

Georgia Emergency Management Agency / Homeland Security  
Pre-Application

Generator Transfer Switch Worksheet

This worksheet is for all Hazard Mitigation Assistance grant programs “Generator Transfer Switch for Critical Facility” proposals that support the Statewide Portable Generator Initiative. Please complete ALL sections and provide the documents requested. If you require technical assistance with this worksheet, please contact the Hazard Mitigation Division at (404)-635-7522 or 1-800-TRY-GEMA to have a Hazard Mitigation Program Specialist assigned to you.

**A. Applicant Information**

1. **Name of Applicant:** \_\_\_\_\_

2. **Applicant Type**

**State Government**       **Local Government**       **Private Non-Profit**

3. **Worksheet Prepared by:**

Ms. Mr. Mrs. **First Name** \_\_\_\_\_ **Last Name** \_\_\_\_\_

**Title** \_\_\_\_\_ **Telephone** \_\_\_\_\_

**Address (City, State, Zip):** \_\_\_\_\_

**E-mail address:** \_\_\_\_\_

4. **Authorized Applicant Agent** (An individual authorized to sign financial and legal documents on behalf on the local government (e.g., the Chairperson, Board of County Commissioners or the County Manager, etc.).

Ms. Mr. Mrs. **First Name** \_\_\_\_\_ **Last Name** \_\_\_\_\_

**Title** \_\_\_\_\_ **Telephone** \_\_\_\_\_

**Address (City, State, Zip):** \_\_\_\_\_

**E-mail address:** \_\_\_\_\_

**Signature:** \_\_\_\_\_ **Date Submitted:** \_\_\_\_\_

**B. Project Information/Mitigation Plan**

1. **Project Title:** \_\_\_\_\_

2. **Project Summary:** (Describe in detail what you are proposing to do.)

3. **Date of Hazard Mitigation Plan approval by FEMA:** \_\_\_\_\_

This project must be identified in your Hazard Mitigation Plan. Provide a copy of the goal, objective, and action step that supports your project application. Please attach a letter of endorsement for the project from your County’s Emergency Management Agency (EMA) Director

**For each generator transfer switch location, please complete sections I through VII in its entirety.**

**I. Project Description : Generator transfer switch for \_\_\_\_\_**

**II. History of Hazards**

Provide a detailed power outage report for each critical facility that needs a generator transfer switch. Include weather related events from a minimum of three different years. Indicate the cause of the power outage. This information should be obtained from your power provider. **The examples in bold qualify as weather related events.**

<b>Date</b>	<b>Time of Outage</b>	<b>Duration (Minutes)</b>	<b>Outage Type</b>	<b>Description</b>
<b>Mon. Feb. 16, 2015</b>	<b>21:26:13 EST</b>	<b>623</b>	<b>Extreme Storm</b>	<b>Trees in Ice Storm</b>
<b>Tue. Jan. 07, 2014</b>	<b>17:41:34 EST</b>	<b>42</b>	<b>Lightning</b>	<b>Lines clear, fault on breaker</b>
Tue. Jan. 07, 2014	06:37:00 EST	75	Equipment Fault	Cracked Insulator
<b>Thu. Dec. 19, 2013</b>	<b>13:31:40 EST</b>	<b>47</b>	<b>Trees-Other</b>	<b>Lines down due to trees</b>

**III. Structure Information for Critical Facility that needs a Generator Transfer Switch**

**1. Critical Facility Type:**

- Police Station     
  Fire Station     
  Hospital     
  Water Treatment Facility  
 Wastewater Treatment Facility     
  EOC     
  Other \_\_\_\_\_

**2. Additional Data to Determine Cost Effectiveness**

Name of current electrical power provider: \_\_\_\_\_

Please include a power outage report for the critical facility which includes weather related events from a minimum of three different years, **refer to History of Hazards section.**

Power Outage Report Attached  Yes  No

**IV. Critical Facility and Value of Service Data**

**1. For Water or Waste Water Services**

Number of meters: \_\_\_\_\_

**2. For Hospitals**

Number of people served by this hospital: \_\_\_\_\_

What is the distance in miles between this hospital and the hospital that would treat these people in the event this hospital was inoperative: \_\_\_\_\_

Number of people served by the nearest hospital: \_\_\_\_\_

If service remained but displaced to new location, provide the number of days displaced \_\_\_\_\_ and costs \_\_\_\_\_

