



**EMERGENCY MEDICAL  
SERVICES AGENCY**  
LOS ANGELES COUNTY



# Los Angeles County Healthcare Facility Emergency Power Resilience Playbook

A New Resource to Safeguard Emergency Power During Power Outages

First Edition

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Approved:

*Richard Tadd*

First Edition

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# Introduction

The Los Angeles County (LAC) Emergency Medical Services (EMS) Agency has developed this *Healthcare Facility Emergency Power Resilience Playbook* as a resource to help safeguard emergency power in hospitals and sub-acute skilled nursing facilities (SNFs) located in Los Angeles County.

The Playbook is a central outcome of a multi-year emergency power preparedness initiative launched by the LAC EMS Agency in 2019 to ensure that LAC and its municipalities, along with its electric utilities and critical healthcare facilities, are employing best practices in minimizing threats to emergency power and accelerating response when threats arise during power outages. The occurrence of Public Safety Power Shutoffs to mitigate wildfire threats has underscored the importance of the initiative.

This Playbook details best practices in safeguarding emergency power and introduces protocols developed by the LAC EMS Agency, with input from the Emergency Power Resilience Work Group, a team convened by the EMS Agency that includes representatives from hospitals, skilled nursing facilities, and the emergency power industry. The protocols are intended to accelerate emergency power threat reporting to expedite response to a facility facing a threat during an outage. An expedited response may include the potential deployment of temporary government generators and the initiation of evacuation support protocols. Early warning will also accelerate service providers' response and, when possible, hasten prioritized power restoration.

The threat reporting protocols introduced in the Playbook, which are suggested but not mandated, do not replace mandated California Department of Public Health (CDPH) emergency power status reporting [requirements](#). The LAC EMS Agency serves as the Medical Health Operational Area Coordinator (MHOAC) for LAC, providing a point of alignment between the Playbook's new emergency power status reporting protocols and the CDPH requirements.

The Playbook introduces the Emergency Power System Assessment and Benchmarking Worksheet. The LAC EMS Agency developed this resource, also with input from the Emergency Power Resilience Work Group, to help hospitals identify potential vulnerabilities in their emergency power system and facilitate a critically important discussion about steps needed to close any gaps. A similar assessment tool was developed for sub-acute SNFs. In California, a sub-acute SNF is a long-term care facility licensed to provide life-support care to patients. Sub-acute SNFs face federal emergency power requirements like those of a hospital. California Assembly Bill (AB) 2511, enacted in 2022, reinforces federal emergency power requirements by, in part, requiring SNFs to have emergency power resources capable of maintaining safe indoor air temperatures in patient care areas during a power outage for a period of up to 96 hours. Safe indoor air temperatures are defined as temperatures between 71 and 81 degrees. Few SNFs have emergency power systems large enough to connect air conditioning equipment to emergency power, a reality that will require many SNFs to make significant investments in emergency power to comply with AB 2511. SNFs are encouraged to protect whatever investments will be required to comply with AB 2511 by implementing the best practices detailed in this Playbook.

The LAC EMS Agency wishes to acknowledge the important contributions of the following stakeholders for their valued support of the Agency’s emergency power preparedness initiative and their significant contributions to this Playbook. Among those acknowledged are individuals that served on the Emergency Power Industry Work Group, convened in January 2020 to facilitate discussion and planning between the LAC EMS Agency and leading generator service, fuel, and rental providers. The collective effort among all stakeholders will enhance protection for the citizens of Los Angeles County and visitors who depend on the availability of critical healthcare services during power outages.

- California Association of Health Facilities (CAHF) and its members
- City of Long Beach Emergency Management Division
- City of Los Angeles Department of Water and Power (LADPW)
- City of Los Angeles Emergency Management Department
- Emergency Power Resilience Work Group Members, including:
  - Charlie Chiang, Pomona Valley Hospital Medical Center
  - Scott Cossey, Henry Mayo Newhall Hospital
  - Stephen Cuthbertson, Norwalk Community Hospital
  - Jason Dunson, Adventist Glendale Hospital
  - Michael Garcia, St. Francis Medical Center
  - Roger Garlick, Providence Cedars-Sinai Tarzana Medical Center
  - Eduardo Gonzalez, East Los Angeles Doctors Hospital
  - Alfredo Navarrete, Lakewood Regional Medical Center
  - Rene Padilla, Martin Luther King Jr. Community Hospital
  - Tim Plumb, USC Arcadia Hospital
  - Adam Richards, Kaiser Permanente Los Angeles
  - Mark Rojas, Cedars-Sinai Medical Center
  - Angela Sharma, Emanate Health Hospitals – Queen of the Valley, Inter-Community, and Foothill Presbyterian
  - Steven Stevens, Memorial Care Long Beach Medical Center
  - Ryan Tuchmayer, Cedars-Sinai Medical Center
  - Bruce Woockman, St. Francis Medical Center
- Facility directors and emergency management officers at hospitals participating in the U.S. Department of Health and Human Services Hospital Preparedness Program
- Hospital Association of Southern California (HASC) with special thanks to ReddiNet® staff
- Los Angeles County Office of Emergency Management
- Los Angeles County Public Health Department
- Powered for Patients
- Southern California Edison®

- Emergency Power Industry Work Group members, including:
  - Peter Bauman, Aggreko Rentals
  - Rick Boatman, SC Fuels
  - Dewey Brunson, Duthie Power Services
  - Eric Cote, Powered for Patients
  - Terry Crammer, LAC EMS Agency
  - Lee Dao, Quinn Power
  - Efrain Davalos, California Fuels & Lubricants
  - Rose Dominguez, Hospital Association of Southern California
  - Cathy Donley, Affordable Generator Services
  - April Galindo, Sunbelt Rentals
  - Greg Gardner, Collicutt/MTU Service
  - Walter Holt, Quinn Power
  - Robin LaFerrara, SC Fuels
  - Dave Lewis, Quinn Power
  - Jake Lewis, Quinn Power
  - Mary Massey, California Hospital Association
  - Marc Montano, SC Fuels
  - Paul Ortis, LAC Internal Services Division
  - Ashu Palta, LAC Office of Emergency Management
  - Soraya Peters, Hospital Association of Southern California
  - Laura Reichelt, Wood Oil Company
  - Gregg Ryan, Amber Industrial Services
  - Andrew Salem, Valley Power Services
  - Chris Sandoval, LAC EMS Agency
  - Jim Schachner, Collicutt/MTU Rental
  - George Villasenor, Dixie Diesel
  - Bill Wood, Wood Oil Company
  - Scott Zeigler, California Fuels & Lubricants



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# How to Use this Playbook

This Playbook was developed as a practical resource for Los Angeles County stakeholders with responsibilities for safeguarding emergency power at hospitals and sub-acute SNFs and assisting these facilities when threats to emergency power arise during a power outage. These stakeholders, as denoted by the icons shown below and throughout the Playbook, include:

- Hospital and sub-acute SNF personnel, including facility directors and engineering department staff, emergency management officers, and administrators
- Government agencies with responsibilities for supporting hospitals and sub-acute SNFs during power outages, including those with access to temporary emergency power assets and those charged with providing evacuation support
- Generator service, fuel, and rental providers
- Electric utility providers



Playbook content is organized through the following four-phase planning and operational continuum:



The content for each Phase contains a brief overview followed by sequential action items for key stakeholders. These instructions relating to emergency power threat reporting and the process for requesting temporary emergency power support reflect best practices and, in some cases, protocols developed by the LAC EMS Agency with input from the Emergency Power Resilience Work Group. A Summary Checklist of Key Stakeholder Responsibilities is provided at the end of each Phase. Playbook users should consider laminating additional copies of those pages, making them an easy-to-reach resource before, during, and after power outages. At a minimum, these checklists should be copied and incorporated into a facility’s Emergency Operations Plan (EOP).

A number of **Power Safety Tips** are included throughout the Playbook to provide important safety information relating to emergency power operations, generator testing, and power restoration procedures. **Power Reliability Tips** are also included to offer best practices for emergency power reliability, post-disaster review of emergency power systems, and communications protocols between facilities and electric utilities.

Relevant background information is provided in the Appendix to help individuals using this Playbook understand the rationale for recommended best practices and new protocols. Among its many resources, the Appendix contains the Emergency Power System Assessment and Benchmarking Worksheet for hospitals and removable checklists reflecting FEMA guidance to help facility managers and their team safeguard emergency power before, during, and after power outages. Posting these checklists in visible locations will facilitate use and easy access for the facility maintenance staff.

Stakeholders should carefully review this Playbook before an event, so they are fully aware of and ready to fulfill their responsibilities in assisting hospitals and sub-acute SNFs in continuing operations while relying on emergency power.

