be covered with punched steel guards for personnel protection.
- I. Muffler/Silencer: Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.
1. Minimum sound attenuation of 25 dB at 500 Hz.
 2. Sound level measured at a distance of 10 feet (3 m) from exhaust discharge after installation is complete shall not exceed levels listed in Quality Assurance paragraph in Part 1 of this Section.
- J. Air-Intake Filter: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.
- K. Air-Intake After-Cooler: Provide After-cooler for combustion air. Coat After-cooler core air surfaces with a corrosion inhibitor to minimize oxidation.
- L. Starting System: 12-V or 24-V electric as required, 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 Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
 3. Cranking Cycle: As required by NFPA 110 for system level specified.
 4. Battery: Adequate capacity within ambient temperature range specified in Part 1 "Project Conditions" Article to provide specified cranking cycle at least three times without recharging.
 5. Battery Cable: Size as recommended by engine manufacturer for cable length required. Include required interconnecting conductors and connection accessories.
 6. Battery Compartment: Factory fabricated of metal with acid-resistant finish and thermal insulation. Include accessories required to support and fasten batteries in place.
 7. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
 8. Battery Charger: Current-limiting, automatic-equalizing and float-charging type. Unit shall comply with UL 1236 and include the following features:
 - a. Operation: Equalizing-charging rate of 10 A 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-

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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 40 deg C to plus 60 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. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
- e. 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.
- f. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

2.4 FUEL OIL STORAGE

- A. Comply with NFPA 30.
- B. Base-Mounted Fuel Oil Tank: Factory installed and piped, complying with UL 142 fuel oil tank. Features include the following:
 - 1. Tank level indicator.
 - 2. Capacity: Fuel for Twenty four hours continuous operation at 100 percent rated power output.
 - 3. Vandal-resistant fill cap.
 - 4. Containment Provisions: Comply with requirements of authorities having jurisdiction.
 - 5. Piping Connections: Factory-installed fuel supply and return lines from tank to engine; local fuel fill, vent line, overflow line; and tank drain line with shutoff valve.

2.5 CONTROL AND MONITORING

- A. Panel-mounted control switch(es) marked "run-off-automatic" to perform the following Sequence of Operation:
 - 1. When the 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.
 - 2. When mode-selector switch is switched to the on position, generator set starts.
 - 3. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements

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automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.

- B. Configuration: Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the generator set. Mounting method shall isolate the control panel from generator-set vibration.
- C. Provide the following on the generator instrument panel:
 - 1. AC voltmeter(s) for each phase or a phase selector switch.
 - 2. AC ammeter(s) for each phase or a phase selector switch.
 - 3. Frequency meter.
 - 4. Voltage-adjusting rheostat to allow +5 percent voltage adjustment.
 - 5. DC voltmeter (alternator battery charging).
 - 6. Engine-coolant temperature gage.
 - 7. Engine lubricating-oil pressure gage.
 - 8. Running-time meter.
 - 9. Fuel Pressure Gauge
 - 10. Jacket Water Temperature Gauge
- D. Controls to shut down and lock out the generator under any of the following conditions:
 - 1. Failing to start after specified cranking time
 - 2. Overspeed
 - 3. Low lubricating-oil pressure
 - 4. High engine temperature
 - 5. High lubricating-oil temperature
 - 6. Operation of remote manual stop station
- E. Indicating and Protective Devices and Controls: As required by NFPA 110 for Level 1 system, including but not limited to the following:

Schedule 1

	Indicator Function	Visual	Shutdown	Audible
1.	Overcrank	Y	Y	Y
2.	Low water temperature	Y	NA	Y
3.	High engine temperature pre-alarm	Y	NA	Y
4.	High engine temperature	Y	Y	Y
5.	Low lube oil pressure pre-alarm	Y	NA	Y
6.	Low lube oil pressure	Y	Y	Y
7.	Overspeed	Y	Y	Y
8.	Low fuel main tank	Y	NA	Y
9.	Low coolant level	Y	Y	Y
10.	EPS supplying load	Y	NA	NA