**3. For Police Stations**

Type of station     
  Metropolitan     
  City     
  Rural

Number of people served by this police station: \_\_\_\_\_

Number of police officers who work at this location: \_\_\_\_\_

Number of police officers who would not work at this location in a power outage: \_\_\_\_\_

If service remained but displaced to new location, provide the number of days displaced \_\_\_\_\_ and costs \_\_\_\_\_

**4. For Fire Stations**

Type of station  Urban  Suburban  Rural  Wilderness (from USDA’s Urban Influence Codes)

Number of people served by this fire station: \_\_\_\_\_

Distance in miles to next closest fire station that has backup power \_\_\_\_\_

Does Fire Station Provide EMS  Yes  No

If Fire Station provides EMS (Distance in miles to next closest fire station that could provide EMS service and has backup power): \_\_\_\_\_

**5. For EOC**

Type of EOC:  Stand-alone structure  Part of an existing structure

Use of existing structure: \_\_\_\_\_

Operation of EOC:  Full time, daily  Temporary, only upon activation

Annual Operating Budget: \_\_\_\_\_

Average Number of Days of Use per year: \_\_\_\_\_

**6. For Other Facility \_\_\_\_\_**

Annual budget(s) for the department(s) affected by loss of facility: \_\_\_\_\_

If service remained but displaced to new location, provide the number of days displaced\_\_\_\_ and costs\_\_\_\_\_

**V. Location of Critical Facility that needs a Generator Transfer Switch**

Structure Name	Address	Zip Code	Year Built	Will Require Modification To Add Transfer Switch To Outside Of Structure (Yes or No)	Latitude/ Longitude

**\*Latitude and Longitude coordinates need to be in Decimal Degrees. The coordinates should be where the portable generator connects to the structure.**

**1. Include Flood Insurance Rate Map (FIRM) showing each structure**

Attach a copy of the panel(s) from the FIRM.

- VE or V 1-30\*
- AE or A 1-30\*
- AO or AH\*
- A (no base flood elevation given)\*
- B or X (shaded)
- C or X (unshaded)

**\*If located in the above zones with an asterisk, the transfer switch must be installed to the 500 year flood level.**

**2. Map and Photographs showing each structure**

Include Google map with the structure clearly marked.

- Provide high-resolution color photographs by email showing a front view, a side view, a back view and a street view of the structure.

**VI. Generator Transfer Switch Budget**

List all anticipated costs in detailed. Consider the potential future date of construction when compiling the cost estimate. **Please provide documentation for each budget item with detailed vendor(s) estimates.**

Item Description	Cost Estimate	Source
Manual Transfer Switch		

**VII. Generator Data Sheet**

1. Running Load (KW)	_____			
2. Starting Load (KW)	_____			
3. Is load being stepped in?	_____			
4. Generator Specified (KW)	_____			
5. Generator Voltage	_____			
6. Single or Three Phase	_____			
7. Type of Controls	_____	_____		
	<b>Automatic</b>	<b>Manual</b>		
8. Type of Fuel	_____	_____	_____	_____
	<b>Gas</b>	<b>Diesel</b>	<b>Propane</b>	<b>Other</b>

**Additional information/remarks (Select appropriately):**

**Generator Type:**  Fixed  Portable

- Generator on slab, not in Special Flood Hazard Area- relevant codes and standards are stated in the application’s Scope of Work
- Generator on slab, in Special Flood Hazard Area- relevant codes and standards are stated in the application’s Scope of Work  
AND:
  - A letter provided by floodplain manager stating project complies with local floodplain ordinance
- Elevated generator, not in Special Flood Hazard Area- relevant codes and standards are stated in the application’s Scope of Work  
AND:
  - Certification from a Georgia registered engineer that the elevating structure is designed for the anticipated load to the structure including but not limited to wind, flood, snow, seismic
- Elevated generator, in Special Flood Hazard Area- relevant codes and standards are stated in the application’s Scope of Work  
AND:
  - A letter provided by the floodplain manager stating project complies with local floodplain ordinance
  - Certification from a Georgia registered engineer that the elevating structure is designed for the anticipated load to the structure including but not limited to wind, flood, snow, seismic

If portable, provide transport, hook up, and fuel supply and storage requirements at multiple facilities and how these will be executed.