The notice of initial publication of the Playbook and electronic copy of the Playbook was sent to the California Hospital Association, Hospital Association of Southern California, California Association of Health Facilities, California Department of Public Health, Health Facility Inspection Division, LAC Public Health, and all hospitals and skilled nursing facilities in Los Angeles County. This Playbook is published on the LAC EMS Agency website so the Agency can make periodic updates and facilities and other stakeholders have easy online access to this critical resource. Along with the online PDF of the entire Playbook, templated Appendix sections are provided as downloadable Word files to facilitate use by hospitals and sub-acute SNFs. All Hospital Preparedness Program participating hospitals received printed copies of the Playbook in September of 2023; additional documents can be downloaded and placed in three-ring binders for distribution to appropriate personnel to be used as a resource before, during, and after power outages.

**NOTE:** Each facility is responsible for updating the Playbook when the LAC EMS Agency provides updated content. In addition, facilities that adopt other policies and best practices to safeguard emergency power are encouraged to incorporate these best practices, along with the protocols and best practices introduced in the Playbook, into their emergency operation plan. Facilities are also encouraged to provide training to help their staff implement all new emergency power resilience policies and best practices.



# Phase I – Vulnerability Assessment

This section of the Playbook details important responsibilities for stakeholders in assessing emergency power system vulnerabilities and initiating planning efforts to address vulnerabilities. These responsibilities primarily fall on hospitals, sub-acute SNFs, and their generator service providers.

## Key Stakeholder Responsibilities

### Facility Directors

#### Action Item – Complete Emergency Power System Assessment and Benchmarking Worksheet



Hospital facility directors should complete the **Emergency Power System Assessment and Benchmarking Worksheet**, located in [Appendix B](#). This resource will assist hospitals in assessing the state of their emergency power system. The worksheet for hospitals includes a benchmarking section that enables hospitals in LAC to compare their emergency power system to other hospitals based on anonymized and aggregated information from the census of hospital emergency power systems conducted by the LAC EMS Agency in 2021. Currently, benchmarking data is unavailable for sub-acute SNFs in LA, so these facilities should use the **Emergency Power System Assessment Worksheet for sub-acute Skilled Nursing Facilities**, located in [Appendix C](#).

The Worksheets include a series of questions that help highlight strengths and potential vulnerabilities. They also provide mitigation tips reflecting best practices to close any gaps. The Worksheets should be completed initially by the facility director or a member of their team and then used to guide the [Emergency Power System Review](#) discussion among facility directors, emergency management officers, and administrators (see page 12 for details on the Emergency Power System Review discussion).

### Emergency Management Officers

#### Action Item 1 – Confirm Which Risk Tier the Facility’s Emergency Power System Has Been Placed in by the LAC EMS Agency (for hospitals only)

To facilitate faster response to hospitals more likely to need deployment of temporary emergency power assets, and to prioritize refueling or evacuation assistance during a power outage, the LAC EMS Agency has developed a two-tiered, **confidential** risk classification for hospitals in LAC. The risk tiers were developed based on information provided by hospitals for the EMS Agency’s emergency power system census.

The two tiers, and the criteria that place a hospital on a tier, are as follows:

**Tier 1** – The facility has ample emergency power resources and no issues of concern relating to generator age, limited fuel capacity, or lack of redundant emergency power.

**Tier 2** – Facilities meet one or more of the following conditions:

- Single generator hospitals (which by definition have no redundant source of emergency power)
- Hospitals with less than 48 hours of generator run time-based on onsite fuel storage capacity
- Hospitals with single or two-generator emergency power systems where one or both generators are in excess of 30 years of age

A hospital with a Tier 2 emergency power system classification has different generator status reporting requirements than a Tier 1 facility. These requirements are noted in the Required ReddiNet Reporting Table located in [Appendix G](#). A hospital's Emergency Management Officer (EMO) can obtain the facility's confidential risk tier status by contacting the LAC EMS Agency Disaster Resource Center Program Manager. The **Emergency Power System Assessment and Benchmarking Worksheet**, located in [Appendix B](#), details strategies hospitals can take to improve their emergency power system's capacity to operate continuously during a prolonged power outage. These steps may enable a facility to move off the higher-risk Tier 2 classification. Since no census has been conducted of sub-acute SNF emergency power systems, the two-tiered risk rating only applies to hospitals at this time. However, all sub-acute SNFs in LAC are urged to follow the same reporting requirements as a Tier 2 hospital.

### Action Item 2 – Evaluate Communication Protocols Around Generator Testing, Operations and Failures of Emergency Power

The EMO should verify that pre-generator test notification procedures are in place, including advance warning of clinical staff one or more days prior to the scheduled test and final confirmation by a member of the engineering department with the surgery department before a generator test is initiated. The final check-in prior to initiating a generator test will ensure that no test is initiated when an emergency surgery is taking place. The EMO should also review protocols to ensure that procedures are in place governing how any threat to emergency power during an outage, including a partial or total loss of emergency power, will be communicated to clinical staff and administrators by members of the engineering staff.<sup>1</sup>

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<sup>1</sup> Eric Cote, the contractor who authored this Playbook, was hired as an expert witness in a wrongful death case involving a patient in a west coast hospital who died while undergoing an emergency surgical procedure due to the failure of a generator being tested that supplied power to the operating room. In this case, the hospital's engineering staff failed to conduct a final check-in with the surgical department to verify that no surgeries were underway before the test was initiated.



**Power Safety Tip** – Prior to initiating a generator test, be sure a member of the engineering department contacts the surgical unit to ensure that no unexpected emergency surgeries are underway. If emergency surgeries are underway, the test should be postponed.

## Facility Administrators

### Action Item – Assess Emergency Operations Plan Pertaining to Emergency Power and Address Gaps

Facility administrators should be very familiar with their facility’s Emergency Operations Plan and the responsibilities of various personnel during an emergency situation, including communications protocols governing emergency power testing and operations. As the facility’s EMO evaluates communications protocols around generator testing and operations, the administrator should work closely with the EMO to stay abreast of any identified gaps and engage in discussions about closing those gaps.

## Government Officials



### Action Item – Review Playbook in its Entirety

The bulk of responsibility for Phase I’s Vulnerability Assessment activities falls to hospitals and sub-acute SNFs. However, it’s essential for all government agencies responsible for supporting hospitals and sub-acute SNFs during emergencies to review this Playbook in its entirety to become familiar with their increased responsibilities throughout each phase.

## Generator Service, Fuel, and Rental Providers



### Action Item – Support Clients in Completing Emergency Power System Assessment Worksheets

Generator service, fuel, and rental providers play an important role in safeguarding emergency power at critical healthcare facilities. They are these facilities’ primary resources in conducting scheduled maintenance and their first line of defense when a serious threat to emergency power arises during a power outage. As such, they can play an important role in assisting their clients in completing portions of the **Emergency Power System Assessment Worksheets** and highlighting any known mechanical problems with an emergency power system that have not yet been rectified. Facilities may need assistance from their generator service provider in answering other Worksheet questions about any scheduled or recommended service a facility should undertake over the next 12-month period. Service providers may wish to offer this support proactively.

## Electric Utility Providers

### Action Item – Review Playbook and Adjust Protocols As Needed to Align with Playbook Protocols

As detailed in [Appendix H](#), Southern California Edison and LADWP have existing protocols in place to guide communications and coordination between the utilities and their hospital and sub-acute SNF customers during power outages. The LAC EMS Agency protocols introduced in this Playbook do not supplant utility protocols in any way. However, SCE and LADWP, and LAC’s other three municipal-operated utilities, Burbank Water & Power, Glendale Water & Power, and the Pasadena Water & Power Department, are encouraged to review this Playbook in its entirety. Doing so will give utilities an understanding of the temporary emergency power resources owned by LAC and the cities of Long Beach and Los Angeles. This information could influence decisions by the utilities on the deployment of any temporary emergency power assets to which they have access.

A review of the Playbook will also give utilities a clear understanding of the new emergency power threat reporting protocols in place for hospitals and sub-acute SNFs during power outages. The protocols are intended to protect patients by minimizing the risk of an emergency evacuation triggered by an emergency power failure. An essential piece of information needed to inform evacuation decisions for a facility facing an emergency power threat during an outage will be a utility’s estimated time of restoration (ETR). Ensuring that facilities have the most up-to-date ETR is a critical task for a utility. This information will not only be critical for the facility but also for officials from the LAC EMS Agency and the LAC Public Health Department during situations in which either or both agencies are working closely with impacted hospitals and sub-acute SNFs to assist with evacuation decision-making.



