

# Generator(s) Worksheet

For preliminary Benefit Cost Analysis conducted by the State Mitigation Technical Team

Applies to the following mitigation activities: **PERMANENT AND PORTABLE GENERATOR**. For assistance, contact the State of Tennessee Mitigation Technical Unit.

**IMPORTANT:** This worksheet is required as part of your application. The State of Tennessee Mitigation Technical Unit will conduct a Benefit Cost Analysis (BCA) for your project and the following information is needed to evaluate cost-effectiveness. Once a preliminary BCA is completed, the reviewer will contact you with results and/or to collect support documentation.

**NOTE:** Having a complete worksheet will expedite the Technical Review

## Requirements

To complete a successful project application, a minimum amount of technical information is required for review. Data collected in this worksheet will provide reviewers with preliminary information necessary to evaluate project eligibility, feasibility, and cost-effectiveness. Carefully review and confirm that you are aware of the following information.

Permanent Generator(s): The generator(s) shall be protected against a 500-year flood event by implementing specific activities or by locating the generator(s) outside the Special Flood Hazard Area (SFHA), complying with applicable National Flood Insurance Program (NFIP) requirements and shall be protected against wind with a rated enclosure and appropriate anchoring based on its location requirements per ASCE 7 standards. The selected site shall provide sufficient space to maintain and fuel the generator(s) and shall comply with the National Electrical Code working clearance requirements. Activities shall be completed in strict compliance with Federal, State, and Local applicable Rules and Regulations.

Portable Generator(s): The portable generator(s) shall be stored at a location protected against a 500-year flood event or located outside the Special Flood Hazard Area (SFHA), comply with applicable National Flood Insurance Program (NFIP) requirements, and shall be protected against wind with a rated enclosure based on their location requirements. Activities shall be completed in strict compliance with Federal, State, and Local Rules and Regulations.

Automatic Transfer Switch (ATS): The automatic transfer switch(es) shall be protected against a 500-year flood event by implementing specific activities or by locating the automatic transfer switch(es) outside the Special Flood Hazard Area (SFHA), comply with applicable National Flood Insurance Program (NFIP) requirements and shall be protected against wind with a rated enclosure and appropriate anchoring based on its location requirements per ASCE 7 standards. Activities shall be completed in strict compliance with Federal, State, and Local applicable Rules and Regulations

*I confirm that I have reviewed the requirements listed above (signature):*

FEMA has approved an approach to demonstrating cost-effectiveness for certain hospital generator projects based on pre-calculated benefits which requires minimal documentation if certain requirements are met.

**BEFORE PROCEEDING TO THE NEXT SECTION PLEASE SELECT AN OPTION BELOW:**

Does your project meet all the requirements from the below FEMA memorandum?

[Pre-Calculated Benefits for Certain Hospital Generators to Demonstrate Cost-Effectiveness](#)

Yes (Only complete Section I of this worksheet)

No (Complete all sections of this worksheet)

N/A

For additional resources, please refer to [FEMA Technical Review Job Aid](#) for Generator projects.

**Section I - Project General Information**

<i>Project Name:</i>	? <i>Worksheet completed by:</i>  Name:  Title:  Phone:  Email:
<i>Sub-Applicant:</i>	

**Section II - Project Cost Information**

? <i>Mitigation Project Cost:</i> \$	? <i>Annual Maintenance Cost:</i> \$
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**Section III - Project Specific Information**

The table below allows data entry for up to 4 locations. If your project has more than 4 locations, you can either submit a second Generator Worksheet or attach a separate list, providing the information requested below and in Sections IV, V, and VI, as applicable.

ID	? <i>Project Location (address)</i>	<i>Type of proposed generator (Fixed or Portable)</i>	<i>Proposed Capacity (kW)</i>
1.			
2.			
3.			
4.			

Provide the information requested in the table below by using the ID as the reference to the location listed in the table above.

ID	<i>Type of Fuel (natural gas, diesel, propane, etc.)</i>	<i>Type of Fuel Tank (Sub-base, stand-alone, etc.)</i>	<i>Fuel Tank Storage Capacity &amp; Duration (gallons/ hours)</i>	<i>Proposing to install a new ATS?</i>	<i>Constructing a new concrete Pad?</i>	<i>Is there an Existing generator?</i>	<i>Specify the capacity of the existing Generator (kW)</i>
1.							
2.							
3.							
4.							

<i>If you are not installing a new ATS, please explain why.</i>	<i>If you are not installing a new Concrete Pad, please explain why.</i>
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**Section IV - Loss of Service**

For each project location identified in Section III, please select only **one** type of critical facility, as applicable, and provide responses for the selection made.

Structure ID 1.

**Fire Station**

? How many people are served by the Fire Station?

Does the fire station provide Emergency Medical Services (EMS)?

? Provide the address of the nearest fire station:

Provide the address of the nearest fire station with EMS:

**Police Station**

? How many people are served by this police station?

How many police officers work or report to this police station?

? How many police officers have a designated office space at this police station?

**Hospital**

? How many people are being served by this hospital?

Provide the address of the nearest hospital capable of providing the same type of service:

? How many people are being served by the nearest hospital capable of providing the same type of service?