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	Indicator Function	Visual	Shutdown	Audible
11.	Control switch not in automatic position	Y	NA	Y
12.	High battery voltage	Y	NA	NA
13.	Low cranking voltage	Y	NA	Y
14.	Low voltage in battery	Y	NA	NA
15.	Battery charger ac failure	Y	NA	NA
16.	Lamp test	Y	NA	NA
17.	Contacts for local and remote common alarm	Y	NA	Y
18.	Audible alarm silencing switch	NA	NA	Y
19.	Low starting air pressure	Y	NA	NA
20.	Low starting hydraulic pressure	Y	NA	NA
21.	Air shutdown damper when used	Y	Y	Y
22.	Remote emergency stop	NA	Y	NA
23.	Fuel tank derangement alarm	Y	NA	Y
24.	Fuel tank high-level fuel supply shutdown alarm	Y	NA	Y
25.	Generator overload	Y	NA	Y
26.	Low fuel secondary tank	Y	NA	Y
27.	Fuel leak main tank	Y	NA	NA
28.	Fuel leak secondary tank	Y	NA	NA
29.	High Alternator temperature	Y	NA	Y
30.	Ground Fault Indication	Y	NA	NA

- F. Individual alarm indication to annunciate any of the conditions listed above with the following characteristics:
1. Battery powered
 2. Visually indicated
 3. Have a lamp test switch(es) to test the operation of all alarm lamps
 4. Controls to shut down the generator upon removal of the initiating signal or manual emergency shutdown
 5. Audible Alarm: Include necessary contacts and terminals in control and monitoring panel. Provide 4 spare spaces for future alarms. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset.

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- G. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator, unless otherwise indicated.
- H. Remote Alarm Annunciator (GAP): Comply with NFPA 99 and Schedule 1 above. An LED labeled with proper alarm conditions shall identify each alarm event and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

2.6 GENERATOR OVERCURRENT AND FAULT PROTECTION

- A. Generator Circuit Breaker: Molded-case, electronic-trip type; 100 percent rated; complying with UL 489.
 - 1. Coordination: Coordinate selection of Generator Breaker with other breakers included in other portions of the Work. Refer to Division 26 "Overcurrent Protective Device Coordination Study" for further requirements.
 - 2. Tripping Characteristics: Adjustable long-time and short-time delay and instantaneous.
 - 3. Trip Settings: Selected to coordinate with generator thermal damage curve.
 - 4. Shunt Trip: Connected to trip breaker when generator set is shut down by other protective devices.
 - 5. Mounting: Adjacent to or integrated with control and monitoring panel.
 - 6. Locking: Disconnecting means lockable in the open/off position.
- B. Ground-Fault Indication: Comply with NFPA 70, "Emergency System" signals for ground-fault. Integrate ground-fault alarm indication with other generator-set alarm indications.

2.7 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

- A. Comply with NEMA MG 1.
- B. Type: Alternating current, synchronous.
- C. Temperature Rise: As indicated in Engine-Generator Set section above.
- D. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.
- E. Electrical Insulation: Class H.
- F. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required.

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- G. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.
- H. Enclosure: Dripproof.
- I. Instrument Transformers: Mounted within generator enclosure.
- J. Voltage Regulator: Solid-state Microprocessor-based type separate from exciter, providing performance as specified. Control to allow for programmability based on the type of load connected.
 - 1. Adjusting rheostat control and monitoring panel shall provide plus or minus 5 percent adjustment of output-voltage operating band.
 - 2. Features:
 - a. Solid state voltage build up: Integrates accessories into one convenient unit.
 - b. No replaceable fuses.
 - c. Over-excitation Protection: Shuts off generator output when excitation current exceeds normal operating currents for 15 seconds or instantaneous shutoff if output is shorted.
 - d. Fault Detection Logging: Diagnostics identifying operation outside of programmed limits, and specific fault information is available even after the unit has been powered down.
 - e. Digital Display: Allows system parameter monitoring.
 - f. Adjustable overvoltage protection.
 - g. Adjustable undervoltage protection.
 - h. Adjustable Underfrequency protection.
 - i. Gain adjustment 0 to 10-percent to provide output voltage compensation for changes in load or frequency.
 - j. Reactive droop control, adjustable 0 to 10% droop at full load and 0.8 PF.
 - k. True RMS 3-phase voltage monitoring.
 - l. Remote communication capability.
 - m. Rotating diode monitor.
 - n. Protection against loss of voltage sensing and long term overcurrent conditions. The overcurrent protection function shall automatically reset when the regulator is de-energized. The regulator shall not be damaged or result in unsafe operation when subjected to open or shorted input due to sensing loss, or a short to ground or adjacent conductor.
- K. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.
- L. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.

2.8 OUTDOOR GENERATOR-SET ENCLOSURE

- A. Sound Attenuated Enclosure Fabrication(see site specific spreadsheet for dBA requirements : Steel, rated for environmental conditions at installed location).
 - 1. Construction: Vandal-resistant, Galvanized-steel, metal-clad enclosure erected on concrete foundation. Instruments and control shall be mounted within enclosure.
 - 2. Structural Design and Anchorage: Comply with ASCE 7 for wind loads, adequate to resist loads imposed by sustained winds and 3 second gusts based on the project location Exposure criteria.
 - 3. Muffler Location: Within enclosure.

