



Protecting Patients When Disaster Strikes

A Playbook for Safeguarding Emergency Power Systems for
Rhode Island's Critical Healthcare Facilities During Extended Power Outages

RHODE ISLAND EMERGENCY MANAGEMENT AGENCY
RIEMA

POWERED For Patients™

Safeguarding Backup Power in Critical Care Facilities

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Introduction

This Playbook provides a guide for safeguarding emergency power systems and expediting power restoration for critical healthcare facilities during and following disasters that trigger extended power outages.

The Rhode Island Emergency Management Agency (RIEMA) and the Rhode Island Department of Health (RIDOH) worked closely with the nonprofit organization Powered for Patients to develop this resource.

Stakeholders should carefully review this Playbook to better understand their important roles and responsibilities to help ensure patient safety by sustaining emergency power until utility power is restored. Many of the key responsibilities attributed to individual stakeholders reflect existing response plans. Other actions in this Playbook are enhanced protocols recommended by Powered for Patients based on national best practices and research of current disaster planning and response activities at Rhode Island's hospitals.

RIEMA encourages any facility that relies on emergency power to adopt these protocols and practices to help safeguard emergency power.

About Powered for Patients

Powered for Patients is a 501(c)3 nonprofit organization formed to address lessons learned from Hurricane Katrina and Hurricane Sandy when the failure of emergency power supply systems led to patient fatalities and emergency evacuation of numerous hospitals. Powered for Patients promotes best practices in safeguarding emergency power systems and expediting power restoration for critical healthcare facilities. More information about Powered for Patients is available at www.poweredforpatients.org.

Governor Gina Raimondo

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How to use this Playbook:

This Playbook details a four-phase planning and operational continuum to safeguard emergency power systems and expedite power restoration. It also outlines the responsibilities for individual stakeholders during each phase.

Key Stakeholders for Whom Playbook was Developed

CRITICAL HEALTHCARE FACILITIES

- Facility managers and Emergency Preparedness Coordinators for hospitals and other healthcare facilities
- Healthcare facility executives and administrators
- Emergency power system service and fuel providers

GOVERNMENT

- Local emergency management officials
- State public health and emergency management officials & Governor
- Federal agencies including HHS, DHS/FEMA, US Army Corps of Engineers

RHODE ISLAND'S ELECTRIC UTILITIES

- National Grid
- Pascoag Electric

Make the Most of this Playbook During Disasters by Keeping Two Critical Resources Readily Accessible.

1. Facility Managers' Emergency Power Supply System Detachable Checklists
   (see purple tab in appendix)

2. Key Stakeholder Contact Information, including:
   NGRID's outage reporting phone number for hospitals – 800-465-1212
   Pascoag Electric's outage reporting phone number for hospitals – 401-568-0066
   (see orange tab in appendix for all contact information)

Typical Local & State Process

Estimated timeline and sequence of events associated with mechanical or other threat to emergency power supply system that results in request for FEMA deployment of temporary power.

Total time frame: 4 hours 15 minutes to 10 hours.

Estimated timeline for the typical local and state sequence of events shown in info graphic is based on projections from Powered for Patients. Estimated timeline for the FEMA sequence of events is based on FEMA estimates.

Fold out for Typical FEMA Deployment timeline ⟶

Phase I – Vulnerability Assessment & Planning | Phase II – System Fortification & Mitigation | Phase III – Rapid Threat Response | Phase IV – Post Disaster Recovery

Reducing Risk through Vulnerability Assessment & Planning

KEY STAKEHOLDER RESPONSIBILITIES

Recent disasters such as Hurricanes Katrina and Sandy have demonstrated that having a backup power system is no guarantee that backup power will work when called upon.

This reality places a premium on assessing the state of a facility's emergency power system. This process will provide appropriate staff within a healthcare facility with a heightened awareness of potential vulnerabilities and allow resolution of problems before a disaster. It will also enable increased vigilance during a disaster of potentially problematic equipment that has not been replaced.

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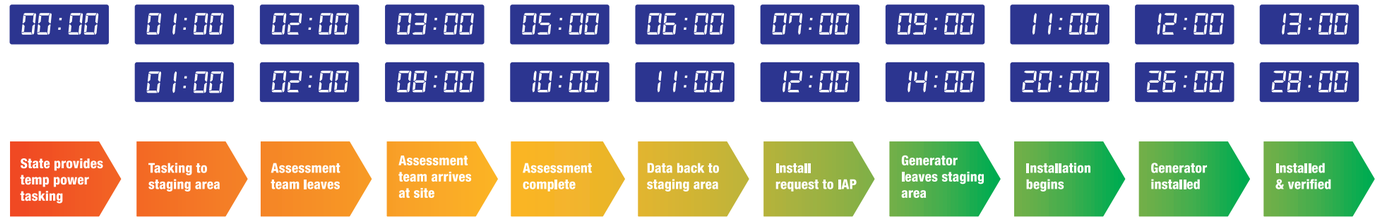
Typical FEMA Deployment

Install milestone events & timeline estimates with no EPFAT registration based on FEMA projections

Total time frame: 13 hours to 28 hours.



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Facility Managers

Step 1 – Conducting an Emergency Power System Vulnerability Assessment Survey
In 2016, Powered for Patients worked with RIEMA, the RI Department of Health (RIDOH) and the Hospital Association of Rhode Island (HARI) to develop and implement an Emergency Power System Vulnerability Assessment Survey for all Rhode Island hospitals, building on work previously conducted with all healthcare facilities in Rhode Island.

Aggregated results of the survey were provided to Powered for Patients and other stakeholders and helped form the basis of certain protocols in this Playbook.

Facility-specific results were retained by facilities and shared confidentially with select government officials on a need-to-know basis. The facility-specific results are important tools than can help guide planning discussions between hospital facility managers and hospital administrators (copies of facility-specific data can be requested through HARI).

Other critical healthcare facilities like nursing homes and dialysis centers were not part of the initial survey. However, facility managers for all critical healthcare facilities are encouraged to complete their own Emergency Power System Vulnerability Assessment Survey, available online at www.poweredforpatients.org/risurvey (or the RIEMA website).

Step 2 – Conduct a more detailed system assessment to include life cycle analyses or modernization study. Some larger hospital systems have gone far beyond the minimum testing and maintenance requirements for emergency power supply systems by investing in advanced analysis of emergency power system components. These analyses often incorporate the questions asked in the Powered for Patients Emergency Power System Vulnerability Assessment survey and may also include:

- Calculating the condition of key components based on a standard life expectancy table
- Conducting extensive physical inspections of key system components by qualified experts to provide a condition assessment

Facilities should contact their current emergency power system service provider, electrical contractor or Mechanical, Electrical, Plumbing (MEP) contractor for assistance in implementing this step. Following completion of this process, use results to augment findings of the Vulnerability Survey to help assess system upgrade and reconditioning needs.

Step 3 – Facilities managers should meet with their facility's Emergency Preparedness Coordinator. This will ensure that the results of the Emergency Power System Vulnerability Assessment Survey are reflected and exercised in operational plans.

Tip

Power Reliability Tip – During blue sky days, be sure to check your Critical Spare Parts Inventory for your emergency power supply system to ensure you'll have the spare parts needed during prolonged use of emergency generators.

UTILITIES

Step 1 – Convene annual meeting of hospital facility managers, RIDOH, HARI and RIEMA for the purpose of reviewing protocols for how hospitals should detach from and reattach to utility power during disasters that trigger extended power outages. This meeting should be attended by the utility's hospital liaisons and emergency planning and response staff.

Step 2 – Provide updates on any changes to the prioritized restoration process to key stakeholders including RIEMA, RIDOH, HARI and hospital facility staff.

Step 3 – Notify hospital facility managers any time a new utility representative is assigned to their facility.

Step 4 – Work with RIDOH and HARI to ensure relevant information identified in Steps 1-3 is also shared with other critical healthcare facilities.

Tip

Power Reliability Tip – During disasters, ensure proper staffing to stay on top of potential mechanical threats or diminishing fuel supply as failures in emergency power supply systems are more likely to occur in the 36 to 96-hour time range following a disaster.

GOVERNMENT

Governor and Senior Staff

Step 1 – The Governor and his or her senior staff should understand the governor's unique role in working with RIEMA's Director and FEMA during federally-declared disasters to request emergency power system resources, including replacement generators from the FEMA/US Army Corps of Engineers fleet of temporary generators, as well as generator fuel.

Step 2 – The Governor and his or her senior staff, along with the RIEMA Director and staff from RIDOH, should work in advance of disasters with the leaders of municipalities where the state's hospitals and other critical infrastructure are located to apprise them of the governor's unique role in the allocation of federal emergency power system resources. This outreach will help align expectations of local officials with the realities of deployment of limited emergency power system resources following a disaster.