**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 run time.

## Summary Checklist of Key Stakeholder Responsibilities



Phase I – Vulnerability Assessment	
Stakeholder	Key Responsibility
Facility Director/Staff for Hospitals and sub-acute SNFs	Action Item 1 – Review Playbook in its entirety Action Item 2– Complete Emergency Power System Assessment Worksheets
Emergency Management Officer	Action Item – 1 – Review Playbook in its entirety Action Item 2- Determine which risk tier the hospital’s emergency power system has been assigned to by the LAC EMS Agency Action Item 3 – Evaluate communication protocols around generator testing, operations, and failures of emergency power
Facility Administrator	Action Item – 1 – Review Playbook in its entirety Action Item 2 - Work with the emergency management officer to assess Emergency Operations Plan pertaining to emergency power and address gaps
Government Officials	Action Item – Review Playbook in its entirety
Generator Service, Fuel, and Rental Providers	Action Item – 1 – Review Playbook in its entirety Action Item 2 – Support clients in completing Emergency Power System Assessment Worksheets
Electric Utility Providers	Action Item - Review Playbook in its entirety and adjust protocols as needed to align with Playbook protocols



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# Phase II – System Fortification & Mitigation Planning

This section of the Playbook provides practical information to help facilities safeguard emergency power by addressing known vulnerabilities identified during Phase I – Vulnerability Assessment. This section also introduces emergency power status reporting protocols and procedures for requesting the deployment of temporary government generators when emergency power is threatened during a power outage.

## Key Stakeholder Responsibilities

### Facility Directors

#### Action Item 1 – Hold Emergency Power System Review Discussion

One of the most important emergency power planning and mitigation steps hospitals and sub-acute SNFs can take is to schedule an Emergency Power System Review discussion, a recommendation developed by the LAC EMS Agency based on input from the Emergency Power Resilience Work Group.



This discussion, which can be held as a standalone meeting or be incorporated into existing meetings among senior leaders, will allow hospital leadership to discuss their emergency power system’s risk classification from the LAC EMS Agency and also help hospitals and sub-acute SNFs make the most of the Emergency Power System Assessment Worksheets (completed during Phase I’s Vulnerability Assessment activities). This important discussion will help ensure that senior leaders are aware of any vulnerabilities and can more effectively advocate for the resources necessary to close any serious gaps. The discussion should be scheduled shortly after the facility director, or a qualified individual has completed the Worksheet. Discussion participants should include the facility director, emergency management officer, and an administrator. The Worksheet should serve as a guide for this discussion and copies of the completed Worksheet should be provided to each attendee prior to the conversation.

#### Action Item 2 – Develop Mitigation Strategy to Address Emergency Power System Vulnerabilities

An essential outcome of the Emergency Power System Review discussion should be an initial mitigation strategy to address the most pressing emergency power system vulnerabilities. The facility director should take the lead in developing this strategy which should include an initial estimate of the resources needed to close the most urgent gaps, a timeline for implementation, and a delineation of specific responsibilities shared among the facility director, emergency management officer, and administration. Following this initial discussion, subsequent Emergency Power System Review discussions should take place annually or as needed if a policy change is made or operational approaches are modified.

### Action Item 3 – Conduct a Pre-Outage Review of the Emergency Power System Using the FEMA Checklist

Facility directors and their staff should conduct a review of their emergency power system prior to a power outage using FEMA’s D-1 Emergency Power System Checklist, located in [Appendix N](#). This vital step will help ensure that an emergency power system is ready to operate when called upon. Facilities may find it helpful to use the checklist during a facility’s weekly or monthly generator testing.

## **Emergency Management Officers**

### Action Item 1 – Participate in Emergency Power System Review Discussion

It is essential that the EMO participate in the Emergency Power System Review discussion with the facility director and the administrator and follow up on any assigned responsibilities arising from this conversation. Among the topics the EMO should raise during this discussion is a facility’s emergency power system risk tier (for hospitals). Discussion should address steps that could be taken to enhance the emergency power system’s capability to operate continuously during an extended power outage. These steps, which could include replacing outdated generators, increasing the number of generators, or increasing on-site fuel storage capabilities, could move a facility off Tier 2. In situations in which the EMO is unfamiliar with the facility’s emergency power system, they may find it helpful to observe the facility management team during the initial use of the FEMA Checklist D-1 for Emergency Power Planning Prior to a Power Outage.

## **Facility Administrators**

### Action Item 1 – Participate in Emergency Power System Review Discussion

The administrator’s primary responsibility during this phase is participating in the Emergency Power System Review discussion with the facility director and the emergency management officer. The administrator should request a briefing on communications protocols around emergency power testing and threats to emergency power during outages. The LAC EMS Agency recognizes that facility administrators do not have the time to become steeped in the details of their facility’s emergency power system. The Playbook recommends increasing administrator awareness of a facility’s emergency power system to boost leadership understanding of any serious shortcomings and enlist their support in closing any gaps.

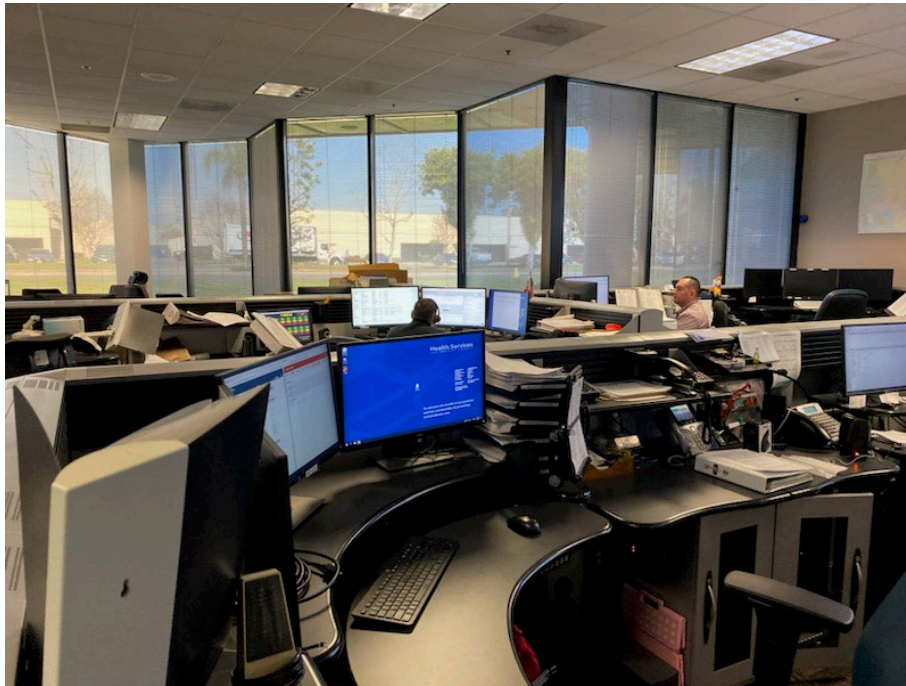
### Action Item 2 – Secure Resources to Address Emergency Power System Vulnerabilities

The administrator needs to engage with facility leadership to promptly secure the necessary resources to address any serious emergency power system vulnerabilities. The facility administrator should also follow up periodically with the facility director to monitor progress in addressing emergency power system vulnerabilities and provide support to overcome any obstacles. When the administrator is unfamiliar with the facility’s emergency power system, they may find it helpful to observe the facility management team during the initial use of the FEMA D-1 Checklist for Emergency Power Planning Prior to a Power Outage.

## Government Agencies

### Action Item – Review Responsibilities for Assisting Hospitals and Sub-Acute SNFs During Power Outages

As hospitals and sub-acute SNFs ramp up their emergency power system fortification and mitigation planning, government agencies responsible for assisting facilities must be ready to fulfill the obligations detailed in this Playbook. The LAC EMS Agency has taken on several responsibilities with the publication of this Playbook, including coordinating requests for temporary emergency power from hospitals. To assist the LAC EMS Agency in fulfilling this responsibility, enhanced ReddiNet features to support accelerated emergency power threat reporting and requests for deployment of government generators have been developed. The LAC EMS Agency’s Medical Alert Center (MAC) has also taken on additional responsibilities, including monitoring emergency power status reports via ReddiNet and notifying appropriate county officials if any severe threats arise or if requests for deployment of temporary government generators are made. Internal training is being developed to help familiarize staff with these responsibilities.



LAC EMS Agency Medical Alert Center located in Santa Fe Springs, California.

## Generator Service, Fuel, and Rental Providers



### Action Item – Support Client Efforts to Address Emergency Power System Vulnerabilities

Generator service providers can actively assist their hospital and sub-acute SNF clients in addressing emergency power system vulnerabilities identified during the assessment. This engagement may include providing detailed cost estimates for system upgrades, identifying overdue maintenance, and assisting in completing this work.

Generator rental and fuel providers should be mindful that some facilities may need to execute contracts with them as part of System Fortification and Mitigation Planning work.



**Power Reliability Tip** – Many hospitals across the country have increased their footprint through major expansions over the span of decades. These expansions often result in new electrical and emergency power assets being added to the new section of the facility and connected to original and oftentimes outdated electrical distribution equipment. This mismatch between new and old can cause a number of problems, including the inability to effectively distribute the new source of emergency power to older sections of the building. Adding new emergency power capabilities to a facility is generally always a good step but an even more prudent step would be working with a qualified mechanical, electrical, and plumbing (MEP) engineer to design the expansion in a way that also modernizes key components of the electrical distribution system.