**I certify that I have visited the project site, performed all necessary tests, and have verified that the attached calculated loads and generator specifications will meet all requirements of this proposed installation as described in the Application’s description of work.**

_____	_____	_____
Signature	Title	Date

_____	_____	_____
Print Name	Organization	Telephone Number

**NOTES:**

1. The generator must be installed in accordance with all applicable local and national building and electrical codes, in addition to the “Generator Codes and Standards.”
2. Please attach available information on proposed equipment, load and sizing data, etc.
3. The Applicant should develop and implement a generator maintenance plan which includes periodically exercising the generator under load.

**THIS FORM MUST BE SIGNED BY A CERTIFIED ELECTRICIAN**

## Generator Codes and Standards

### *In accordance with the National Electrical Code*

**NOTE:** Manufacturer's installation instructions will apply for all areas outside the flood hazard area. In the absence of manufacturer's instructions, the method of installation will be approved by the building official as related to the pad supporting the generator. Inside the flood area, a structure will be required for support of the generator to be designed by an engineer and approved by the building official and elevated 2 feet above base flood elevation.

0-14.\* Generators and 665, shall also

comply with the provisions of those Articles.

*It is recommended that waterproof covers be provided for use in emergency.*

**445-2. Marking.** Each generator shall be provided with a nameplate giving the marker's name, the rating in kilowatts or kilovolt-amperes, the normal volts and amperes corresponding to the rating, and the revolutions per minute.

**445-3. Drip Pans.** Generators shall be provided with suitable drip pans if required by the authority having jurisdiction.

**445-4. Overcurrent Protection.**

- (a) **Constant-Potential Generators.** Constant-potential generators, except alternating-current generators and their exciters, shall be protected from excessive current by circuit breakers or fuses.
- (b) **Two-Wire Generators.** Two-wire, direct-current generators may have overcurrent protection in one conductor only if the overcurrent device is actuated by the entire current generated, except that in the shunt field. The overcurrent device shall not open the shunt field.
- (c) **65 Volts or Less.** Generators operating at 65 volts or less and driven by individual motors shall be considered as protected by the overcurrent device protecting the motor if these devices will operate when the generators are delivering not more than 150 per cent of their full-load rated current.
- (d) **Balancer Sets.** Two-wire, direct-current generators used in conjunction with balancer sets to obtain neutrals for 3-wire systems shall be equipped with overcurrent devices which will disconnect the 3-wire system in the case of excessive unbalancing of voltages or currents.
- (e) **3-Wire, Direct-Current Generators.** Three-wire, direct-current generators, whether compound or shunt wound shall be equipped with overcurrent devices, one in each armature lead, and so connected as to be actuated by the entire current from the armature. Such overcurrent devices shall consist either of a double-coil circuit breaker, or of a 4-pole circuit breaker connected in the main and equalizer leads and tripped by two overcurrent devices, one in each armature lead. Such protective devices shall be so interlocked that no one pole can be opened without simultaneously disconnecting both leads of the armature from the system.

**445-5. Size of Conductors.** The conductors from the generator terminals to supplied equipment shall have an ampacity not less than 115 per cent of the nameplate current rating of the generator. Neutral conductors shall be the same size as the conductors of the outside legs.

**445-6. Protection of Live Parts.** Live parts of generators of more than 150 volts to ground shall not be exposed to accidental contact where accessible to unqualified persons.

**445-7. Guards for Attendants.** Where necessary for the safety of attendants the provisions of section 430-133 shall be compiled with.

**445-8. Grounding.** If a generator operates at a terminal voltage in excess of 150 volts to ground, the frame shall be grounded in the manner specified in Article 250.\* If the frame is not grounded, it shall be permanently and effectively insulated from the ground.

**445-9. Bushings.** Where wires pass through an opening in an enclosure, conduit box, or barrier, a bushing shall be used to protect the conductors from the edges of the opening having sharp edges. The bushing shall have smooth, well rounded surfaces where it may be in contact with conductors. If used where there may be a presence of oils, grease, or other contaminants, the bushing shall be made of a material not deleteriously affected.

**\* 430.14. Location of Motors.**

- (A) Ventilation and Maintenance. Motors shall be located so that adequate ventilation is provided and so that maintenance, such as lubrication of bearings and replacing of brushes, can be readily accomplished.  
*Exception: Ventilation shall not be required for submersible types of motors.*
- (B) Open Motors. Open motors that have commutators or collector rings shall be located or protected so that sparks cannot reach adjacent combustible material.  
*Exception: Installation of these motors on wooden floors or supports shall be permitted.*