Step 3 – The Governor and his or her senior staff, along with the RIEMA Director and staff from RIDOH, should meet with senior leaders from National Grid annually to collectively review disaster plans and reaffirm current understanding of how the state and National Grid will interact during a major disaster to collectively address prioritized restoration of power. This information should be shared with response partners who coordinate with critical infrastructure during response, (e.g., Emergency Support Function leads).

RI Emergency Management Agency

Step 1 – Jointly convene with RIDOH, HARI and the Rhode Island Healthcare Engineering Society (RIHES) an annual meeting of all hospital facility managers and their service and fuel providers to:

- Share information, best practices, and provide a forum for open discussion of issues, concerns, and challenges relating to safeguarding emergency power.
- Provide an overview of the Rhode Island Healthcare System Event Work Plan through which hospital facility managers (or their generator service or fuel providers) work with the designated Emergency Preparedness Coordinator in their facility to contact Emergency Support Function-8 (ESF-8), Public Health and Medical Services when there is an unplanned generator status change (mechanical or system failure). Should there be an emergency demand for fuel outside of traditional vendor support, RIEMA is able to provide, through its Resource Management Plan, emergency power system service and fuel vendors with access to fuel resources. Hospitals are encouraged, via ESF-8, to report any status change in fuel delivery, consumption or other irregularities that could impact their ability to operate emergency power systems.

Step 2 – Ensure that contact information for key stakeholders, detailed in the back of this Playbook, is updated annually and shared with all stakeholders.

Step 3 – RIEMA's Director, through the Training and Exercise Plan and Schedule, will encourage critical infrastructure stakeholders that rely on emergency power to maintain operations during a major disaster with a prolonged power outage to review and exercise disaster plans.

Step 4 – Exercise the Powered for Patients Emergency Power Supply System Playbook through a table top exercise or functional drill. Confirm contact information for official FEMA point of contact for formal requests for temporary emergency power support and confirm protocol for such requests.

RI Department of Health

Step 1 – Work with RIEMA to ensure critical infrastructure stakeholders are aware of enhanced protocols and procedures.

Step 2 – Working with HARI, ensure compliance with annual hospital surveys to include collection of necessary data to keep the USACE's Emergency Power Facility Assessment Tool (EPFAT) updated for each hospital in Rhode Island.

Step 3 – Conduct meetings with individual hospitals that have emergency power supply systems considered vulnerable based on responses to the 2016 Emergency Power System Vulnerability Assessment Survey.

Step 4 – Work with HARI to maintain up-to-date contact information for appropriate staff at all hospitals including landlines, cell phones and alternate contact information.

Federal Officials

Step 1 – Coordination of emergency contracting support for lifesaving and life-sustaining services including the provision of emergency power.

Step 2 – Coordinate with state partners to assess general state fuel contract capacities and capabilities.

Step 3 – Ensuring that state officials, including the Governor, the Emergency Management Agency Director, and the Director of the Department of Health, understand federal temporary power resources that are available during disasters, how to best access these resources and what the costs will be for tapping these resources.

Step 4 – Continue engagement in disaster planning and response initiatives and exercises designed to safeguard emergency power and expedite power restoration.

Tip

Power Reliability Tip – In the aftermath of a disaster that triggers an extended power outage, a facility's emergency power supply system will have been seriously tested. Be sure to complete each item in the FEMA checklist included in FEMA Document P-1019: *Emergency Power Systems for Critical Facilities: A Best Practices Approach to Improving Reliability.* (See appendix in Playbook)

Plan B: Ensuring Reliable Emergency Power When the Grid Goes Down
Critical Healthcare Facilities

FACILITY MANAGERS

Step 1 – Meet with healthcare facility administrators to review the results of the 2016 Emergency Power System Vulnerability Assessment Survey. Be prepared to answer the following questions and address any other key issues:

- What is the overall state of our emergency power supply system?
- Should we consider replacing or updating outdated emergency power system components? If so, what levels of investment would be needed to make incremental or significant improvements to our facility's emergency power system?
- Are there other updates to our facility or electrical infrastructure being planned, or that we should consider, that could incorporate needed upgrades to our emergency power system?
- What is our equipment maintenance history compared to manufacturers' recommended maintenance schedule?
- What additional resources do you need to bring our facility's emergency power supply system to a higher level of reliability or readiness?
- How does our hospital's emergency operations plan address the communication between facility managers and hospital administrators in the event of a failure of our emergency power supply system?

- What support do you need to help our facility comply with the Rhode Island Healthcare System Event Work Plan seeking a notification by our facility Emergency Preparedness Coordinator any time our facility experiences an unplanned generator status change or an irregularity in fuel delivery?

Step 2 – Make sure you have the most up-to-date contact information for your utility manager and the correct phone number for your utility's after-hours on-call representative who can assist with updates on estimated restoration times after an event.

Step 3 – Ensure that your utility provider has current contact information for hospital facility staff that will be liaising with a utility during an emergency that triggers an extended power outage. Be sure to provide your utility with alternative contact phone numbers, including cell numbers, for these individuals. Ensure the 24/7 presence of a facilities staff member who can provide access to utility crews who may need to inspect electrical system components within the hospital before restoring utility power following an extended power outage.

Step 4 – Create a written protocol that details the specific steps to be taken and by whom when your facility transitions between utility power and emergency power. Share this protocol with your electric utility and ask for feedback. Update this protocol on an annual basis and be sure all facility staff, including electricians, are aware of this protocol. This protocol should address the dangers of emergency power sources feeding back onto the grid and hazards associated with disconnecting utility feeds into the facility's electrical panel.

Step 5 – Make sure that your facility's Emergency Operations Plan (EOP), which should define emergencies based on a Hazard Vulnerability Analysis (HVA), identifies the process, resources, personnel roles and responsibilities in an emergency (including command, control and coordination). Ensure that your EOP addresses the implications of a potential or actual failure of your emergency power supply system.

Step 6 – Work with administrators and clinical staff to ensure their understanding of the clinical impacts associated with load shedding in the event of a partial failure of your emergency power system. Understanding what critical loads can be maintained and for what duration with a partially functioning emergency power system can have a major impact on decisions to continue sheltering in place or ordering a partial or complete hospital evacuation.

Tip

Power Reliability Tip – Engage the services of a qualified fuel vendor to conduct an annual analysis of the fuel in large tanks fueling emergency generators. Make sure your vendor tests the fuel at three different levels of your tank (bottom, middle and top) to ensure that an accurate assessment of fuel condition is made. Testing only the fuel at the top of a tank often misses sediment that can exist at the bottom of a tank that can interrupt the operation of a generator after extended operation.

Step 7 – Secure from your generator service provider and fuel providers a written document annually that details the terms of any agreements that provide temporary replacement generators, temporary rental generators or fuel for your facility during an extended power outage. Detail the time frame for fulfilling this deliverable, i.e., within 12 hours of request, within 24 hours of request, auto refill (for fuel providers). If no such contingency contracts are in place, consider implementing such contracts.

Step 8 – If your emergency power system is monitored remotely by internal staff or a third party and this process provides real-time email, text or phone alerts when problems with generator performance or fuel levels are detected, talk with your remote monitoring system provider about how to share elements of this information with appropriate state and federal government officials (specifically, ESF-8) and your electric utility. Sharing this information quickly can help improve situational awareness of your emergency power systems' operating status during an extended power outage and expedite deployment of resources and potentially accelerate restoration time if you lose emergency power. (For more information about protocols related to sharing remotely monitored backup power system data, visit www.poweredforpatients.org/infosharing).

Step 9 – Complete each item in the FEMA checklist included in FEMA Document P-1019: *Emergency Power Systems for Critical Facilities: A Best Practices Approach to Improving Reliability.* SEE PURPLE TAB IN APPENDIX FOR REMOVABLE CHECKLIST AND POST WHERE ALL FACILITY PERSONNEL CAN READILY ACCESS CHECKLIST.

HEALTHCARE FACILITY EXECUTIVES AND ADMINISTRATORS

Step 1 – Schedule a meeting with the Director of Facilities and facility managers to carefully review facility-specific results of the Emergency Power System Vulnerability Assessment Survey.
In addition to a careful review of survey results, key questions to address include:

- What is the overall state of our emergency power supply system?
- Should we consider replacing or updating outdated emergency power system components? If so, what levels of investment would be needed to make incremental or significant improvements to our facility's emergency power system?
- Are there other updates to our facility or electrical infrastructure being planned, or that we should consider, that could incorporate needed upgrades to our emergency power system?
- What is our equipment maintenance history compared to manufacturers' recommended maintenance schedule?
- What additional resources do you need to bring our facility's emergency power supply system to a higher level of reliability or readiness?
- How does our hospital's emergency operations plan address the communication between facility managers and hospital administrators in the event of a failure of our emergency power supply system?
- What support do you need to help our facility comply with the Rhode Island Healthcare System Event Work Plan seeking a notification by our facility Emergency Preparedness Coordinator any time our facility experiences an unplanned generator status change or an irregularity in fuel delivery?