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4. Finish: Factory-applied finish in manufacturer's standard enamel over corrosion-resistant treatment or rust-inhibiting primer coat, undersurfaces treated with corrosion-resistant undercoating.
 5. Hinged Panels: Allow access to generator, control sections, metering, and accessory compartments. Hinged panels must be arranged for minimum of 120-degree swing; standard 90-degree swing is not acceptable. Multiple panels shall be lockable and provide adequate access to components requiring maintenance.
 6. Ventilation louvers equipped with insect and rodent screen arranged to permit air circulation while excluding insects, rodents, and minimize exterior dust.
- B. Engine Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for 2 hours with ambient temperature at top of range specified in system service conditions.
1. Louvers: Fixed-engine, cooling-air inlet and discharge. Storm-proof and drainable louvers prevent entry of rain and snow.
- C. Interior Lights with Switch: Factory-wired, vaporproof-type fixtures within housing; arranged to illuminate controls and accessible interior. Arrange for external electrical connection.
1. Ballasts for Low-Temperature Environments:
 - a. Temperatures Minus 20 Deg F (Minus 29 Deg C) and Higher: Electromagnetic type designed for use with indicated lamp types.
 2. AC lighting system and connection point for operation when remote source is available.
- D. Convenience Outlets: Factory wired, GFCI. Arrange for external electrical connection.

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- E. Metal Shroud: Provide metal shroud to force radiator discharge air out through wall louver. Provide shroud assembly with gravity type louver in front of the radiator and a drain at the base of the shroud. Finish shroud to match enclosure.
- F. Turning Vein: Provide metal turning vein to force radiator discharge air up vertically. Provide assembly with gravity type louver at in front of the radiator and a drain at the base. Finish turning vein to match enclosure.
- G. Enclosure Auxiliary Equipment Panel: Within Generator-Set Enclosure provide factory-installed Panelboard to serve auxiliary generator equipment. Panel board shall meet the requirements of Division 26 Section "Panelboards."
 - 1. Panel Rating: 100A MCB, 208/120V, 3-Phase, 4 Wire, plus ground, 24-pole panelboard.
 - 2. Loads Served:
 - a. Coolant jacket Heaters.
 - b. Battery charger.
 - c. Fuel leak detection control.
 - d. Battery heater.
 - e. Fuel oil cooler.
 - f. Enclosure lighting.
 - g. Convenience Receptacles.

2.9 VIBRATION ISOLATION DEVICES

- A. Spring Isolators: Freestanding, steel, open-spring isolators.
 - 1. Outside Spring Diameter: Not less than 80 percent of compressed height of the spring at rated load.
 - 2. Minimum Additional Travel: 50 percent of required deflection at rated load.
 - 3. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
 - 4. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
 - 5. Base Plates: Factory drilled for bolting to structure and bonded to 1/4-inch (6-mm) thick, rubber isolator pad attached to underside of base plate. Base Plate shall limit floor load to 500 psig (3447 kPa).
 - 6. Top Plate and Adjustment Bolt: Threaded top plate with adjustment bolt and cap screw to fasten and level equipment.
- B. Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.
 - 1. Housing: Steel with resilient vertical-limit stops to prevent spring extension due to wind loads or if weight is removed; factory-drilled baseplate bonded to 1/4-inch- (6-mm-) thick, elastomeric isolator pad attached to baseplate underside; and adjustable equipment mounting and leveling bolt that acts as blocking during installation.
 - 2. Outside Spring Diameter: Not less than 80 percent of compressed height of the spring at rated load.
 - 3. Minimum Additional Travel: 50 percent of required deflection at rated load.
 - 4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
 - 5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

2.10 FINISHES

- A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

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2.11 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 and with IEEE 115.
- B. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:
 - 1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
 - 2. Conduct EPA Emissions test in compliance with the TIER Level requirements for the project location.
 - 3. Full load run (minimum of four hours).
 - 4. Maximum power.
 - 5. Voltage regulation.
 - 6. Transient and steady-state governing.
 - 7. Single-step load pickup.
 - 8. Safety shutdown.
 - 9. Report factory test results within 10 days of completion of test.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine-generator performance.
- B. Examine roughing-in of piping systems and electrical connections. Verify actual locations of connections before packaged engine-generator installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to witness and assist with the equipment installations, including connections.