**Utility**

? Select the type of utility:

Number of customers directly served by the utility system:

**Other Critical Facility Type**

Specify Facility Name

? What is the Annual Operational Budget for this critical facility? \$

**Note:** In Section VI below, provide a brief description of how this building is a critical facility and specify which functions are essential to the community.

Structure ID 2.

**Fire Station**

? How many people are served by the Fire Station?

Does the fire station provide Emergency Medical Services (EMS)?

? Provide the address of the nearest fire station:

Provide the address of the nearest fire station with EMS:

**Police Station**

? How many people are served by this police station?

How many police officers work or report to this police station?

? How many police officers have a designated office space at this police station?

**Hospital**

? How many people are being served by this hospital?

Provide the address of the nearest hospital capable of providing the same type of service:

? How many people are being served by the nearest hospital capable of providing the same type of service?

**Utility**

? Select the type of utility:

Number of customers directly served by the utility system:

**Other Critical Facility Type**

Specify Facility Name

? What is the Annual Operational Budget for this critical facility? \$

**Note:** In Section VI below, provide a brief description of how this building is a critical facility and specify which functions are essential to the community.

**Section IV - Loss of Service (continued)**

For each project location identified in Section III, please select only **one** type of critical facility, as applicable, and provide responses for the selection made.

Structure ID 3.

**Fire Station**  
 ? How many people are served by the Fire Station?   
 Does the fire station provide Emergency Medical Services (EMS)?   
 ? Provide the address of the nearest fire station:   
 Provide the address of the nearest fire station with EMS:

**Police Station**  
 ? How many people are served by this police station?   
 How many police officers work or report to this police station?   
 ? How many police officers have a designated office space at this police station?

**Hospital**  
 ? How many people are being served by this hospital?   
 Provide the address of the nearest hospital capable of providing the same type of service:   
 ? How many people are being served by the nearest hospital capable of providing the same type of service?

**Utility**  
 ? Select the type of utility:   
 Number of customers directly served by the utility system:

**Other Critical Facility Type**  
 Specify Facility Name   
 ? What is the Annual Operational Budget for this critical facility? \$

**Note:** In Section VI below, provide a brief description of how this building is a critical facility and specify which functions are essential to the community.

Structure ID 4.

**Fire Station**  
 ? How many people are served by the Fire Station?   
 Does the fire station provide Emergency Medical Services (EMS)?   
 Provide the address of the nearest fire station:   
 Provide the address of the nearest fire station with EMS:

**Police Station**  
 ? How many people are served by this police station?   
 How many police officers work or report to this police station?   
 ? How many police officers have a designated office space at this police station?

**Hospital**  
 ? How many people are being served by this hospital?   
 Provide the address of the nearest hospital capable of providing the same type of service:   
 ? How many people are being served by the nearest hospital capable of providing the same type of service?

**Utility**  
 ? Select the type of utility:   
 Number of customers directly served by the utility system:

**Other Critical Facility Type**  
 Specify Facility Name   
 ? What is the Annual Operational Budget for this critical facility? \$

**Note:** In Section VI below, provide a brief description of how this building is a critical facility and specify which functions are essential to the community.

**Section V - Historical Damage Information**

Provide a list of power outages suffered in the past due to high wind events (Historical data for 3 or more events is preferred), and include any expenses that the City/County incurred attending the emergency.

ID	? Date of Event	? Storm Type	? Power Outage Duration (Hrs./Days)	? Expense Description	? Documented Cost (\$)
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$
					\$

**Section VI - Additional Information**

*Please use this page to expand on the information provided above or to include any additional information relevant to the proposed mitigation project.*

## GENERATOR(S) WORKSHEET INSTRUCTIONS

Refer to the instructions below to complete the Generator(s) Worksheet using the best available data.

### Section I - Project General Information

**Project Name:** Enter the name of the project title. The title should be short but descriptive (e.g., City of Murfreesboro, Police Station, Backup Generator).

**Sub-Applicant:** Enter your organization's legal name.

**Worksheet completed by:** Enter name, title, phone number, and email of the person completing this Worksheet. This person must have the knowledge and/or the resources to accurately answer all questions and provide supporting documentation, as needed. Information may come from multiple credible sources.

### Section II - Project Cost Information

**Mitigation Project Cost:** Enter the total cost of the project. A lump sum on this worksheet is acceptable for preliminary BCA, but a detailed breakdown attached to your application is required.

**Annual Maintenance Cost:** Enter the cost associated with maintaining the effectiveness of the components installed as part of the utility mitigation project.

### Section III - Project Specific Information

**Project Location:** Provide the physical address(es) of the critical facility(es) that will be supported by the proposed generator(s). For multiple locations, please provide information on Section VI of this worksheet.

**Type of proposed generator:** From the dropdown menu option, select the proposed type of generator(s):

- **Permanent Generator:** A permanently installed generator that provides a secondary source of power by being hard-wired into the facility's main distribution panel and can be started manually or automatically in the event of a power outage.
- **Portable Generator:** A non-fixed generator that works with stand-alone applications and is meant to temporarily provide a secondary source of power to energize critical functions.