Step 2 – Assess your facility's emergency response plans to determine if provisions exist to provide support for the family members of critical facilities staff. If no such plans exist, they should be considered. A major disaster that results in an extended power outage will place enormous pressure on critical personnel to attend to the safety and wellbeing of their own family. Addressing these needs through pre-event planning can help ensure that vital facilities staff will be available when they are most needed as power outages extend into multiple days.

EMERGENCY POWER SYSTEM SERVICE AND FUEL PROVIDERS

Step 1 – Provide a written list of key spare parts that your company or the generator manufacturer recommends should be on-hand at a facility at all times.

Step 2 – Service and fuel providers should provide an annual update to hospital clients on their disaster planning and response capabilities to include details on:

- Capacity to meet surge demand during disaster
- Capacity to address credentialing needs to gain access to restricted areas
- Emergency contact information for key personnel

Step 3 – Provide a written report annually to healthcare clients on the terms of any agreements that provide temporary replacement generators or temporary rental generators during an extended power outage. Detail the time frame for fulfilling this deliverable, i.e., within 12 hours of request, within 24 hours of request, auto refill (for fuel providers).

Tip

Power Safety Tip – Develop Effective Lockout/Tagout Protocols When Restoring Utility Power

If utility lines coming into your facility have been disconnected during the installation of temporary power units, implement a Lockout/Tagout protocol to ensure that power is not restored before lines have been reconnected to the facility's electrical system by qualified electricians.

In the Eye of the Storm: Sustaining Emergency Power for Four Days or Longer

CRITICAL HEALTHCARE FACILITIES

Facility Managers

Step 1 – Ensure proper staffing to stay on top of potential mechanical threats or diminishing fuel supply as Powered for Patients research has determined that failures in emergency power supply systems are more likely to occur in the 36 to 96-hour time range following a disaster.

Step 2 – Remain vigilant in monitoring emergency power supply system and its components for any signs of mechanical failure along with fuel levels. Should you need to have your emergency power supply system serviced and/or fuel replenished, secure an estimated time of arrival and any anticipated barriers providers anticipate in getting to your facility. Notify ESF-8 to any unplanned generator status changes, difficulties obtaining fuel, and/or any concerns of service or fuel providers in gaining access to facility.

SEE INFO GRAPHIC ON NEXT PAGE DEMONSTRATING TIME SAVINGS PROVIDED TO GOVERNMENT OFFICIALS AND UTILITIES WHEN THE IMPORTANT PROTOCOLS OUTLINED IN STEP 2 ABOVE ARE FOLLOWED.

Step 3 – Launch electric utility communications protocols by calling a power outage into utility's outage system as soon as possible.

NGRID's outage reporting phone number – 800-465-1212
Pascoag Electric's outage reporting phone number – 401-568-0066

Step 4 – If hospital facility staff have not heard from the utility customer manager assigned to them, they should contact this liaison immediately after calling into the outage system to seek a status report and estimated time of restoration (ETR).

Step 5 – In addition to notifying ESF-8, contact your local emergency manager to ensure that they are aware when your facility experiences unplanned generator status changes, you have difficulty obtaining fuel, and/or have any concerns about service or fuel providers gaining access to your facility.

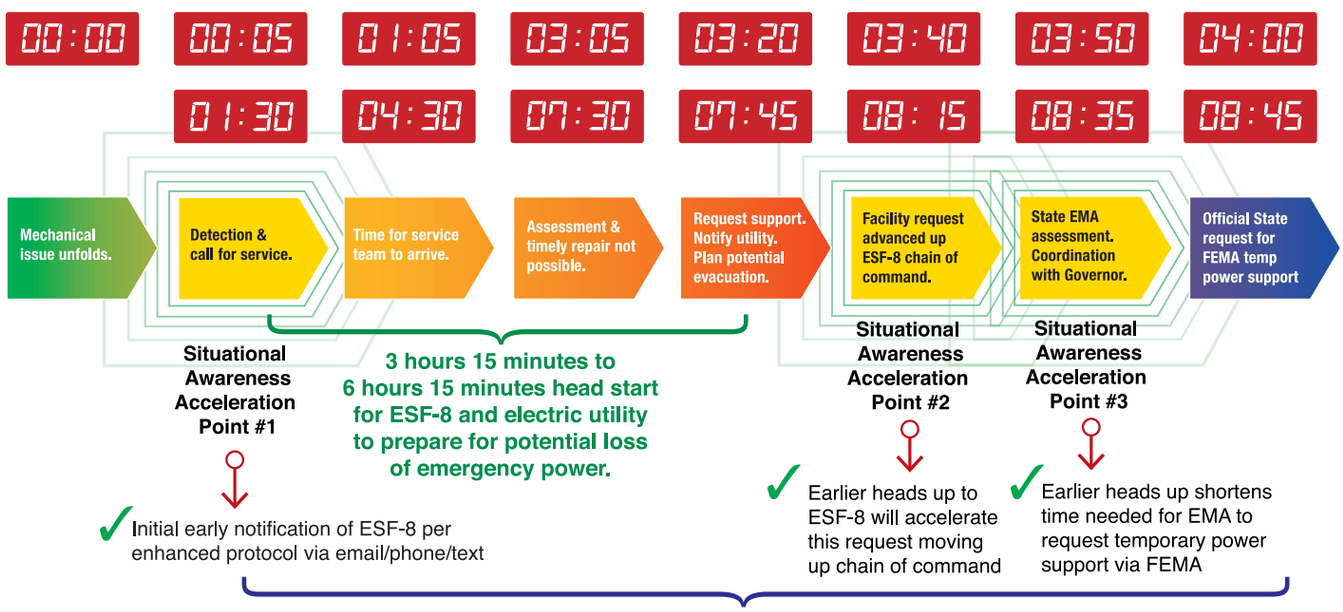
Step 6 – Ensure that emergency power system is not feeding power back to the grid prior to utility restoration. (There have been documented instances when temporary generators have been connected to a facility's electrical system in a way that bypasses the Automatic Transfer Switch, increasing the danger of electricity feeding back into the grid and endangering utility workers.)

Step 7 – If utility lines coming into your facility have been disconnected during the installation of temporary power units, it is critical that the utility feed be reattached to the hospital's electrical system by qualified electricians prior to power restoration by the utility. (In some states, in the haste to augment emergency power or replace failing backup generators during emergencies, some hospital electricians have disconnected utility lines coming into their facility and left them on the ground or on the floor in the electrical room. This poses a great danger when the lines are re-energized. Removing a utility feed from a hospital's electrical system should be avoided whenever possible.)

Early Notification via email/phone/text

Accelerated notification of ESF-8 chain of command enabled by enhanced early warning protocol.

Total time frame: 4 hours to 8 hours 45 minutes.



Estimated timeline for the enhanced local and state sequence of events shown in info graphic is based on projections from Powered for Patients. Estimated timeline for the FEMA sequence of events is based on FEMA estimates.

Fold out for EPFAT Accelerated FEMA Deployment timeline ⟶

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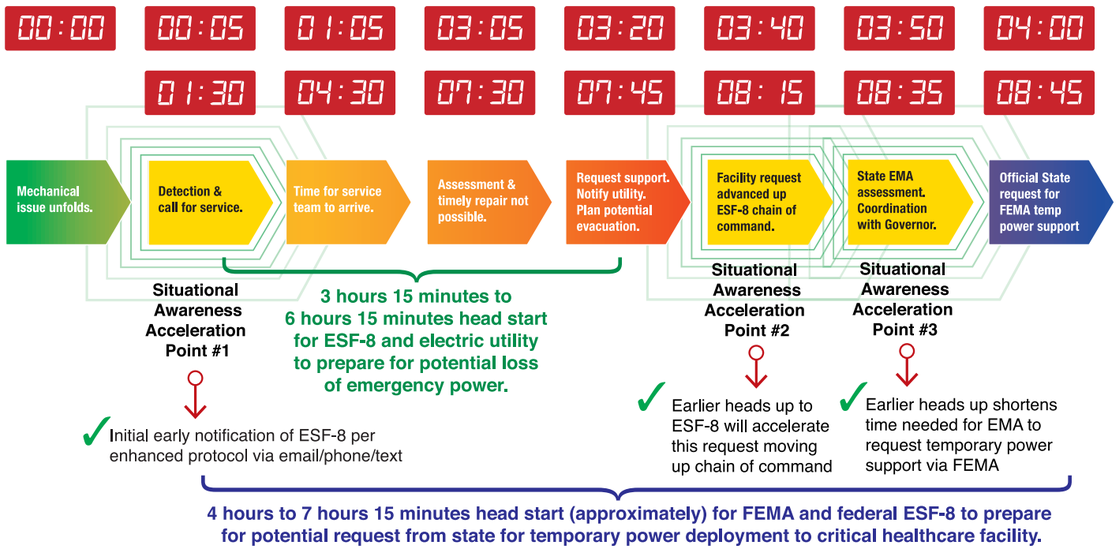