3.3 INSTALLATION

- A. Comply with NECA/EGSA 404, "Recommended Practice for Installing Generator Sets" as published by the National Electrical Contractors Association.
- B. Comply with packaged engine-generator manufacturers' written installation and alignment instructions and with NFPA 110.
- C. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.
- D. Install and anchor equipment level on concrete bases, 4-inch (100-mm) nominal thickness. Concrete base is specified in Division 26 Section "Hangers and Supports for Electrical Systems," and concrete materials and installation requirements are specified in Division 03.
- E. Install packaged engine generator with vibration isolation having a minimum deflection of 1 inch (25 mm) on concrete base.
 - 1. Provide integral vibration isolators and restrained spring isolators
 - 2. Secure engine generator set to anchor bolts installed in concrete bases. Construct concrete bases according to Division 26 Section "Hangers and Supports for Electrical Systems."
- F. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.
- G. Provide full fuel tank for generator after completion of all tests.

3.4 CONNECTIONS

- A. Piping installation requirements are specified in Division 23 Sections. Drawings indicate general arrangement of piping and specialties.
- B. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow service and maintenance.
- C. Connect engine exhaust pipe to engine with flexible connector.
- D. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- E. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.5 IDENTIFICATION

- A. Identify system components according to Division 23 Section "Identification for HVAC Piping and Equipment" and Division 26 Section "Identification for Electrical Systems."
- B. Affix a label with a toll-free telephone number for contacting emergency maintenance field service to front of each generator unit.
- C. Warranty Nameplate: Affix a metal label to the generator that lists the following data:
 - 1. Warranty Period
 - 2. Start up Date
 - 3. Termination Date
 - 4. Supplier Name
 - 5. Supplier Address
 - 6. Preventive maintenance Contract Holder

3.6 FIELD QUALITY CONTROL

- A. Prepare for acceptance tests as follows:
 - 1. Test insulation resistance for each bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.
 - 3. Coordinate tests with tests for transfer switches and run them concurrently.
 - 4. Provide Fuel, oil, and other materials necessary to conduct tests.
 - 5. Provide Load Bank, temporary ventilation, instruments, and other testing materials necessary to conduct tests.
 - 6. Perform Engine-Generator Pre-start Checklist provided by manufacturer, including but not limited to the following items, proceed with startup only after all pre-start checklist items are satisfactory and within manufacturers guidelines.
 - a. Verify that all packing materials have been properly removed.
 - b. Verify proper Oil level.
 - c. Verify proper Water level .
 - d. Verify proper Day tank fuel level, where provided.
 - e. Verify proper Sub-base fuel tank fuel level, where provided.
 - f. Verify Battery connection and charge condition are correct.
 - g. Verify Engine to control interconnects are correct.
 - h. Verify Engine-generator intake air/exhaust openings are not obstructed.
 - i. Verify Engine-generator and enclosure ventilation openings are not obstructed.
- B. Perform the following field tests and inspections and prepare test reports:
 - 1. Test mounting and anchorage devices according to requirements in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
 - 2. Inspect generator installation, including wiring, components, connections, and equipment. Test and adjust components and equipment.
 - 3. Verify that electrical control wiring installation complies with manufacturer's submittal by means of point-to-point continuity testing. Verify that wiring installation complies with requirements in Division 26 Sections.
 - 4. After installing generator but before equipment is energized, verify that grounding system at generator tests to specified value or better.
 - 5. Perform each electrical test and visual and mechanical inspection stated in NETA ATS. Certify compliance with test parameters. Perform NETA tests and inspections for each of the following NETA categories:
 - a. Engine Generator Section, 7.22.1.

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- b. Circuit Breakers, Section 7.3.
 - c. Cables, Section 7.3.
 - d. Ground-fault Systems, Section 7.14.
 - e. Battery Systems, Section 7.18.
6. Infrared Scanning: Perform Thermographic Survey in accordance with NETA ATS, Section 9.0.
- a. Initial Infrared Scanning: Within 60 Days after Substantial Completion, perform an infrared scan of each power wiring termination and each bus connection. Open or remove doors and covers so connections are accessible to portable scanner.
 - b. Instruments, Equipment:
 - 1) Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
- C. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Assist factory-authorized service representative during testing and correct deficiencies as required. Report results in writing.
- 1. Complete installation and startup checks according to manufacturer's written instructions.
 - 2. Perform functional and operational sequence testing according to approved Method or Procedure.
 - 3. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here including, but not limited to,
 - a. Single-step full-load pickup test.
 - b. Full load test, minimum of four hours.
 - 4. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.
 - a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
 - b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
 - c. Verify acceptance of charge for each element of the battery after discharge.
 - d. Verify that measurements are within manufacturer's specifications.
 - 5. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
 - 6. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine-generator system before and during system operation. Check for air, exhaust, and fluid leaks.
 - 7. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
 - 8. Harmonic-Content Tests: Measure harmonic content of output voltage under 25 percent and at 100 percent of rated linear load. Verify that harmonic content is within specified limits.
 - 9. Noise Level Tests: Measure A-weighted level of noise emanating from generator-set installation, including engine exhaust and cooling-air intake and discharge, at four locations on the property line, and compare measured levels with required values.
 - 10. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