# Summary Checklist of Key Stakeholder Responsibilities



Phase II – System Fortification & Mitigation Planning	
Stakeholder	Key Responsibility
Facility Director/Staff for Hospitals and sub-acute SNFs	<p>Action Item 1 – Schedule and lead Emergency Power System Review discussion</p> <p>Action Item 2 – Develop a mitigation strategy to address emergency power system vulnerabilities</p> <p>Action Item 3 – Conduct a pre-outage review of the emergency power system using FEMA D-1 Checklist (<a href="#">See Appendix N</a>)</p>
Emergency Management Officer	Action Item – Participate in Emergency Power System Review discussion
Facility Administrator	Action Item – Participate in Emergency Power System Review discussion
Government Officials	Action Item – Review responsibilities for assisting hospitals and sub-acute SNFs during power outages outlined in Playbook
Generator Service, Fuel, and Rental Providers	Action Item – Support client efforts to address emergency power system vulnerabilities

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## Phase III – Rapid Threat Response

During an ongoing power outage, generator status reporting requirements developed by the LAC EMS Agency will come into play. The potential also exists for a facility to request the deployment of a temporary generator from the LAC EMS Agency through the resource request process via ReddiNet. Details on status reporting requirements and resource requests are outlined below. Additional detail on status reporting requirements is provided in [Appendix G](#). A prolonged power outage presents the greatest risk for failures of emergency power. As such, a review of the emergency power system during an outage, using [FEMA’s D-2 emergency power system checklist](#), is an essential step for facility directors and their teams.

### Key Stakeholder Responsibilities

#### Facility Directors

##### Action Item 1 – Conduct a Review of the Emergency Power System Using the FEMA Checklist



Facility directors and their staff should review their emergency power system amid an ongoing power outage using FEMA’s D-2 Checklist for Emergency Power Planning During Power Outage, located in [Appendix O](#). This critical step will help ensure that an emergency power system can continue operating when it faces its greatest challenge.

##### Action Item 2 – Keep Emergency Management Officer and Other Key Staff Apprised of Emergency Power Status

The emergency power status reporting protocols introduced by the LAC EMS Agency in this Playbook call upon a facility’s EMO to ensure that a facility’s emergency power status can be provided via ReddiNet within 30 minutes of a power outage, or as soon as practical. In addition, when the following triggering events occur, additional status reporting is required:

- A mechanical problem with a generator that requires a call for service (only applies to Tier 2 hospitals and sub-acute SNFs)
- A further drop in available clinical services
- Fuel levels falling below 24 hours of remaining run time

The EMS Agency recognizes that EMO’s may not be able to provide the status update given other obligations during an emergency situation. To ensure a facility’s ability to provide timely emergency power status updates, multiple personnel should receive access to ReddiNet along with the training needed to make timely emergency power status reports. Good candidates for this backup emergency power status reporting role include the facility director, a senior member of the engineering staff, the administrator, or the incident commander.



See [Appendix G](#) for additional detail on the emergency power status reporting requirements. An EMO, or other designated personnel, can only fulfill these critical reporting requirements if the facility director or an engineering staff member provides frequent updates on emergency power status.



**Power Safety Tip** – If your facility’s emergency power 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 normally would be powered by backup generators.



**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.

## Emergency Management Officers

### Action Item 1 – Provide Emergency Power Status Updates via ReddiNet

As previously noted, emergency power status reporting protocols require a facility’s EMO to ensure that the facility’s emergency power status can be provided via ReddiNet within 30 minutes of a power outage, or as soon as practical. In addition, the triggering events delineated previously will require status updates from the facility via ReddiNet.

### Action Item 2 – Request Deployment of Temporary Generators from LAC EMS Agency (If necessary)

In rare situations when a facility needs to request deployment of a temporary generator from the LAC EMS Agency, facilities should submit a resource request via ReddiNet. If ReddiNet is unavailable, use the LAC EMS Agency Medical and Health Resource Request form, see [Appendix Q](#).



NOTE: Facilities are reminded that these generators can only be obtained if they are available and if a facility has been unable to secure a generator on its own. Larger healthcare systems may have access to temporary generators that they can deploy to their facilities. In addition, facilities are reminded that LAC and the cities of Los Angeles and Long Beach do not have cabling for these generators or licensed personnel that can install them. As such, facilities should be prepared to secure cabling and installation expertise from private sector service providers. Installation of a quick connect device should also be considered as this will enable faster connection of a temporary generator.



**Power Reliability Tip** – The best way for a healthcare facility to guarantee access to a temporary private-sector generator during a power outage is to execute a contract with a rental provider that guarantees delivery of temporary generators.

## Facility Administrators

### Action Item – Maintain Situational Awareness of Emergency Power Status

During an extended power outage, facility administrators will likely be playing an active role in implementing their facility’s Emergency Operations Plan. During this process, the administrator should maintain situational awareness of the emergency power system status through near-constant communications with the EMO and the facility director.

If a facility requests the deployment of a temporary generator from the LAC EMS Agency, the administrator will need to sign off on this request. Facilities should only submit a request to LAC EMS Agency for a generator when unable to obtain one in the private sector.

## Government Agencies

### Action Item – Actively Monitor Emergency Power Status Reporting via ReddiNet

During an extended power outage, officials at the LAC EMS Agency’s MAC will be actively monitoring ReddiNet for emergency power status reports from hospitals and sub-acute SNFs, including details about whether a facility’s reliance on emergency power triggers a drop in available clinical services below reduced levels expected when operating on emergency power, i.e., further reductions in CT and MRI imaging capabilities, surgical capacity, etc. Should this occur, a facility may ask the LAC EMS Agency to place them on diversion, a request that can only be approved by the MAC.

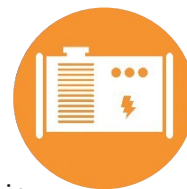


Continued monitoring of ReddiNet will alert MAC personnel to any changes in emergency power status that trigger an elevation of a facility’s risk rating. This development may prompt further engagement between LAC EMS Agency officials and the impacted facility. During large-scale events that result in a surge of monitoring and coordination activity at the MAC, it may not be possible for MAC personnel to be continuously aware of changes in a facility’s generator status (reflected as color changes in the new generator pill that has been incorporated into ReddiNet to facilitate the new generator threat reporting protocols). As such, anytime a facility is concerned that a threat to emergency power could affect its ability to continue operations, the facility should contact the MAC by phone **(866-940-4401)**.

## Generator Service, Fuel, and Rental Providers

### Action Item – Maintain Disaster Response Posture

During an extended power outage, most generator service, fuel, and rental providers have contingency plans to keep up with the increased demand for services that a prolonged outage will trigger from hospitals and sub-acute SNFs in LAC. As the duration of an outage grows and the potential for shortages of generators and fuel increases, industry providers should be prepared to work with officials in county government if a coordinated response to a facility is needed.



## Electric Utility Providers

### Action Item – Provide Timely Updates to Hospitals and Sub—Acute SNFs on the Estimated Time of Restoration



As mentioned, it's crucial that electric utility providers in LAC furnish their critical healthcare facility customers with the latest estimated restoration time in the event of a power outage. In cases where a primary or backup feeder line can serve critical healthcare customers, utilities should determine whether the outage impacts the backup line. In situations where the outage does not affect the backup feeder line, utilities should prepare to switch a customer to their backup feeder line if any threat to emergency power arises that would necessitate such a switch. This information will be vital in evacuation decisions, particularly if a facility risks losing emergency power during an outage.

# Summary Checklist of Key Stakeholder Responsibilities



Phase III – Rapid Threat Response	
Summary Checklist of Key Stakeholder Responsibilities	
Stakeholder	Key Responsibility
Facility Director/Staff for Hospitals and sub-acute SNFs	<p>Action Item 1 – Conduct a review of the emergency power system using the FEMA D-2 Checklist (located in <a href="#">Appendix O</a>)</p> <p>Action Item 2 – Keep Emergency Management Officer, or other designated personnel, apprised of emergency power status</p>
Emergency Management Officer	<p>Action Item 1 – Ensure that emergency power status updates are provided via ReddiNet</p> <p>Action Item 2 – Request deployment of temporary generators from LAC EMS Agency (If necessary)</p>
Facility Administrator	<p>Action Item 1 – Maintain situational awareness of emergency power status</p> <p>Action Item 2 – Approve any request for deployment of LAC EMS Agency generators</p>
Government Officials	Action Item – Actively monitor emergency power status reporting via ReddiNet
Generator Service, Fuel, and Rental Providers	Action Item – Maintain disaster response posture
Electric Utility Providers	Action Item – Provide timely updates to hospitals and sub-acute SNFs on the estimated time of restoration

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# Phase IV – Post-Power Outage Recovery

This section of the Playbook addresses the importance of a hotwash assessment that should be undertaken by hospitals, sub-acute SNFs, government agencies, generator service, fuel, rental, and utility providers following a prolonged power outage. Stakeholders should rely on their existing hotwash protocol for this process. If no protocol exists, consider using the template in [Appendix K](#). This Playbook section also details the recommended use of FEMA’s D-3 Checklist for Emergency Power Planning Following a Power Outage.