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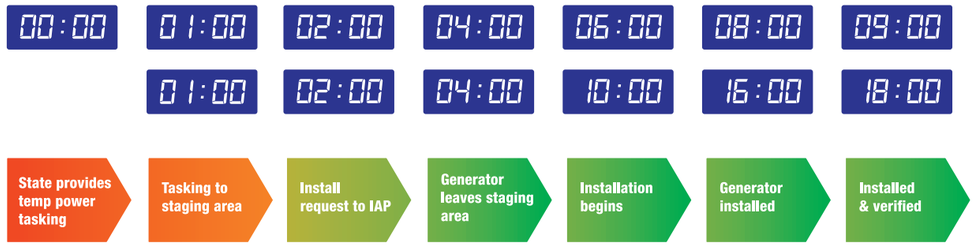
EPFAT Accelerated Deployment

Install milestone events & timeline estimates with EPFAT registration based on FEMA projections

Total time frame: 9 hours to 18 hours.

4 hours to 10 hours potential time savings with EPFAT registration.



Healthcare Facility Executives and Administrators

Step 1 – Launch facility's emergency response plan.

Step 2 – Maintain close coordination with facilities staff to maintain situational awareness of backup power status and fuel supply to help ensure rapid response to a failure of emergency power.

Step 3 – Help ensure that facilities staff responsible for backup power system operation and maintenance have the internal and external resources needed to sustain backup power.

Step 4 – Help ensure that family members of facility staff have the support they need to diminish the likelihood of critical facility staff not being available to support the emergency power supply system.

EMERGENCY POWER SYSTEM SERVICE AND FUEL PROVIDERS

Step 1 – Activate disaster response plans to meet the likely surge needs of hospital customers and other critical healthcare facilities.

Step 2 – Notify the impacted healthcare facility and RIEMA Emergency Operations Center of any obstacles in deploying service or fuel crews to critical healthcare facilities. RIEMA can be contacted at 401-462-7528.

UTILITIES

Step 1 – Deploy personnel to RIEMA Emergency Operations Center, located at 645 New London Ave, Cranston, RI 02920.

Step 2 – Coordinate closely with ESF partners who monitor critical infrastructure and, when necessary, RIEMA leadership and the Governor, to address prioritized restoration requests.

Step 3 – Maintain close contact with healthcare facility contacts (facility managers or others within the facility who have made a request for restoration) to ensure frequent communication and support around restoration needs. Remind critical healthcare customers of protocols around reestablishing utility power when generator power is in use to ensure safety of utility personnel and avoid any lost time in restoration. Continue to work closely with ESF-8 until restoration to all healthcare facilities has been completed.

Tip

Power Safety Tip – Ensure that emergency power system is not feeding power back into the grid prior to utility restoration.

There have been documented instances when temporary generators have been connected to a facility's electrical system in a way that bypasses the Automatic Transfer Switch (ATS), increasing the danger of emergency generators feeding power back into the grid and endangering utility workers. Prior to utility power restoration, make sure there is no connected power source that isn't flowing through the ATS. Also, ensure that the ATS is functioning properly before utility power is restored.

GOVERNMENT

Governor and Senior Staff

Step 1 – Maintain frequent communication about emergency power needs with RIEMA Director to enable faster decisions relating to requests for federal assistance with temporary generators and generator fuel.

Step 2 – Be ready to work with RIEMA leadership to quickly request an Emergency or Major Disaster Declaration from FEMA, a key step in enabling the state to access temporary power assistance from FEMA.

RI Emergency Management Agency

Step 1 – Launch operation of State Emergency Operations Center (SEOC) at RIEMA headquarters.

Step 2 – Establish a Joint Information Center (JIC) to ensure that messaging in advance of an approaching hurricane includes the following important public health preparedness reminders:

- At-risk citizens relying on electric-powered medical devices during an extended power outage, such as oxygen concentrators, respirators, and dialysis machines, should fully charge the batteries (including backup batteries) of their equipment prior to a likely power loss;
- At-risk citizens should identify a backup power source for their equipment in the event of an extended power outage, either through their own generator, a neighbor's generator or available backup power sources at a local police or fire station; and
- Rhode Islanders with residential generators should help at-risk neighbors recharge the batteries of life-sustaining electric powered medical devices.

Step 3 – Maintain close coordination with ESF-8 staff to stay apprised of emerging threats to emergency power supply systems at Rhode Island's hospitals and other critical healthcare facilities.

Step 4 – Provide periodic updates to designated FEMA representatives on emerging threats to emergency power supply systems for critical infrastructure.

Step 5 – Keep governor and his or her staff apprised of emerging threats to emergency power supply systems.

Step 6 – Be prepared to receive calls from emergency power system service providers and fuel vendors with information about obstacles to deployment of service or fuel crews. Work with other key stakeholders (RI State Police, RIDOT) to overcome obstacles and help ensure ability of service teams to get to healthcare facilities and other critical infrastructure.

Step 7 – RIEMA leadership should be prepared to request federal temporary power assistance or fuel replenishment, if Direct Federal Assistance has been made available through either an Emergency or Major Disaster Declaration.

Tip

Power Safety Tip – If your facility's emergency power supply system will be operating at less than normal capacity, be sure to notify the appropriate clinical staff so they understand what equipment may not be functioning that would normally be powered by backup generators.

RI Department of Health

Step 1 – Support the messaging needs of the governor and his or her spokespersons relating to at-risk citizens relying on electric-powered medical devices such as oxygen concentrators, respirators, and dialysis machines. See messaging recommendations in action items for RIEMA/Joint Information Center (JIC) on page 26.

Step 2 – In advance of an approaching hurricane, activate the Rhode Island Healthcare System Event Work Plan.

Step 3 – Deploy to RIEMA's SEOC to staff ESF-8, located at 645 New London Avenue, Cranston, RI 02920.

Step 4 – Keep RIEMA leadership apprised of incoming requests for emergency power supply system support.

Tip

Power Safety Tip – In keeping with the enhanced information sharing protocols during disasters detailed in this Playbook, be sure to Notify ESF-8 of any unplanned generator status changes, any difficulties obtaining fuel, and any challenges service or fuel providers anticipate in gaining access to your facility in a timely manner.

Federal Officials

The following federal government actions are detailed in the Power Annex of the All Hazards Plan developed by FEMA Region I.

Step 1 – Process state and tribal requests for emergency and major disaster declarations, and process requests for federal assistance. Establish multi-agency coordination mechanisms as needed.

Since the following federal actions related to its mission of supporting temporary power are not sequential and can be executed concurrently, they are shown as bulleted items rather than sequential steps:

- Coordinate with the impacted state and tribal governments on capability requirements (through the Power Task Force, if established) to deliver emergency power requirements
- Pre-position emergency-power capabilities for Region I
- Determine generator requirements to meet requests from the impacted states and tribes
- Estimate fuel requirements
- Fill and adjudicate approved requests from the states and tribes for emergency-power resources
- Provide technical assistance to the states, tribes, and the private sector for power restoration
- Provide updates on power outages during response operations

Resetting the Table for the Next Power Outage

Following major natural or manmade disasters, emergency management and public health agencies often conduct a "hotwash" review shortly after the event for discussion and evaluation of how agencies performed, what worked well, the key challenges faced and lessons learned. These "hotwash" discussions are also used to create the After-Action Review. This section of the Playbook details this important process for all key stakeholders. This section also addresses other important post-disaster recovery steps. (See page 34 for simple template for hotwash discussion.)

CRITICAL HEALTHCARE FACILITIES

Facility Managers

Step 1 – Schedule a meeting with facility staff for an internal hotwash discussion of challenges faced and lessons learned. Participate in a larger healthcare facility-wide hotwash on the facility's response overall. Ensure that any key elements that need to be addressed at the state level are relayed to the facility's Emergency Preparedness Coordinator to be addressed at the Healthcare Coalition of Rhode Island (HCRI) hotwash(es).

Step 2 – Complete each item in the FEMA checklist included in FEMA Document P-1019: Emergency Power Systems for Critical Facilities: A Best Practices Approach to Improving Reliability. SEE PURPLE TAB IN APPENDIX FOR REMOVABLE CHECKLIST AND POST WHERE ALL FACILITY PERSONNEL CAN READILY ACCESS CHECKLIST.