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11. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 12. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 13. Testing Instruments: Instruments shall have been calibrated within the last 12 months, traceable to standards of NIST, and adequate for making positive observation of test results. Make calibration records available for examination on request.
- D. Correct Deficiencies, Retest and Report:
1. Report results of tests and inspections in writing.
 2. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations.
 3. Correct unsatisfactory conditions, and retest to demonstrate compliance; replace switches, relays, conductors, units, and devices as required to bring system into compliance.
 4. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
 5. Prepare a report, certified by manufacturer and manufacturer's field service, that identifies component, connection, conductors and devices checked and describes results. Include notation of deficiencies detected, remedial action taken, and observations and test results after remedial action.
- E. Test Labeling: On completion of satisfactory testing of each unit, attach a dated and signed "Satisfactory Test" label to tested component.

3.7 ADJUSTING

- A. Set field-adjustable overcurrent protection device trip characteristics according to settings provided by overcurrent protection device manufacturer.
1. Settings will be provided after the submittal process and review of report required by Division 26 Section "Overcurrent Protective Device Coordination Study." are completed.
- B. Set field-adjustable intervals and delays, and relays per manufacturer's requirements, unless otherwise indicated.

3.8 CLEANING

- A. Clean components according to manufacturer's written instructions.
- B. Prior to installation of cover plates inspect interior surfaces and perform the following:
1. Vacuum dirt and debris; do not use compressed air to assist in cleaning.
- C. On completion of covers installation, inspect exterior surfaces and perform the following:
1. Remove paint splatters and other spots.
 2. Vacuum dirt and debris; do not use compressed air to assist in cleaning.
 3. Repair exposed surfaces to match original finish.

3.9 PROTECTION

- A. Protect equipment from exposure to dirt, fumes, water, corrosive substances, and physical damage.

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3.10 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's management and maintenance personnel to adjust, operate, and maintain packaged engine generators. Refer to Division 01 Section "Demonstration and Training."
- B. Coordinate this training with that for transfer switches.

END OF SECTION

HAZARD MITIGATION GRANT PROGRAM Grantee-Subgrantee Agreement

On March 6, 2014, the President declared that a major disaster exists in the State of Georgia. This declaration was based on damage resulting from severe winter storms. This document is the Grantee-Subgrantee Hazard Mitigation Assistance Agreement for the major disaster, designated FEMA-4165-DR, under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288 as amended by Public Law 100-707, 42 USC 5121 et seq. ("The Act"), in accordance with 44 CFR 206 Subpart N, Hazard Mitigation Grant Program. Under this Agreement, the interests and responsibilities of the Grantee, herein after referred to as the State, will be executed by the Georgia Emergency Management Agency/ Homeland Security (GEMA/HS). The individual designated to represent the State is Mr. Jim Butterworth, Governor's Authorized Representative. The Subgrantee to this Agreement is Dade County. The interests and responsibilities of the Subgrantee will be executed by Dade County's agent, the Subgrantee's Authorized Representative.

1. The following Exhibits are attached and made a part of this agreement:

- Exhibit "A": Application for Federal Assistance, GEMA/HS Form 150
- Exhibit "B": Assurances- Construction Programs, Standard Form 424B
- Exhibit "C": Project Administration Guidelines: Financial Assistance, Hazard Mitigation Grant Program
- Exhibit "D": Certification regarding Drug-Free Workplace Requirements
- Exhibit "E": Certification regarding Lobbying
- Exhibit "F" Scope of Work
- Exhibit "G": Progress Payment Request Form
- Exhibit "H": Federal Funding Accountability and Transparency Act Certification