## Key Stakeholder Responsibilities

### Facility Directors

Action Item 1 – Conduct a Post-Outage Review of the Emergency Power System and Replenish Consumable Items Using FEMA Checklist



The **FEMA D-3 Checklist for Emergency Power Planning Following a Power Outage**, located in [Appendix P](#), details important post-power outage recovery activities. Depending on the duration of a power outage, staff at a hospital or sub-acute SNF may need to replace certain emergency power system consumable items such as fuel filters, air filters, oil filters, oil, and coolants to ensure a 10-day onsite supply of these items. This important checklist will help ensure that these critical details are not overlooked.

Action Item 2 – Conduct a Post-Power Outage Hotwash

A hotwash is simply a post-incident discussion among involved parties that candidly assesses and prepares a written response to these basic questions:

- 1) What went well?
- 2) What were the top challenges?
- 3) How could the process be improved next time?

The facility director should lead a hotwash discussion among staff within the facility department and, if needed, include generator service, rental, and fuel providers. This department-level hotwash will help prepare the facility director to participate in a facility-wide hotwash.

## Emergency Management Officers

### Action Item – Participate in Facility-Wide Hotwash Discussion

The EMO should be prepared to participate in a facility-wide hotwash. In addition, the facility administrator may assign the emergency management officer responsibility for ensuring that departments conduct post-outage hotwashes. This individual may also be charged with documenting any changes to procedure triggered by hotwashes and ensuring that these changes are reflected in any relevant Emergency Operation Plans or contingency plans. Hotwashes can also be conducted between two different organizations. For example, a hotwash between the LAC EMS Agency and individual hospitals or sub-acute SNFs could be undertaken to assess the efficacy of coordination and communication between these stakeholders during a power outage. Should such a hotwash occur, it would likely be the responsibility of the EMO to represent the facility in such a discussion.

## Facility Administrators

### Action Item – Participate in Hotwash Discussions

The facility administrator should take part in any facility-wide hotwash. In addition, a facility administrator should be apprised of all hotwash discussions happening within departments and seek a report on the outcomes of these hotwashes. To the extent a facility-wide or department-specific hotwash establishes new policies or protocols, the administrator should be apprised of these.

## Government Agencies

### Action Item – Conduct Hotwash Assessments

Officials at the LAC EMS Agency should conduct a hotwash following a prolonged power outage to review its actions relating to emergency power issues in hospitals and sub-acute SNFs.



Several questions should be addressed during this hotwash, including:

- Did hospitals and sub-acute SNFs implement the agency’s emergency power status reporting protocols effectively?
- Did the higher-risk facilities adhere to the more frequent status update requirements?
- Did MAC personnel respond appropriately to changes in the risk classification of a facility’s emergency power system as reflected in the generator pill color?
- Was there any need for coordination with the LAC Public Health Department relating to emergency power threats facing sub-acute SNFs? If so, was this coordination effective?
- Did any facilities request deployment of temporary generators? If so, how did this process unfold? Any opportunities for improvement?

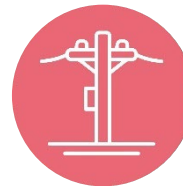
## Generator Service, Fuel, and Rental Providers



### Action Item – Conduct Hotwash Assessments

Generator service, fuel, and rental providers should conduct a hotwash after a prolonged outage to assess their internal operations and the service they provided to clients. Conducting a hotwash with clients is recommended to give a fuller picture of customer perception of the services received. To the extent service providers worked with officials from the LAC EMS Agency in coordinating a collective response to a facility facing an emergency power threat, consideration should be given to conducting a joint hotwash between the LAC EMS Agency and service, fuel, and rental providers.

## Electric Utility Providers



### Action Item – Conduct Hotwash Assessments

Electric utility providers are likely accustomed to conducting internal hotwash assessments following power outages. For long-duration outages, utilities are encouraged to conduct joint hotwash assessments with critical healthcare customers, especially those that experience any threats to emergency power during an outage that trigger stepped-up coordination and communication between the utility and the facility. An important communication issue to review in such a hotwash would be the facility's experience contacting the utility and whether this contact was made through a key account liaison or another utility point of contact. In outages where the utility provided temporary emergency generators for critical healthcare customers, a targeted post-outage hotwash is recommended to assess the process around the deployment of temporary generators.



**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 FEMA checklist D-3 (Appendix item P).

## Summary Checklist of Key Stakeholder Responsibilities



Phase IV – Post Power Outage Recovery	
Summary Checklist of Key Stakeholder Responsibilities	
Stakeholder	Key Responsibility
Facility Director/Staff for Hospitals and sub-acute SNFs	Action Item – Conduct hotwash with the facilities team and participate in facility-wide hotwash
Emergency Management Officer	Action Item – Participate in facility-wide hotwash and help fulfill respective responsibilities arising from department-level hotwashes
Facility Administrator	Action Item – Participate in facility-wide hotwash and review the outcome of department-level hotwashes
Government Officials	Action Item – Conduct hotwash and participate in external hotwashes as needed
Generator Service, Fuel, and Rental Providers	Action Item – Conduct internal hotwash and participate in external hotwashes with clients and LAC EMS Agency as needed
Electric Utility Providers	Conduct hotwash assessments



**Los Angeles County Healthcare Facility Emergency  
Power Resilience Playbook Appendices**

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## Appendix A - The Value of Benchmarking a Hospital's Emergency Power System Against Other Hospitals in Los Angeles County

The **Emergency Power System Assessment and Benchmarking Worksheet for Hospital**, located in [Appendix B](#), will help hospitals understand the capabilities and potential vulnerabilities of their emergency power system compared to other hospitals in Los Angeles County. As one would expect, there are wide variations in the size and capacity of emergency power systems among the 80 hospitals included in the LAC EMS Agency's emergency power system census. Smaller hospitals will need fewer generators and less onsite fuel than larger hospitals to meet the required level of emergency power capacity. For example, the smallest non-rural hospital in the LAC EMS Agency census has 50 acute care beds compared to the largest hospital with 875 acute care beds, a 17.5-fold increase. This doesn't mean that the larger facility needs an emergency power system that is 17.5 times larger than the smaller facility.

To enable a more balanced comparison between facilities with different-sized emergency power systems, this benchmarking data includes a calculation of the generator power as measured in kilowatts (kW) per number of licensed acute care beds. When using this approach to compare the facility with 50 acute care beds against the facility with 875 beds, the differences between the two facilities' emergency power systems are less dramatic. The 50-bed facility has 6 kW of generator power per bed compared to 13.54 kW of generator power per bed for the 875-bed facility.

Other metrics included in the **Benchmarking Worksheet** don't lend themselves to such an "apples-to-apples" comparison. For example, the total run time for a facility's emergency power system based on onsite fuel capacity should be roughly the same across all facilities, even though the amount of fuel on site will vary dramatically given the vast difference in the number and size of generators among facilities. The federal government has established 96 hours of continuous generator run time as the recommended standard that drives the amount of onsite fuel storage capacity a facility would need. Hospitals in LAC have a vast range of capabilities in this category, as illustrated in the **Benchmarking Worksheet**. At the top end of the spectrum, one facility has enough onsite fuel storage to run its emergency power system for 329 continuous hours. At the bottom end of that spectrum, three facilities only have enough onsite fuel storage to run their emergency power systems for just under 24 hours, three days less than the federal recommendation. In addition to kW power per licensed acute care bed and generator run time, hospital benchmarking data is provided for the number and age of generators.

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Appendix B - Emergency Power System Assessment and Benchmarking Worksheet for Hospitals

Hospitals in Los Angeles County are strongly encouraged to use this Emergency Power System Assessment and Benchmarking Worksheet to capture key details about their emergency power system’s strengths and potential gaps. The Worksheet will also help hospitals compare their emergency power system capabilities and potential shortcomings against other hospitals in Los Angeles County using anonymized and aggregated benchmarking data. This Worksheet should be completed by the facility director or a qualified member of the engineering department. Hospitals can refer to the answers provided for the LAC EMS Agency’s previous census of hospital emergency power systems to make completion of this Worksheet easier. NOTE: This worksheet is available as a downloadable Word file on the LAC EMS Agency’s website.