Healthcare Facility Executives and Administrators

Step 1 – Schedule a hotwash meeting with facility maintenance staff to discuss lessons learned with respect to the operation of emergency power supply systems. Participate in a larger healthcare facility-wide hotwash on the facility's response overall. Ensure that specific challenges and lessons learned for your facility, including lessons learned about interactions with government and utility stakeholders during the disaster, and any other key elements that need to be addressed at the state level, are relayed to the facility's Emergency Preparedness Coordinator to be addressed at the Healthcare Coalition of Rhode Island (HCRI) hotwash(es).

EMERGENCY POWER SYSTEM SERVICE AND FUEL PROVIDERS

Step 1 – Conduct an internal hotwash to assess lessons learned. Be prepared to participate in discussions with healthcare facility clients about lessons learned. These stakeholders should be prepared to participate in external hotwash meetings convened by the RI Emergency Management Agency and or the RI Department of Health.

UTILITIES

Step 1 – Conduct an internal hotwash to assess lessons learned and be prepared to participate in external hotwash meetings convened by the RI Emergency Management Agency and or the RI Department of Health.

GOVERNMENT

Governor and Senior Staff

Step 1 – In concert with the RIEMA Director, the governor and his or her senior staff should conduct their own hotwash assessment shortly following the disaster.

RI Emergency Management Agency

Step 1 – Convene a hotwash debriefing of key stakeholders ideally no later than three weeks following the disaster.

Key stakeholders to be invited include:

- Emergency power system service and fuel providers;
- Local emergency management officials;
- RI Office of Energy Resources (RIOER);
- State public health and emergency management officials & Governor;
- Federal agencies including HHS, DHS/FEMA, U.S. Army Corps of Engineers; and
- Utilities.

Given the broad range of stakeholders participating, consideration should be given to including subgroups of stakeholders to address issues pertinent to their role in safeguarding emergency power systems and expediting power restoration. If practical, the governor should attend the opening of this meeting to thank all of the stakeholders for their important work in safeguarding emergency power and expediting power restoration during the disaster.

Step 2 - RIEMA should prepare a written report to be shared with attendees of the hotwash session detailing:

- What worked well
- What could be improved
- Specific ideas for improvement

RI Department of Health

Step 1 – Conduct a hotwash of key healthcare system stakeholders ideally no later than three weeks following the disaster. Given the number of healthcare facilities in Rhode Island, it is possible that several hotwashes may be conducted, each focused on a facility type.

Step 2 – Conduct hotwashes with other impacted public health partners, such as impacted food establishments and/or drinking water systems.

Federal Officials

Step 1 - Launch post disaster hotwash review and participate in state hotwash review as appropriate to document lessons learned.

Step 2 – Continue to support recovery of the region as needed with key federal resources.

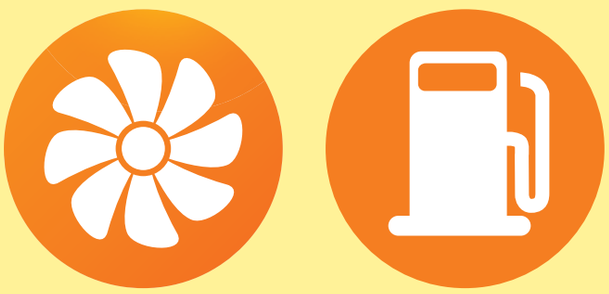
Three Key Post Disaster Hotwash Questions on Emergency Power Supply Systems for Critical Healthcare Facilities

NOTE: Use this simple form to guide internal hotwash discussions. Use additional sheets as necessary to document responses. Be prepared to bring responses, or a summary of responses, to any post-disaster RIEMA – RIDOH hotwash meeting your organization participates in.

Name of Organization:
What went well?
1.
2.
3.
What were the top challenges?
1.
2.
3.
How could the process be improved next time?
1.
2.
3.

Inventory

See Next Page for Critical Spare Parts Inventory For Emergency Power Supply System & Fuel Consumption Rates



Inventory of Key Generator Parts & Fuel Consumption Rates

Key Part	Manufacturer	KW Rating	# of Units on Hand (as of ___/___/___) Pre-Disaster	Fuel Consumption per hour under full load	Size of tank supplying fuel	# of Units on Hand (as of ___/___/___) Post-Disaster
Generator # ___						
Thermostat (Engine)						
Thermostat (Water Heater Jacket)						
Motor Starter						
Fuse (multiple sizes)						
Water Heater Jacket						
Fanbelt(s)						
Heater Hose						
Fuel filter						
Fuel Water Separator Filter						
Oil filter						
Air filter						
Oil						
Coolant						
Generator # ___						
Thermostat (Engine)						
Thermostat (Water Heater Jacket)						
Motor Starter						
Fuse (multiple sizes)						
Water Heater Jacket						
Fanbelt(s)						
Heater Hose						
Fuel filter						

Inventory of Key Generator Parts & Fuel Consumption Rates

Key Part	Manufacturer	KW Rating	# of Units on Hand (as of ___/___/___) Pre-Disaster	Fuel Consumption per hour under full load	Size of tank supplying fuel	# of Units on Hand (as of ___/___/___) Post-Disaster
Generator # ___						
Thermostat (Engine)						
Thermostat (Water Heater Jacket)						
Motor Starter						
Fuse (multiple sizes)						
Water Heater Jacket						
Fanbelt(s)						
Heater Hose						
Fuel filter						
Fuel Water Separator Filter						
Oil filter						
Air filter						
Oil						
Coolant						
Generator # ___						
Thermostat (Engine)						
Thermostat (Water Heater Jacket)						
Motor Starter						
Fuse (multiple sizes)						
Water Heater Jacket						
Fanbelt(s)						
Heater Hose						
Fuel filter						
Fuel Water Separator Filter						
Oil filter						
Air filter						
Oil						
Coolant						
Generator # ___						
Thermostat (Engine)						
Thermostat (Water Heater Jacket)						
Motor Starter						
Fuse (multiple sizes)						
Water Heater Jacket						
Fanbelt(s)						
Heater Hose						
Fuel filter						
Fuel Water Separator Filter						
Oil filter						
Air filter						
Oil						
Coolant						
Automatic Transfer Switch						

Parts Ordering:

Parts Department Contact Information:

Point of Contact: ______________________________ Phone Number: ______________________________

Cell phone: ______________________________ Email: ______________________________

Secondary Point of Contact: ______________________________ Phone Number: ______________________________

Cell phone: ______________________________ Email: ______________________________

NOTE: For facilities with more than three generators, copy this form to document parts inventory for additional generators.

Contact info

Make the most of this Playbook during disasters by keeping this key stakeholder contact information readily accessible for all appropriate personnel before, during and after disasters.

Key Emergency Power Supply System Stakeholder Contacts

GOVERNMENT

FEMA Region I office, Boston, MA: 617-956-7506. EOC: 978-461-5400. 24/7 Watch Center: 978-461-5501.
HHS Region I office, Boston, MA: 617-565-1159. EOC: 202-619-7800.
RIEMA: 401-946-9996. EOC: 401-462-7528; Backup: 401-462-7071.
RIDOH: EOC phone number for ESF-8: 401-462-7518. Any emergency at a healthcare facility: Center for Emergency Preparedness and Response on-call system: 401-222-6911.

UTILITIES

National Grid
National Grid's Outage reporting phone number for hospitals: 800-465-1212. After-hours: 800-322-3223.
Pascoag Electric's outage reporting phone number for hospitals: 401-568-6222. After-hours: 401-568-6222.
NGRID Hospital Liaisons: (Hospital facility managers, please note your utility liaison here)

Liaison name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

Pascoag Power (Hospital facility managers, please note your utility liaison here)

Liaison name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

HOSPITALS

(Key stakeholders who may need to contact individual facility management staff at hospitals during emergencies are encouraged to note facility manager's names and contact information in the spaces below. Given the frequency with which this information changes, this Playbook only includes main switchboard phone numbers.)

Bradley Hospital – Main Switchboard: 401-432-1000

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

Butler Hospital – Main Switchboard: 401-455-6200

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

Eleanor Slater Hospital – Main Switchboard: 401-462-3085

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

Hasbro Children's Hospital – Main Switchboard: 401-444-4000

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

Kent Hospital – Main Switchboard: 401-737-7000

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

Landmark Hospital – Main Switchboard: 401-769-4100

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

Memorial Hospital – Main Switchboard: 401-729-2000

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

Miriam Hospital – Main Switchboard: 401-793-2500

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

Newport Hospital – Main Switchboard: 401-846-6400

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

Rhode Island Hospital – Main Switchboard: 401-444-4000

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

South County Hospital – Main Switchboard: 401-782-8000

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

St. Joseph's Our Lady of Fatima Hospital – Main Switchboard: 401-456-3000

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

Westerly Hospital – Main Switchboard: 401-596-6000

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

Women & Infants Hospital – Main Switchboard: 401-274-1100

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

Zamboranno Hospital – Main Switchboard: 401-567-5400

Facility manager name:	Office phone:
Cell phone:	Email address:
Secondary contact:	Office phone:
Cell phone:	Email address:

GENERATOR SERVICE PROVIDERS

(For some generator service providers, cell phone numbers are not provided because cell phones are not always used during disaster response scenarios. If a hospital's generator service company liaison provides a cell phone number, it should be noted below.)