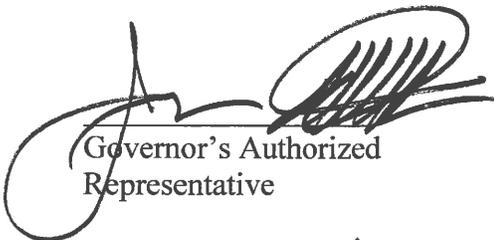
2. Pursuant to Section 404 of the Act, funds are hereby awarded to the Subgrantee on a 75 percent federal cost share and 10 percent state cost share basis for the hazard mitigation project(s) described in Exhibits "A" and "F". The Subgrantee shall be responsible for the remaining 15 percent share of any costs incurred under Section 404 of the Act and this Agreement. Allowable costs will be governed by OMB Circular A-87 and 44 CFR Part 13.
3. If the Subgrantee violates any of the conditions of disaster relief assistance under the Act, this Agreement, or applicable federal and state regulations; the State shall notify the Subgrantee that additional financial assistance for the project in which the violation occurred will be withheld until such violation has been corrected to the satisfaction of the State. In addition, the State may also withhold all or any portion of financial assistance which has been or is to be made available to the Subgrantee for other disaster relief projects under the Act, this or other agreements, and applicable federal and state regulations until adequate corrective action is taken.
4. The Subgrantee agrees that federal or state officials and auditors, or their duly authorized representatives may conduct required audits and examinations. The Subgrantee further

agrees that they shall have access to any books, documents, papers and records of any Grantees of federal disaster assistance and of any persons or entities which perform any activity which is reimbursed to any extent with federal or state disaster assistance funds distributed under the authority of the Act and this Agreement.

5. The Subgrantee will establish and maintain an active program of nondiscrimination in disaster assistance as outlined in implementing regulations. This program will encompass all Subgrantee actions pursuant to this Agreement.
6. The Subgrantee agrees that the mitigation project contained in this agreement will be completed by Dade County on or before September 30, 2017. Completion dates may be extended upon justification by the Subgrantee and approval by FEMA and the Governor's Authorized Representative.
7. The certifications signed by the Subgrantee in the application relating to maintenance of a Drug-Free workplace (44 CFR Part 17) and New Restrictions on Lobbying (44CFR Part 18) apply to this Grant Agreement and are incorporated by reference.
8. The written assurances provided by Dade County pertaining to FEMA's post award approval conditions apply to this Grant Agreement and are incorporated by reference.
9. The Subgrantee shall follow Uniform Administrative Requirements for Grants found in Title 44 CFR Part 13 and FEMA HMA (Hazard Mitigation Assistance) program guidance to implement this grant award. The following Office of Management and Budget (OMB) Circulars are also applicable to this grant:

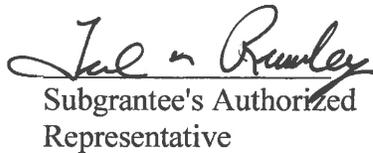
2 CFR Part 225 Cost Principles; (OMB Circular A-87)
 OMB Circular A-102 Uniform Administrative Requirements; and
 OMB Circular A-133 Audits of State and Local Governments

10. There shall be no changes to this Agreement unless mutually agreed upon, in writing, by both parties to the Agreement.



Governor's Authorized Representative

11 MAY 16
 Date



Subgrantee's Authorized Representative

4-27-16
 Date

EXHIBIT "B"**ASSURANCES - CONSTRUCTION PROGRAMS**

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability including funds sufficient to pay the non-Federal share of project costs to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the assistance; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will not dispose of, modify the use of, or change the terms of the real property title, or other interest in the site and facilities without permission and instructions from the awarding agency. Will record the Federal interest in the title of real property in accordance with awarding agency directives and will include a covenant in the title of real property acquired in whole or in part with Federal assistance funds to assure non-discrimination during the useful life of the project.
4. Will comply with the requirements of the assistance awarding agency with regard to the drafting, review and approval of construction plans and specifications.
5. Will provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work conforms with the approved plans and specifications and will furnish progress reports and such other information as may be required by the assistance awarding agency or state.
6. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
7. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
8. Will comply with the Intergovernmental Personnel act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 CFR 900, Subpart F).
9. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
10. Will comply with all Federal statutes relating to non-discrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1858), which prohibits discrimination on the basis of Sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
11. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal and federal-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
12. Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

13. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333) regarding labor standards for federally-assisted construction subagreements.

14. Will comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires Grantees in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.

15. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (PL. 93-523);

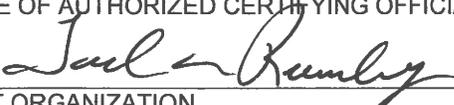
and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).

16. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

17. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).

18. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."

19. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL 	TITLE Chairman
APPLICANT ORGANIZATION Dade County Board of Commissioners	DATE SUBMITTED 4-27-16

Standard Form 424B (Rev. 7-97) Back

EXHIBIT "C"
GEORGIA EMERGENCY MANAGEMENT AGENCY/ HOMELAND SECURITY
Hazard Mitigation Grant Program
Project Administration Guidelines: Financial Assistance

This fact sheet provides a synopsis of information contained in the Grantee-Subgrantee Agreement and other applicable documents. Its purpose is to provide general guidelines for efficient and timely Hazard Mitigation Grant Program project administration.

1. **Project Identification.** The Federal Emergency Management Agency (FEMA) has assigned project number HMGP 4165-0031 to this project. Please reference this number in all correspondence, as doing so will greatly assist us in processing any actions for this project.
2. **Documentation.** You must keep full documentation to get maximum payment for project related expenditures. Documentation will be required as part of the approved Hazard Mitigation Grant Program project file. Documentation consists of:
 - A. Grantee-Subgrantee Agreement.
 - B. Copies of checks, vouchers or ledger statements.
 - C. Contracts awarded.
 - D. Invoices or other billing documents.
 - E. Progress reports.
 - F. Record of advance or progress payments (where applicable).
3. **Funding.** Cost sharing has been established at 75% federal, 10% state, and 15% applicant.
4. **Debarred and Suspended Parties.** You must not make any award or permit any award (subgrant or contract) at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs under Executive Order 12549, "Debarment and Suspension".
5. **Procurement Standards.** You may use your own procurement procedures, which reflect applicable State and local laws and regulations, provided that the procurements conform to applicable Federal laws and standards. Below is a summary of key procurement standards that a Subgrantee should incorporate as discussed in 44 CFR § 13.36 procurement.
 - A. Perform procurement transactions in a manner providing full and open competition
 - B. Contracts and Procurements must be of reasonable cost, generally must be competitively bid, and must comply with Federal, State, and local procurement standards. FEMA finds four methods of procurement acceptable:

- 1) Small purchase procedures: an informal method for securing services or supplies that do not cost more than \$100,000 by obtaining several price quotes from different sources
 - 2) Sealed bids: a formal method where bids are publicly advertised and solicited, and the contract is awarded to the responsive bidder whose proposal is the lowest in price
 - 3) Competitive proposals: a method similar to sealed bid procurement in which contracts are awarded on the basis of contractor qualifications instead of on price
 - 4) Non-competitive proposals: a method whereby a proposal is received from only one source, because the item is available only from a single source; there is an emergency requirement that will not permit delay;
- C. Maintain sufficient records to detail the significant history of procurement. These records will include, but are not necessarily limited to, the following: rationale for the method of procurement, selection of contract type, and contractor selection or rejection.
- D. Take affirmative steps to assure the use of small and minority firms, women's business enterprises, and labor surplus area firms when possible.
- E. Include specific provisions in Subgrantees' contracts to allow changes, remedies, changed conditions, access and records retention, suspension of work and other clauses approved by the Office of Federal Procurement Policy.

6. Payments

A. Progress Payments

- (1) When progress payments are desired, you must submit a written request (on provided form at Exhibit "G") and provide supporting documentation, such as an invoice and copies of check.
- (2) The Risk Reduction Specialist reviews the request and supporting documentation. The Hazard Mitigation Division Director reviews and approves or denies the request.
- (3) If the request is denied, the Hazard Mitigation Division Director will inform you in writing that additional documentation is required to support the request.
- (4) If the request is approved, the Hazard Mitigation Division Director will authorize payment of the requested amount.
- (5) Quarterly report submissions must be current in order to receive progress payments.

- B. Advance Payments - Advance payments will be made on an exception basis only.
7. Subgrantee Performance - The scope of work (see Exhibit F) must be initiated within 90 days of this award notification.
- A. If documentation, inspections or other reviews reveal problems in performance of the scope of work the Hazard Mitigation Division Director will inform you in writing of the deficiencies.
 - B. In addition, the State may also withhold all or any portion of financial assistance which has been made available under this agreement until adequate corrective action is taken.
8. Grant Expiration Date
- A. The grant expiration date runs through September 30, 2017 and has been established based on project milestones established by the applicant in their grant application. The grant expiration date is the time period which the Subgrantee is expected to complete the scope of work. You may not expend FEMA or state funds beyond this date. All costs must be submitted for reimbursement within 60 days of the end of the grant expiration date.
 - B. Requests for time extensions to the Grant Expiration Date will be considered but will not be granted automatically. A written request must be submitted to the Hazard Mitigation Division Director with an explanation of the reason or reasons for the delay. Without justification, extension requests will not be processed. Extensions will not be granted if the Subgrantee has any overdue quarterly progress reports. If an extension is requested, it must be received 90 days prior to the grant expiration date. When fully justified, the State Hazard Mitigation Division Director may extend the grant expiration date.
9. Project Termination
- A. The Grantee, Subgrantee, or FEMA may terminate grant award agreements upon giving written notice to the other party at least seven (7) calendar days prior to the effective date of the termination. All notices are to be transmitted via registered or certified mail.
 - B. The Subgrantee's authority to incur new costs will be terminated upon the date of receipt of the notice or the date set forth in the notice. Any costs incurred prior to the date of the receipt of the notice or the date of termination set forth in the notice will be negotiated for final payment. Close out of the grant award will commence and be processed as prescribed under final inspection procedures described in this Grantee-Subgrantee Agreement.