**Emergency Power System Assessment and Benchmarking Worksheet for Hospitals (To be completed by Facility Director or his or her staff)**

<b>Part I – Background Questions</b>	
Name of facility	
Address of facility	
Name, title, and contact information of the person completing the worksheet	
Number of licensed acute care beds	
The date worksheet was completed	

**Part II – Vulnerability Assessment with Benchmarking Data and Suggested Mitigation Strategies to Address Vulnerabilities (To be completed by Facility Director or other qualified personnel.) Completed document can help guide the Emergency Power System Review discussion.**

**Section A – Hospital Benchmarking Data**

Question	Answer	Benchmarking Data	Suggested Mitigation Strategies to Address Vulnerabilities
Number of generators		The average number of generators is 3.41	If your facility is operating with a single generator, you should seriously consider installing a quick-connect device to enable rapid connection of a temporary replacement generator. Since single-generator facilities have no redundant emergency power, the failure of their only generator and the inability to quickly connect a temporary replacement puts patients at greater risk of an emergency evacuation. (See <a href="#">Appendix I</a> for additional information about quick-connect devices).
What is the ratio of total kW generator power to the number of licensed acute care beds in your facility? (Add up the kW power of each generator in the emergency power system and divide this figure by the total number of licensed acute care beds.) The LAC EMS Agency recognizes that the number of staffed beds in a hospital is often significantly lower than licensed beds. Since the number of staffed beds fluctuates, the number of licensed beds was used to determine the ratio of kW generator power.		The average amount of generator power measured in kW per acute care licensed bed is 11 kW. Among the hospitals included in the census, the lowest kW-to-bed ratio is 0.44 and the highest is 57.25. There is no federal or state standard for the kW-to-bed ratio. This figure is provided as a guide for hospitals in LAC.	If your hospital has less than 5 kW per bed, consideration should be given to expanding your emergency power system.

**Part II Continued– Vulnerability Assessment with Benchmarking Data and Suggested Mitigation Strategies to Address Vulnerabilities (To be completed by Facility Director or other qualified personnel.) Completed document can help guide the Emergency Power System Review discussion.**

**Section A Continued – Hospital Benchmarking Data**

Question	Answer	Benchmarking Data	Suggested Mitigation Strategies to Address Vulnerabilities
<p>How old are your generators?</p>		<p>The average age of the 271 generators included in the LAC EMS Agency census is 24.6 years. The suggested useful life of a generator is 30 years, based on <a href="#">Roadmap to Resiliency</a>, a white paper on emergency power resilience published in 2017 by the American Society for Healthcare Engineering and Powered for Patients.</p>	<p>Any facility with a generator 30 years of age or older should develop plans to replace the generator as soon as possible.</p>
<p>What is the emergency power system runtime based on your facility’s onsite fuel storage capacity? <b>See Generator Fuel Consumption Rate Chart in <a href="#">Appendix S</a></b></p>		<p>The average runtime among hospitals in LAC included in the census is 100.35 hours based on full tanks. 34 hospitals have more than 100 hours, and of these, 5 have in excess of 200 hours of runtime. 44 hospitals have less than 100 hours of runtime, of which 14 have less than 40 hours of runtime. Of these 14 hospitals, 4 have a runtime between 20 and 30 hours and 2 have a runtime below 20 hours.</p>	<p>The federal government has established 96 hours as the ideal time a hospital should be able to operate its emergency power system before refueling. Hospitals with less than 40 hours of emergency power runtime should ensure that they have a contract with a secondary fuel supplier. In addition, the facility should ensure that it can make an immediate payment to this secondary fuel supplier during a power outage to ensure timely fuel delivery, especially if this provider is a new vendor for the facility. These facilities should also consider expanding their existing fuel system’s capacity.</p>

<b>Section B - General questions to help identify potential vulnerabilities in an emergency power system with mitigation strategies to address any gaps. (To be completed by the Facility Director or other qualified personnel.)</b>		
<b>Question</b>	<b>Answer</b>	<b>Guidance and Suggested Mitigation Strategies to Address Vulnerabilities</b>
Do you have a generator service contract in place?	Yes or No	If no, a service contract should be executed immediately with a reputable service provider.
Do you have the ability to make an immediate payment to a fuel supplier during a power outage to ensure timely fuel delivery?	Yes or No	During a prolonged power outage, generator fuel supplies may become limited, forcing facilities to rely on fuel suppliers that are not their primary supplier. In these situations, many fuel suppliers will only deliver fuel if they receive payment at the time of delivery. Facilities should be sure they have the means to make immediate payment for a fuel delivery if they still need to establish credit with a fuel supplier.
Do you have a generator rental contract in place that assures the delivery of a temporary replacement generator during a power outage?	Yes or No	If no, a contract should be established that includes language guaranteeing the delivery of a temporary generator when needed. Including these clauses in rental agreements carries a cost, which is why many hospitals will not implement this type of contract. The only way to ensure that a rental generator will be made available to a facility during an outage is to execute the correct type of contract.
Has your facility recently completed any repairs to its emergency power system or are any repairs currently scheduled?	Yes or No	If yes, the facility director should brief the administrator on these repairs.
Has your facility performed maintenance on its emergency power system in accordance with the manufacturer's recommendations?	Yes or No	If yes, the checklist of completed maintenance activities and the list of scheduled maintenance activities should be provided to the facility administrator. If no, the checklist of recommended maintenance activities that have not been completed should be provided to the administrator with a cost estimate for the maintenance work. This can be supplied by the facility's generator service provider.
What levels of investment would be needed to make incremental or significant improvements to your facility's emergency power system?		A facility's generator service provider can be helpful in addressing these questions.



**Part II Continued– Vulnerability Assessment with Suggested Mitigation Strategies to Address Vulnerabilities. (To be completed by Facility Director or other qualified personnel.) Completed document can help guide the Emergency Power System Review discussion.**

Question	Answer	Suggested Mitigation Strategies to Address Vulnerabilities
Do you have a written report addressing recommendations from your generator service provider on repairs or upgrades that should be considered for your emergency power system components?	Yes or No	If yes, have these repairs or upgrades been scheduled? If not, address any impediments to scheduling suggested repairs or upgrades with facility leadership during the Emergency Power System Review discussion.  If no, ask your service provider to provide a written report addressing recommended repairs or maintenance to address any known shortcomings in the emergency power system.
Do you have a written protocol addressing how emergency power system testing in your facility is conducted?	Yes or No	If no, such a protocol should be developed immediately. This protocol should include explicit communication protocols that provide clinical staff with advanced notice before any generator test is initiated to ensure that monitoring of any life support patients can be arranged during the test.
Are there updates to the facility or electrical infrastructure being planned, or that should be considered, that could incorporate needed upgrades to the emergency power system?	Yes or No	If updates to the facility or its electrical infrastructure are being planned, discussions with a Mechanical, Electrical, and Plumbing (MEP) contractor should take place about opportunities to upgrade the facility’s emergency power system.
In addition to conducting required testing on backup generators, do you routinely test switchgear equipment including automatic transfer switches?	Yes or No	If no, speak with your generator service provider to assess options for testing switchgear equipment, including automatic transfer switches.
Have you already identified locations for temporary generator installations on your campus?	Yes or No	If no, ask a generator rental provider to visit your facility and make suggestions on the ideal locations for temporary generators. This step will also help determine how much cabling would be needed to connect a temporary generator.

**Part II Continued– Vulnerability Assessment with Suggested Mitigation Strategies to Address Vulnerabilities. (To be completed by Facility Director or other qualified personnel.) Completed document can help guide the Emergency Power System Review discussion.**

Question	Answer	Suggested Mitigation Strategies to Address Vulnerabilities
Have appropriate personnel been trained on the manual operation of the diesel generators and overall emergency power system?	Yes or No	If no, schedule a training with your generator service provider as soon as possible to ensure that all engineering staff can manually operate the emergency power system.
Does your emergency power system have any unique cooling or operational requirements that may require special measures during a disaster (heat exchangers, cooling towers, etc.)?	Yes or No	If yes, discuss with your emergency power service provider and ensure that all engineering staff are aware of any unique requirements and can address these during a power outage. If unsure, check with your generator service provider.
Do you have a protocol established with input from your utility for detaching and reattaching to your electric utility during power outages?	Yes or No	If no, speak with your utility to determine what this protocol is. Be sure to document the protocol and ensure that all members of the engineering staff understand how to implement the protocol.
Is your water system dependent on power for water pressure due to building elevation? If so, is your water system supported by emergency power?	Yes or No	If no, ask your generator service provider, or an electrical contractor, whether your current emergency power system could accommodate any pumps needed to ensure proper water pressure. If there is no current capacity, ask for a cost proposal for expanding emergency power to enable the connection of water system pumps.
If your generator and its components, including fuel tanks, are not above the floodplain and safe from other water surges such as dam and water tower breaks, are system components encapsulated and protected from a flood?	Yes or No	If no, work with generator service providers or other contractors to install floodproofing devices.