Authorized Services of New England – Main number: 888-890-9886

Contact name: Keith Leone	Office phone: 508-229-1352
Cell phone:	Email address: kleone@asne.com

Cummins – Main number: 781-329-1750

Contact name: Ron Todisco	Office phone: 781-751-1237
Cell phone:	Email address: ron.todisco@cummins.com

Highland Power – Main number: 866-420-4440

Contact name: John Lougee	Office phone: 508-941-6500
Cell phone: 508-802-3648	Email address: lougee@highlandpower.com

Lightship Group – Main number: 401-294-3341

Contact name: Anthony Boncorddo	Office phone: 401-294-3341
Cell phone: 401-418-0960	Email address: anthonyb@lightshipgroup.com

Milton Cat – Main number: 508-634-5890

Contact name: Gary Rudman	Office phone: 508-717-5221
Cell phone:	Email address: Gary_Rudman@miltoncat.com
Parts Call Center MA: 508-634-5890	Parts Call Center RI: 401-946-6350

Power Up Generator Service – Main number: 603-657-9080

Contact name: Mark Watson	Office phone: 603-657-9080
Cell phone: 603-396-3540	Email address: mark@powerupgeneratorservice.com

Weld Power – Main number: 800-288-6016

Contact name: Timothy Earnest	Office phone: 800-288-6016
Cell phone: 774-808-7079	Email address: service@weldpower.com
	Email address: tearnest@weldpower.com

Other:

Contact name:	Office phone:
Cell phone:	Email address:

Other:

Contact name:	Office phone:
Cell phone:	Email address:

GENERATOR FUEL PROVIDERS

(Healthcare facility personnel who may need to contact generator fuel suppliers are encouraged to note contact names and information in the spaces below. Given the frequency with which this information changes, this Playbook only includes the main switchboard phone number.)

Amerigas (propane only)

Contact name: Office phone: 401-783-3357, 800-805-0601

Cell phone: Email address:

Fleet Master

Contact name: Office phone: 401-467-8773

Cell phone: Email address:

Gingers

Contact name: Office phone: 401-596-4221

Cell phone: Email address:

Martini Oil

Contact name: Office phone: 401-943-7492

Cell phone: Email address:

Petro Commercial

Contact name: Office phone: 800-645-4328

Cell phone: Email address:

Pier Fuel Oil

Contact name: Office phone: 401-789-9490

Cell phone: Email address:

Sprague

Contact name: Office phone: 401-421-4690

Cell phone: Email address:

Superior

Contact name: Office phone: 401-467-6510

Cell phone: Email address:

Thomas J Malloy

Contact name: Office phone: 401-333-0665

Cell phone: Email address:

Other:

Contact name: Office phone:

Cell phone: Email address:

Other:

Contact name: Office phone:

Cell phone: Email address:

Other:

Contact name: Office phone:

Cell phone: Email address:

Checklist

Make the most of this Playbook before, during and after disasters by keeping these detachable FEMA Facility Manager's Emergency Power Supply System Checklists in an accessible location for all facility personnel.

Table D-1 Checklist for Emergency Planning Prior to Emergency or Disaster for Emergency Power Supply System from FEMA P-1019 Guidebook

1. **Combustion Air Intake and Exhaust Systems**
   - ☐ a. Louvers Operational with no restricted movement and no obstructions
   - ☐ b. Rain cap has no restricted movement
   - ☐ c. Exhaust piping has no foreign object blockage, i.e., bird and rodent nesting, condensation drained
2. **Batteries**
   - ☐ a. Batteries installed in conditioned air space to avoid temperature extremes
   - ☐ b. Interconnecting cables sized to compensate for voltage drop
   - ☐ c. Charging system operational and alarms tested
   - ☐ d. Specific gravity and voltages checked and acceptable
   - ☐ e. Cable connections corrosion free and tight on both ends
3. **Generator set controller**
   - ☐ a. All lock-out faults investigated, corrected, and cleared
   - ☐ b. AUTO start engaged
4. **Output circuit breakers**
   - ☐ a. Closed or ready and able to close if electrically operated
5. **Load cables**
   - ☐ a. Clean and terminations checked for proper spacing and torque
6. **Engine block, generator space heaters, circulating pump(s)**
   - ☐ a. Operational and circulating warm coolant and oil (if equipped with pump)
7. **Fuel Delivery System**
   - ☐ a. Fuel quality tested and storage vessels maintained to prevent water accumulation and bacterial growth
   - ☐ b. Storage vessels, including day tanks, topped to appropriate levels
   - ☐ c. Fuel transfer pumps powered by emergency system and periodically tested
   - ☐ d. Preferred customer agreements in place with fuel suppliers to assure delivery

checklist

Table D-1 Checklist for Emergency Planning Prior to Emergency or Disaster for Emergency Power Supply System from FEMA P-1019 Guidebook

1. **Combustion Air Intake and Exhaust Systems**
   - ☐ a. Louvers Operational with no restricted movement and no obstructions
   - ☐ b. Rain cap has no restricted movement
   - ☐ c. Exhaust piping has no foreign object blockage, i.e., bird and rodent nesting, condensation drained
2. **Batteries**
   - ☐ a. Batteries installed in conditioned air space to avoid temperature extremes
   - ☐ b. Interconnecting cables sized to compensate for voltage drop
   - ☐ c. Charging system operational and alarms tested
   - ☐ d. Specific gravity and voltages checked and acceptable
   - ☐ e. Cable connections corrosion free and tight on both ends
3. **Generator set controller**
   - ☐ a. All lock-out faults investigated, corrected, and cleared
   - ☐ b. AUTO start engaged
4. **Output circuit breakers**
   - ☐ a. Closed or ready and able to close if electrically operated
5. **Load cables**
   - ☐ a. Clean and terminations checked for proper spacing and torque
6. **Engine block, generator space heaters, circulating pump(s)**
   - ☐ a. Operational and circulating warm coolant and oil (if equipped with pump)
7. **Fuel Delivery System**
   - ☐ a. Fuel quality tested and storage vessels maintained to prevent water accumulation and bacterial growth
   - ☐ b. Storage vessels, including day tanks, topped to appropriate levels
   - ☐ c. Fuel transfer pumps powered by emergency system and periodically tested
   - ☐ d. Preferred customer agreements in place with fuel suppliers to assure delivery
8. **Engine oil**
   - ☐ a. Low run time, capable of at least 48-hours continuous run time
   - ☐ b. Level proper
   - ☐ c. Scheduled Oil Sample results reviewed and proper actions taken
   - ☐ d. Spare oil and delivery methods, i.e. funnels, pumps, drum carts, etc. nearby
   - ☐ e. Leaks inspected and corrected
9. **Consumables - 10-day supply (minimum) in on-site storage**
   - ☐ a. Fuel filters
   - ☐ b. Oil filters
   - ☐ c. Air filters
   - ☐ d. Oil
   - ☐ e. Coolant
10. **Local, state, and federal authorities and service organizations**
    - ☐ a. Emergency plans developed
    - ☐ b. Road maintenance crews aware and in agreement that site's public access is critical and shall be maintained at all times to allow emergency vehicle passage
    - ☐ c. Aware and in agreement that fuel delivery and engine generator set parts and service organizations are to be considered and labeled as emergency vehicles with authorized site passage
11. **Communications**
    - ☐ a. Portable cell towers available and capable of being placed and made operational in short time
    - ☐ b. Site two-way radios and cell phones charged and fully operational
    - ☐ c. Site data reception and transmission systems inspected and proper operation tested with remote facilities and personnel
12. **Generator**
    - ☐ a. Windings clean
    - ☐ b. Space heaters operational
    - ☐ c. Bearings properly greased
    - ☐ d. Air intake and exhaust air paths cleaned of dirt, debris and obstructions
13. **Cooling System**
    - ☐ a. Proper levels
    - ☐ b. Leaks inspected and corrected as needed

checklist

D-2 Emergency Power Supply System Checklist for Operating During Emergency from FEMA P-1019 Guidebook

1. Combustion Air Intake

- ☐ a. Louvers Operational with no restricted movement and no obstructions

2. Output Circuit Breakers

- ☐ a. Closed or ready and able to close if electricity operated

3. Fuel Delivery System

- ☐ a. Fuel quality tested and storage vessels maintained to prevent water accumulation and bacterial growth
- ☐ b. Storage vessels, including day tanks, topped to appropriate levels
- ☐ c. Fuel transfer pumps powered by emergency system and periodically tested
- ☐ d. Water separators drained