10. Environmental and Historic Preservation Conditions.

- A. The following Environmental Project Conditions must be followed to ensure the project remains in compliance through implementation:

Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders. This review did not address all federal, state, and local requirements. Acceptance of federal funding requires Grantee to comply with all federal, state, and local laws. Failure to obtain all appropriate federal, state, and local environmental permits and clearances may jeopardize federal funding.

If ground-disturbing activities occur during construction or demolition, Subgrantee will monitor ground disturbance and if any potential archeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.

11. Equipment/Supplies

- A. The Subgrantee must comply with the regulations listed in 44 CFR 13.32 Equipment, 44 CFR 13.33 Supplies, and 44 CFR 13.36 Procurement and must be in compliance with state laws and procedures.

12. Grant Modifications

- A. Any grant modifications, including deviation from the approved scope of work or budget, must be submitted in writing for approval prior to implementation. Grant Modifications include:
1. Any revision which would result in the need for additional funding.
 2. Transfers between budget categories.
- B. The Grantee shall follow prior approval requirements for budget revisions found in 44 CFR 13.30. Transfer of funds between total direct cost categories in the approved budget shall receive the prior approval of FEMA when such cumulative transfers among those direct cost categories exceed ten percent of the total budget.

13. Appeals - You may submit an appeal on any item related to grant assistance. Appeals must be submitted to the State Hazard Mitigation Division Director within 90 days of the action which is being appealed.

14. Progress Reports

- A. Quarterly progress reports are required. The report will be supplied to you by GEMA/HS on a quarterly basis for your completion.
- B. The initial progress report will cover the period through June 30, 2016. It must be submitted no later than July 15, 2016.
- C. Subsequent reports must be filed by you within fifteen days after the end of each calendar quarter (March 31, June 30, September 30, and December 31).

15. Interim Inspections

Interim inspections may be conducted by GEMA/HS staff and/or FEMA staff.

16. Project Closeout

- A. When all work has been completed, you must notify your Risk Reduction Specialist in writing to request project closeout.
- B. A desk review will be conducted by your Risk Reduction Specialist.

17. Audits

- A. If you receive \$500,000 or more in federal assistance from all federal sources, not just this grant, during your fiscal year, you are responsible for having an audit conducted as prescribed by the Single Audit Act and sending a copy to the Georgia Department of Audits and Accounts. Mail reports to:

Department of Audits and Accounts
Non-Profit and Local Government Audits
270 Washington Street, SW, Room 1-156
Atlanta, Georgia 30334-8400

If you need additional information or assistance, contact the Hazard Mitigation Division at (404) 635-7522 or 1-800-TRY-GEMA.

EXHIBIT "D"

Certification Regarding Drug Free Workplace Requirements

This certification is required by the regulations implementing the Drug-Free Workplace Act of 1988, 29 CFR Part 3001. The regulations require certification by Grantees, prior to award, that they will maintain a drug-free workplace. The certification set out below is a material representation of fact upon which reliance will be placed when the agency determines to award the grant. False certification or violation of the certification shall be grounds for suspension of payments,

A. The Grantee certifies that it will or will continue to provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the Grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing an ongoing drug-free awareness program to inform employees about--

- (1) The dangers of drug abuse in the workplace;
- (2) The Grantee's policy of maintaining a drug-free workplace;
- (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
- (4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will--

- (1) Abide by the terms of the statement; and
- (2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;

(e) Notifying the agency in writing within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position and title, to every grant officer or other designee on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted—

- (1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, 29 U.S.C. § 701 et seq.; or
- (2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e), and (f).

EXHIBIT "E"**CERTIFICATION REGARDING LOBBYING**
Certification for Contracts, Grants, Loans, and Cooperative Agreements

This certification is required by the regulations implementing the New Restrictions on Lobbying, 44 CFR Part 18. The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, sub grants, and contracts under grants, loans, and cooperative agreements) and that all Subgrantee shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. § 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.