Appendix C - Emergency Power System Assessment Worksheet for Sub-Acute Skilled Nursing Facilities

<p>Los Angeles County sub-acute skilled nursing facilities (SNFs) are strongly encouraged to use this Emergency Power System Assessment Worksheet to capture key details about emergency power system capabilities and potential gaps. This worksheet should be completed by the facility director or the most qualified individual in the absence of a facility director. Completed worksheets should then guide the Emergency Power System Review discussion among facility directors, emergency management officers, and administrators about addressing any vulnerabilities in the facility’s emergency power system. The LAC EMS Agency recommends scheduling this meeting as soon as possible and annually thereafter. NOTE: This worksheet is available as a downloadable Word file on the EMS Agency’s website.</p>	
<p><b>Emergency Power System Assessment (to be completed by the Facility Director or the most qualified individual in the absence of a facility director)</b></p>	
<p><b>Part I – Background Questions</b></p>	
Name of facility	
Address of facility	
Name, title, and contact information for the person completing the worksheet	
Number of licensed acute care beds	
Date the worksheet was completed	

**Part II – Vulnerability Assessment with Suggested Mitigation Strategies to Address Vulnerabilities. (To be completed by Facility Director or other qualified personnel.) Completed document can help guide the Emergency Power System Review discussion.**

Question	Answer	Suggested Mitigation Strategies to Address Vulnerabilities
Number of generators		<p>Many sub-acute SNFs operate with a single generator, a reality reflecting their smaller size compared to hospitals, many of which have multiple generators in their emergency power system. Sub-acute SNFs with a single generator should seriously consider installing a quick-connect device to enable rapid connection of a temporary replacement generator. This is especially important for sub-acute SNFs licensed to provide ventilator support to patients. Because single-generator facilities have no redundant emergency power, the failure of its only generator and the inability to quickly connect a temporary replacement puts patients at greater risk of an emergency evacuation. <b>(See <a href="#">Appendix I</a> for additional information about quick-connect devices.)</b></p>
Does your facility rely on any generators that exceed 30 years of age?	Yes or No	<p>The suggested useful life of a generator is 30 years, based on <a href="#">Roadmap to Resiliency</a>, a white paper on emergency power resilience published in 2017 by the American Society for Healthcare Engineering and Powered for Patients. Any facility with a generator 30 years or older should develop plans to replace the generator as soon as possible.</p>
Based on current onsite fuel capacity, what is the emergency power system runtime?		<p>The federal government has established 96 hours as the ideal amount of time a skilled nursing facility should be able to operate its emergency power system before refueling. Sub-acute SNFs with less than 40 hours of emergency power run time should ensure that they have a contract with a secondary fuel supplier. <b>(See <a href="#">Appendix S</a> for Generator Fuel Burn Rate chart.)</b></p>
Do you have a generator service contract in place?	Yes or No	<p>If no, a service contract should be executed immediately with a reputable service provider.</p>

**Part II Continued– Vulnerability Assessment with Suggested Mitigation Strategies to Address Vulnerabilities. (To be completed by Facility Director or other qualified personnel.) Completed document can help guide the Emergency Power System Review discussion.**

Question	Answer	Suggested Mitigation Strategies to Address Vulnerabilities
Do you have the ability to make an immediate payment to a fuel supplier during a power outage to ensure timely fuel delivery?	Yes or No	During a prolonged power outage, generator fuel supplies may become limited, forcing facilities to rely on fuel suppliers that are not their primary supplier. In these situations, many fuel suppliers will only deliver fuel if they receive payment at the time of delivery. Facilities should be sure they have the means to make immediate payment for a fuel delivery if they do not have established credit with a fuel supplier.
Do you have a generator rental contract in place that assures the delivery of a temporary replacement generator during a power outage?	Yes or No	If no, a contract should be established that includes language guaranteeing the delivery of a temporary generator when needed. Including these clauses in rental agreements carries a cost, which is why many facilities will not implement this type of contract. The only way to ensure that a rental generator will be made available to a facility during an outage is to execute and fund the right type of contract.
Has your facility recently completed any repairs to its emergency power system or are any repairs currently scheduled?	Yes or No	If yes, the facility director should brief the administrator on these repairs.
Has your facility performed maintenance on its emergency power system in accordance with the manufacturer’s recommendations?	Yes or No	If any recommended emergency power system maintenance by the manufacturer is not being performed, this should be addressed during the Emergency Power Review discussion and a plan to align maintenance with manufacturer recommendations should be developed.
Do you have a written report addressing recommendations from your generator service provider on repairs or upgrades that should be considered for your emergency power system components?	Yes or No	If yes, have these repairs or upgrades been scheduled? If not, address any impediments to scheduling suggested repairs or upgrades with facility leadership during the Emergency Power System Review discussion.  If no, ask your service provider to provide a written report addressing recommended repairs or maintenance to address any known shortcomings in the emergency power system.

**Part II Continued– Vulnerability Assessment with Suggested Mitigation Strategies to Address Vulnerabilities. (To be completed by Facility Director or other qualified personnel.) Completed document can help guide the Emergency Power System Review discussion.**

Question	Answer	Suggested Mitigation Strategies to Address Vulnerabilities
Do you have a written protocol addressing how emergency power system testing in your facility is conducted?	Yes or No	If no, such a protocol should be developed immediately. This protocol should include explicit communication protocols that provide clinical staff with advanced notice before any generator test is initiated to ensure that monitoring of any life support patients can be arranged during the test.
What levels of investment would be needed to make incremental or significant improvements to your facility’s emergency power system?		A facility’s generator service provider can be helpful in addressing these questions.
Are there updates to the facility or electrical infrastructure being planned, or that should be considered, that could incorporate needed upgrades to the emergency power system?	Yes or No	If updates to the facility or its electrical infrastructure are being planned, discussions with a Mechanical, Electrical, and Plumbing (MEP) contractor should take place about opportunities to upgrade the facility’s emergency power system.
Does your facility maintain a current list of all patients on electric-powered medical devices, including their room numbers?	Yes or No	If no, this practice should be implemented. Maintaining such a list can be extremely helpful when a generator failure occurs during a power outage as it allows first responders to determine whether replacement equipment, i.e., oxygen bottles or other devices, can be supplied from fire department assets or other government caches. To the extent these temporary replacements are available, facilities may not face as much pressure to evacuate while awaiting the repair of a failing or failed emergency power system.
In addition to conducting required testing on backup generators, do you routinely test switchgear equipment including automatic transfer switches?	Yes or No	If no, speak with your generator service provider to assess options for testing switchgear equipment, including automatic transfer switches.
Have you already identified locations for temporary generator installations on your campus?	Yes or No	If no, ask a generator rental provider to visit your facility and make suggestions on the ideal locations for temporary generators. This step will also help determine how much cabling would be needed to connect a temporary generator.

**Part II Continued– Vulnerability Assessment with Suggested Mitigation Strategies to Address Vulnerabilities. (To be completed by Facility Director or other qualified personnel.) Completed document can help guide the Emergency Power System Review discussion.**

Question	Answer	Suggested Mitigation Strategies to Address Vulnerabilities
Does the sub-acute SNF have a stock of recommended spare parts for its diesel generators or assurances from local diesel distributor to provide spare parts?	Yes or No	If no, work with your generator service provider to identify key parts that should be held in inventory and add them to a facility’s inventory or obtain assurances from the service provider that these will be available during an emergency. See the list of key spare parts in <a href="#">Appendix M</a> .
Have appropriate personnel been trained on the manual operation of the diesel generators and overall emergency power system?	Yes or No	If no, schedule a training with your generator service provider as soon as possible to ensure that all engineering staff can manually operate the emergency power system.
Does your emergency power system have any unique cooling or operational requirements that may require special measures during a disaster (heat exchangers, cooling towers, etc.)?	Yes or No	If yes, discuss with your emergency power service provider and ensure that all engineering staff are aware of any unique requirements and can address these during a power outage. If unsure, check with your generator service provider.
Do you have a protocol established with input from your utility for detaching and reattaching to your electric utility during power outages?	Yes or No	If no, speak with your utility to determine what this protocol is. Be sure to document the protocol and ensure that all members of the engineering staff understand how to implement the protocol.
Is your water system dependent on power for water pressure due to building elevation? If so, is your water system supported by emergency power?	Yes or No	If no, ask your generator service provider, or an electrical contractor, whether your current emergency power system could accommodate any pumps needed to ensure proper water pressure. If there is no current capacity, ask for a cost proposal for expanding emergency power to enable the connection of water system pumps.
If your generator and its components, including fuel tanks, are not above the floodplain and safe from other water surges such as dam and water tower breaks, are system components encapsulated and protected from a flood?	Yes or No	If no, work with generator service providers or other contractors to install floodproofing devices.