4. Engine oil

- ☐ a. Level checked periodically and determined proper

5. Consumables – Restock to 10 day supply (minimum) in on-site storage

- ☐ a. Fuel filters
- ☐ b. Oil filters
- ☐ c. Air filters
- ☐ d. Oil
- ☐ e. Coolant

6. Local, State and Federal Authorities and Service Organizations

- ☐ a. Emergency plans implemented

Checklist

D-2 Emergency Power Supply System Checklist for Operating During Emergency from FEMA P-1019 Guidebook

1. Combustion Air Intake

- ☐ a. Louvers Operational with no restricted movement and no obstructions

2. Output Circuit Breakers

- ☐ a. Closed or ready and able to close if electricity operated

3. Fuel Delivery System

- ☐ a. Fuel quality tested and storage vessels maintained to prevent water accumulation and bacterial growth
- ☐ b. Storage vessels, including day tanks, topped to appropriate levels
- ☐ c. Fuel transfer pumps powered by emergency system and periodically tested
- ☐ d. Water separators drained

4. Engine oil

- ☐ a. Level checked periodically and determined proper

5. Consumables – Restock to 10 day supply (minimum) in on-site storage

- ☐ a. Fuel filters
- ☐ b. Oil filters
- ☐ c. Air filters
- ☐ d. Oil
- ☐ e. Coolant

6. Local, State and Federal Authorities and Service Organizations

- ☐ a. Emergency plans implemented
- ☐ b. Road maintenance crews maintaining site's public access
- ☐ c. Fuel delivery and engine generator set parts and service organizations allowed site access
- ☐ d. Service organizations implementing emergency plans to assure effective support staffing is available and capable

7. Communications

- ☐ a. Portable cell towers available and capable of being placed and made operational in short time
- ☐ b. Site two-way radios and cell phones charged and fully operational
- ☐ c. Site data reception and transmission systems properly operating

8. Generator

- ☐ a. Winding temperatures acceptable
- ☐ b. Bearings properly greased
- ☐ c. Air intake and exhaust air paths cleared of debris and obstructions
- ☐ d. Stable output voltage and frequency
- ☐ e. Ensure safe and easy access to Generators, Switchgear, Transfer Switches & Fuel Systems. Make sure that all debris is cleared from around your emergency power generators. Also, move or remove vehicles, trash compactors, containers, and other items that may block access to personnel and service trucks, including fuel providers.
- ☐ f. Behind fuel system problems, cooling system failures are the second most common source of failure during extended run times. Be sure that coolant is topped off to the proper level and that all hoses are free of leaks. Ensure that radiators are free of debris and that the radiator fan is working properly.
- ☐ g. Make sure that generators, switchgear, transfer switches and pumps are all in the On and/or Auto setting.

9. Condition Monitoring

- ☐ a. Receiving data
- ☐ b. Results normal

Checklist

D-3 Emergency Power Supply System Checklist for Recovery Following Emergency from FEMA P-1019 Guidebook

1. Combustion Air Intake and Exhaust Systems

- ☐ a. Louvers closed and no obstructions
- ☐ b. Rain cap closed
- ☐ c. Exhaust piping inspected and drain condensation
- ☐ d. Inspect for wet stacking and develop corrective action plan

2. Batteries

- ☐ a. Charging system operational and alarms tested
- ☐ b. Specific gravity and voltages checked and accepted
- ☐ c. Cable connections corrosion free and tight on both ends

3. Generator set controller

- ☐ a. All lock-out faults investigated, corrected and cleared
- ☐ b. AUTO start engaged

4. Output circuit breakers

- ☐ a. Closed or ready and able to close if electrically operated

5. Load cables

- ☐ a. Cleaned and terminations checked for proper spacing and torque

6. Engine block, generator space heaters, circulating pump(s)

- ☐ a. Operational and circulating warm coolant and oil (if equipped with a pump)

Checklist

D-3 Emergency Power Supply System Checklist for Recovery Following Emergency from FEMA P-1019 Guidebook

1. Combustion Air Intake and Exhaust Systems
- ☐ a. Louvers closed and no obstructions
- ☐ b. Rain cap closed
- ☐ c. Exhaust piping inspected and drain condensation
- ☐ d. Inspect for wet stacking and develop corrective action plan

2. Batteries
- ☐ a. Charging system operational and alarms tested
- ☐ b. Specific gravity and voltages checked and accepted
- ☐ c. Cable connections corrosion free and tight on both ends

3. Generator set controller
- ☐ a. All lock-out faults investigated, corrected and cleared
- ☐ b. AUTO start engaged

4. Output circuit breakers
- ☐ a. Closed or ready and able to close if electrically operated

5. Load cables
- ☐ a. Cleaned and terminations checked for proper spacing and torque

6. Engine block, generator space heaters, circulating pump(s)
- ☐ a. Operational and circulating warm coolant and oil (if equipped with a pump)

7. Fuel delivery system
- ☐ a. Fuel quality tested and storage vessels maintained to prevent water accumulation and bacterial growth
- ☐ b. Storage vessels, including day tanks, topped to appropriate levels

8. Engine Oil
- ☐ a. Change oil and filter(s) and sample as needed
- ☐ b. Level proper

9. Consumables - Re-stock 10 day supply (minimum) in on-site storage
- ☐ a. Fuel filters
- ☐ b. Oil filters
- ☐ c. Air filters
- ☐ d. Oil
- ☐ e. Coolant

10. Local, State and Federal Authorities and Service Organizations
- ☐ a. Emergency plans reviewed and improved
- ☐ b. Road maintenance crews remove debris and repair damage to allow site access
- ☐ c. Service organization emergency plans reviewed and improved

11. Communications
- ☐ a. Portable cell towers retracted, maintained and properly stored
- ☐ b. Site two-way radios and cell phones charged and fully operational
- ☐ c. Site data reception and transmission systems inspected and proper operation tested with remote facilities and personnel

12. Insulation system test conducted and results analyzed to detect erosion
- ☐ a. Space heaters operational
- ☐ b. Air intake and exhaust air paths cleared of debris and obstructions
- ☐ c. Air gap between rotor pole and stator measured at 12:00, 3:00, 6:00, and 9:00 positions, recorded, and analyzed to detect bearing wear or misalignment
- ☐ d. Excitation system inspected and tested
- ☐ e. Voltage regulator connections inspected and properly torqued
- ☐ f. Insulation system test conducted and results analyzed to detect erosion properly operating

13. Cooling System
- ☐ a. Proper levels
- ☐ b. Drain, flush and replace coolant as needed
- ☐ c. Inspect and correct leaks

checklist

15 hours potential time savings
in deployment of FEMA generator enabled by
remote monitoring, automated reporting,
and EPFAT registration.

Timelines for deployment of temporary FEMA generators

to Hospitals with failed generators during disasters WITH and WITHOUT enhanced early notification protocol and WITH and WITHOUT pre-coordination with FEMA (via EPFAT)



Existing

Local & State		FEMA		Total Time
04 : 15	+	13 : 00	=	17 : 15
10 : 00		28 : 00		38 : 00
4 hrs 15 mins to 10 hrs Mechanical issue unfolds. Official State request for FEMA temp power support.		13 hrs to 28 hrs State provides temp power tasking. Generator installed and verified.		17 hrs 15 mins to 38 hrs Mechanical issue unfolds. Generator installed and verified.

0% Time Savings

Range of hours needed for deployment of FEMA generator following onset of mechanical problem with no early warning to government officials of threat to emergency power by hospital and no pre-coordination with FEMA.

Better

Local & State		FEMA		Potential Time Savings
01 : 15	+	10 : 00	=	11 : 15
1 hr 15 mins potential time savings for official request for FEMA replacement of failed generator.		10 hrs potential time savings for FEMA deployment with EPFAT registration.		11 hrs 15 mins potential time savings for FEMA deployment via email/phone/text and EPFAT registration.

30% Time Savings

Time savings for deployment of FEMA generator based on early warning of ESF-8 chain of command of threat to emergency power by hospital **via text, email or phone** call and hospital registration in FEMA's online Emergency Power Facility Assessment Tool (EPFAT).

Best

Local & State		FEMA		Potential Time Savings
05 : 00	+	10 : 00	=	15 : 00
5 hrs potential time savings for official request for FEMA replacement of failed generator.		10 hrs potential time savings for FEMA deployment with EPFAT registration.		15 hrs potential time savings for FEMA deployment via remote monitoring and EPFAT registration.