**Proposed Capacity (kW):** The generator's size and specifications should be reasonable, appropriate and necessary to continuing critical functions of the facility. The generator(s) should be sized appropriately such that the facility is able to provide uninterrupted critical functions in the event of future power outages.

**Type of Fuel:** Specify the type of fuel to power the proposed generator (e.g., diesel, propane, natural gas, gasoline, etc.)

**Type of Fuel Tank:** Specify the type of fuel tank, if applicable (e.g., Sub-base, stand-alone above ground, stand-alone underground, etc.)

**Fuel Tank Storage Capacity (gallons) & Duration (hours):** Specify the fuel tank storage capacity and duration, if applicable. The fuel tank storage capacity and duration must be sufficient to mitigate risk from the natural hazard.

**Proposing to install a new ATS?** Select "Yes" if you are proposing to install a new Automatic Transfer Switch (ATS) as part of the proposed mitigation project. Select "No" if a new ATS is not necessary and provide an explanation.

**Constructing a new concrete Pad?** Select "Yes" if you are proposing to construct a new concrete pad to install the new generator. Select "No" if a new concrete pad is not necessary and provide an explanation.

**Is there an existing generator?** Select "Yes" if there is an existing generator at the project site; Otherwise, select "No".

**Specify capacity of the existing Generator (kW):** If there is an existing generator at the project site, please specify its capacity.

### Section IV - Loss of Service

#### FIRE STATION

**How many people are served by the Fire Station?** Enter the number of people served by the fire station. If only one fire station serves the entire population of a community, that number may be used. For larger communities with multiple fire stations, only the population directly served by the station being mitigated can be used. Documentation for the service population can come from the fire station, local planning office, or other credible source.

**Does the fire station provide Emergency Medical Services (EMS)?** Select "Yes" if the fire station provides EMS or has EMS trained personnel; Otherwise, select "No".

**Provide the address of the nearest fire station:** The nearest fire station would serve as an alternative station to provide fire protection due to loss of function of the fire station being mitigated.

**Provide the address of the nearest fire station with EMS:** The nearest fire station would serve as an alternative station to provide EMS and fire protection due to loss of function of the

fire station being mitigated. (If the nearest fire station also provides EMS, please provide same address).

POLICE STATION

**How many people are served by this police station?** Enter the number of people served by the police station. If only one police station serves the entire population of a community, that number may be used. For larger communities with multiple police stations, only the population directly served by the station being mitigated can be used. Documentation for the service population can come from the police station, local planning office, or other creditable source.

**How many police officers work or report to this police station?** Enter the number of sworn officers that work or report at this location.

**How many police officers have a designated office space at this police station?** Enter the number of police officers that have a designated office space at this police station. It is assumed that police officers with a designated office space would be restricted to perform their regular duties if the police station were shut down due to a disaster. This information is necessary to estimate the loss of function due to the increased crime caused by a reduction of police officers in service.

HOSPITAL

**How many people are being served by this hospital?** Enter the number of people being served by this hospital. Only the population directly served by the hospital being mitigated can be used. Documentation for the service population can come from the hospital, local planning office, or other creditable source.

**Provide the address of the nearest hospital capable of providing the same type of service:** Identify the nearest hospital capable of providing similar services as the hospital being mitigated.

**How many people are being served by the nearest hospital capable of providing the same type of service?** Enter the number of people served by the nearest hospital capable of providing the same service. Only the population directly served by the alternative hospital can be used. Documentation for the service population can come from the alternative hospital, local planning office, or other creditable source.

UTILITY

**Select the type of utility:** From the dropdown menu, select the type of utility that will be powered by the proposed generator.

**Number of customers directly served by the system:** Enter the number of the customers (people) directly connected to the location(s) that will be mitigated. The number of customers affected by the loss of service can be obtained from the entity, agency, or company providing the utility service. The documentation should be in the form of a letter from the utility on their letterhead. For multiple locations, specify the number of customers connected to each specific location.

OTHER

**Specify Facility Name:** Enter the name of the critical facility that will be mitigated.

**What is the Annual Operational Budget for this critical facility?** Enter the annual budget for the critical facility that is being mitigated. Documentation should include the annual budget for the building that is being mitigated. If the building houses multiple local agencies, the cumulative budget should be used. Alternately, if the annual budget is for an entire school district and one of the buildings is being mitigated, documentation should include how the annual budget was calculated for the single school building.

Section V - Historical Damage Information

**Date of Event:** Enter the date of historical outage event.

**Storm Name:** Enter the name given to the natural hazard event when damage occurred.

**Power Outage Duration (Days):** Enter the number of days the critical facility was impacted by the loss of service due to a power outage. Documentation should be in the form of a letter from the utility on their letterhead or from the entity or agency reporting the outages.

**Expense Description:** Describe any additional expenses incurred by the City or County while attending the emergency during each historic damage event. Documented expenses may include but are not limited to renting portable generators, chillers, overtime paid to personnel to attend the emergency, etc.

**Expense Cost (\$):** Enter the total cost of the additional expenses incurred by the County or City.