40% Time Savings

Time savings for deployment of FEMA generator based on early warning of ESF-8 chain of command of threat to emergency power by hospital **via real time Remote Monitoring** notification and hospital registration in FEMA's online EPFAT tool.

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Accelerating timeline for deployment of FEMA temporary power through enhanced protocols and remote monitoring technology

Existing

Typical Local & State Process

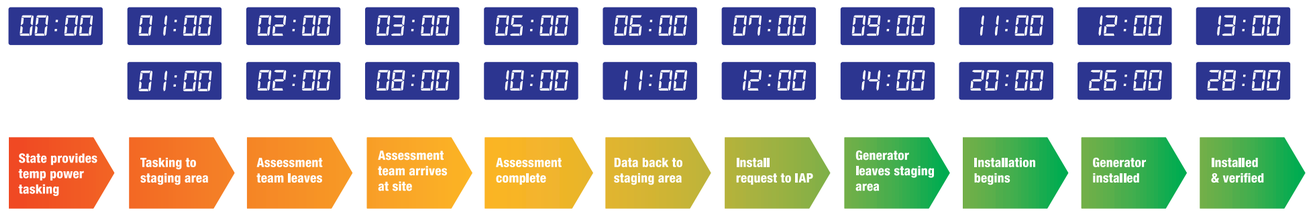
Estimated timeline and sequence of events associated with mechanical or other threat to emergency power supply system that results in request for FEMA deployment of temporary power.

Total time frame: 4 hours 15 minutes to 10 hours.

Typical FEMA Deployment

Install milestone events & timeline estimates with no EPFAT registration based on FEMA projections

Total time frame: 13 hours to 28 hours.

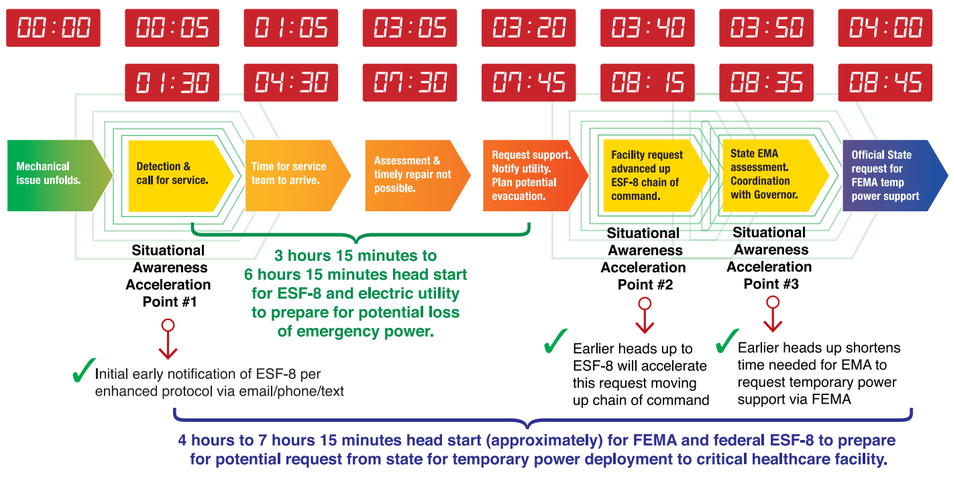


Better

Early Notification via email/phone/text

Accelerated notification of ESF-8 chain of command enabled by enhanced early warning protocol.

Total time frame: 4 hours to 8 hours 45 minutes.

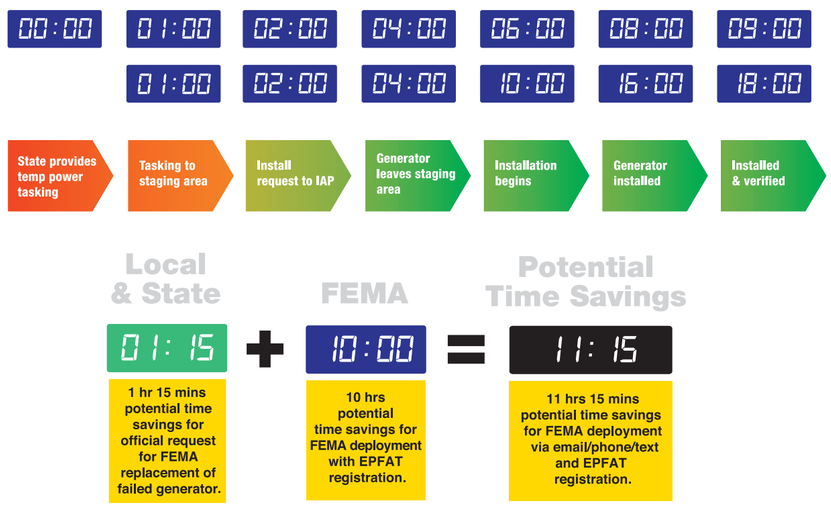


EPFAT Accelerated Deployment

Install milestone events & timeline estimates with EPFAT registration based on FEMA projections

Total time frame: 9 hours to 18 hours.

4 hours to 10 hours potential time savings with EPFAT registration.

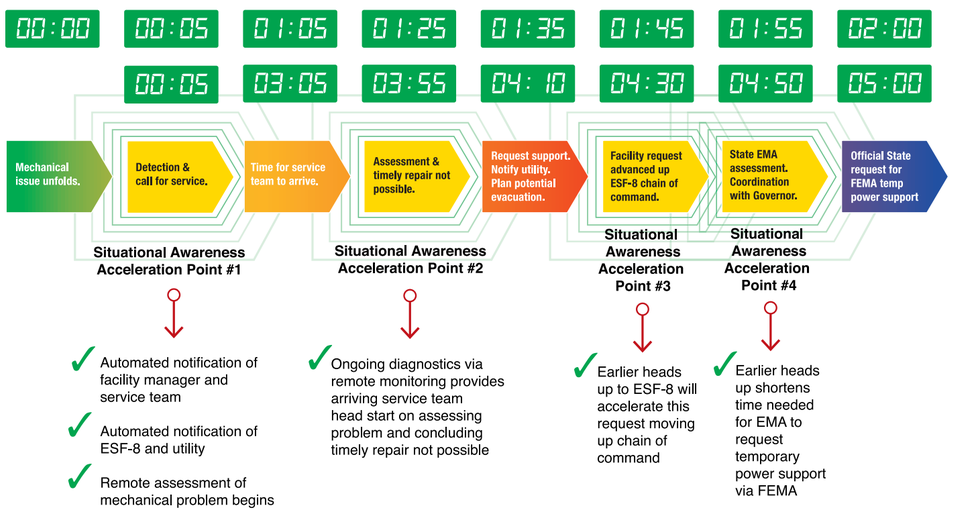


Best

Early Notification via Remote Monitoring

Accelerated notification of ESF-8 chain of command enabled by <u>remote</u> <u>monitoring</u> and <u>automated</u> <u>reporting</u>.

Total time frame: 2 hours to 5 hours.

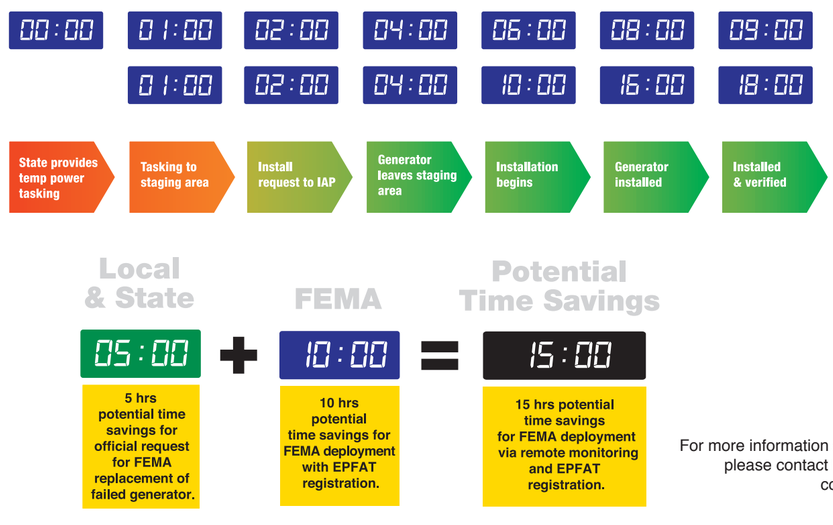


EPFAT Accelerated Deployment

Install milestone events & timeline estimates with EPFAT registration based on FEMA projections

Total time frame: 9 hours to 18 hours.

4 hours to 10 hours potential time savings with EPFAT registration.



Estimated timelines for the local and state sequence of events shown in info graphic are based on projections from Powered for Patients. Estimated timelines for the FEMA sequence of events are based on FEMA estimates.

For more information about Powered for Patients, please contact Project Director Eric Cote at cote@poweredforpatients.org or at 202-810-0125.

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