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## Appendix D - Outdated Generators: A Risk to Patient Safety

Among the key findings of the LAC EMS Agency's emergency power preparedness initiative is the significant number of hospitals operating with outdated generators in LAC. The 2021 census of hospital emergency power systems conducted by the LAC EMS Agency showed that over 30 percent of the 271 generators captured in the census were in excess of 30 years of age, considered the useful life of a generator<sup>2</sup>. For the single-generator acute care hospitals, the percentage of outdated generators was more than double, with some single-generator facilities relying on generators in excess of 50 and even 60 years of age. No federal or state requirements limit the age of a hospital generator if the generator can meet minimum testing requirements. However, these testing requirements do not represent the true challenge an outdated generator would face if required to operate for many hours during an extended outage. Since single-generator facilities lack redundant emergency power, patients in these facilities face a higher risk of emergency evacuation should the facility's only generator fail.



This 50-plus year-old generator was previously relied on by a hospital in LAC that recently invested in installing a new generator.

Given the age of generators in many of the single-generator hospitals, and the lack of redundant emergency power in these facilities, the LAC EMS Agency offered one time funding in 2021 for single-generator hospitals participating in the U.S. Department of Health and Human Services Hospital Preparedness Program to install real-time emergency power system monitoring technology. This technology acts like a heart monitor for a patient, providing automated, 24/7, real-time alerts to designated individuals anytime emergency power is activated or experiences a problem while operating. When these alerts are provided to generator service providers and designated government officials, generator repair or deployment of temporary government generators can be accelerated, minimizing the risk of an emergency evacuation. As of the publication date of this Playbook, two of the county's single-generator hospitals had taken advantage of the LAC EMS Agency's offer to supply the real-time generator monitoring technology.

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<sup>2</sup> The 30-year useful life of a generator is detailed in [Roadmap to Resiliency](#), a white paper on emergency power resilience published in 2017 by the American Society for Healthcare Engineering (ASHE), and Powered for Patients.

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## Appendix E - Understanding Government Emergency Power Assets and Response Plans When Emergency Power is Threatened

An essential part of stepped-up emergency power preparedness planning for hospitals and sub-acute SNFs is developing a clear understanding of which government agencies will respond to emergency power threats that occur during an outage, what this response will be, and how facilities should communicate with government agencies when threats to emergency power arise during outages.

Among the unique emergency power assets in LAC is a sizeable fleet of temporary generators purchased with FEMA funds that several LAC government agencies collectively own, along with the cities of Long Beach and Los Angeles. This fleet consists of twelve 800 kW generators and twenty-three 200 kW generators, sizes that make them ideally suited for a number of hospitals and many sub-acute SNFs. Six of the 800 kW generators are maintained by agencies within LAC, including the LAC EMS Agency, which maintains two of these generators. The City of Long Beach maintains eleven 200 kW generators and the City of Los Angeles maintains twelve 200 kW generators and six 800 kW generators. While this is an impressive array of emergency power assets, the county and city agencies do not have sufficient cabling, employees with expertise, or the licensing required to connect these generators. Hospitals and sub-acute SNFs should take steps to secure necessary cabling and contract with a qualified generator service provider, generator rental provider, or electrical contractor to perform the installation should one of these assets become needed. Installing a quick-connect device will enable rapid connection of a temporary generator into a facility's electrical distribution system. A quick-connect is especially important for facilities with one or two generators. Such facilities are more likely to face an emergency evacuation if they cannot install a temporary generator quickly. (See [Appendix I](#)) for information about Quick Connect devices).



Two 800 kW generators owned by the LAC EMS Agency that are part of the fleet of twelve such generators purchased collectively by LAC and the City of Los Angeles using FEMA funds.

The two lead agencies that will address threats to emergency power at hospitals and sub-acute SNFs during a power outage are the LAC EMS Agency and the LAC Public Health Department. The LAC EMS Agency, a division of the LAC Department of Health Services, plays a lead role in ensuring the readiness of the county's hospitals.

The EMS Agency manages the U.S. Department of Health and Human Services' Hospital Preparedness Program (HPP) and provides HPP funding to participating hospitals to support emergency preparedness activities. The LAC EMS Agency used HPP funding (FAIN # NU90TP921934) to support the ongoing emergency power preparedness initiative it launched in 2019, resulting in the publication of this Playbook.



200 kW generator owned by the City of Long Beach, one of twenty-three such generators purchased collectively by the Cities of Long Beach and Los Angeles with FEMA funds.

The LAC EMS Agency is vital in supporting hospitals with health and medical resources (i.e., personnel, pharmaceuticals, supplies, and equipment) during disasters when these resources are in short supply at facilities. For example, during the COVID-19 pandemic, the LAC EMS Agency coordinated the receipt and distribution of millions of pieces of PPE to hospitals. Generators are not traditionally considered a health and medical resource. However, since the LAC EMS Agency has the coordination responsibility for medical and health response, and is the only health agency that owns FEMA generators, it will play the lead role in helping hospitals and sub-acute SNFs access temporary government generators during an outage.

The LAC Public Health Department also plays a vital role in emergency planning and response through its Emergency Preparedness Response Division (EPRD). The mission of EPRD is to prevent and mitigate the public health consequences of natural or intentional emergencies for LAC residents through threat assessment, planning, improved operational readiness, and timely response. The agency's responsibilities include assisting skilled nursing facilities during power outages and providing support if threats to emergency power arise during an outage.

The LAC EMS Agency works closely with EPRD to support coordinated response for various scenarios, including threats to emergency power at a sub-acute SNF during an outage that may require the deployment of locally-owned government generators.

These two agencies collaborate with emergency management agencies during a large-scale disaster, including the LAC Office of Emergency Management (OEM). During a significant emergency or disaster, the LAC OEM will likely activate its emergency operation plan and stand up its Emergency Operation Center (EOC) and its Uniform Coordination Group, which will support and manage county-wide response and make decisions about allocating limited resources across all critical infrastructure sectors. To help the LAC OEM's Unified Coordination Group make decisions regarding healthcare facilities, representatives from the LAC EMS Agency, the LAC Department of Public Health and the LAC Department of Mental Health will deploy to the LAC OEM's emergency operations center to fulfill the Medical and Health Branch Coordinator function. Consider a scenario in which a hospital or sub-acute SNF requested the deployment of temporary government generators when other facilities were already using the two 800 kW generators under the control of the EMS Agency. In this situation, personnel from the LAC EMS Agency helping to fulfill the Medical and Health Branch Coordinator function would relay information about the severity of an emergency power threat to help the EOC make decisions about the allocation of the county's remaining four 800 kW generators.

## Appendix F - Protocol for Requesting Deployment of Temporary Government Generators During an Emergency

Any hospital or sub-acute SNF in LAC that needs to request the deployment of a temporary government generator during a power outage will have to submit a resource request through ReddiNet. The resource request will require facilities to verify that they could not secure a temporary replacement generator through the private sector. The LAC EMS Agency's Medical Alert Center personnel will receive these requests in real-time and liaise with facility personnel and government organizations to help fulfill requests for temporary generators. If ReddiNet is unavailable, use the LAC EMS Agency Medical and Health Resource Request form included in [Appendix Q](#).

As noted previously in this Playbook, in addition to the LAC EMS Agency, other LAC agencies and the Cities of Long Beach and Los Angeles each have a cache of temporary generators that can be deployed to healthcare facilities facing a threat to emergency power during an outage. These assets are intended to support all critical infrastructure facilities that rely on emergency power during an outage which means hospitals and sub-acute SNFs cannot be guaranteed access to these generators. When requests for these assets are made, the LAC EMS Agency will work with the custodians to secure them for hospitals and SNFs that cannot secure generators from the private sector. Remember, the government agencies who maintain these temporary generators do not have the cabling or qualified personnel to install these generators at a healthcare facility. Facilities should consider investing in cabling and quick-connect devices and contracting with a service provider qualified to install temporary generators before an emergency situation.



**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 the utility power restoration, make sure there is no power source that is not connected through the ATS. Also, make sure that the ATS units are functioning properly before utility power is restored.

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## Appendix G – Detail on Los Angeles County Emergency Medical Services Agency’s Emergency Power Status Reporting Protocols

The LAC EMS Agency’s Emergency Power Status Reporting Protocol is one of several protocols and recommended best practices introduced in this Playbook. The status reporting protocol will provide government officials with improved situational awareness of generator status in hospitals and sub-acute SNFs during power outages, enabling accelerated response when these facilities face a threat to emergency power. This response may include placing hospitals on diversion status if clinical services are significantly limited or no longer available, deploying temporary government generators if requested, and assisting with any evacuations that may become necessary.

The Emergency Power Status Reporting Protocol requires Tier 1 and Tier 2 hospitals, and sub-acute SNFs, to report their generator status through ReddiNet anytime a power outage lasts more than 30 minutes. However, if a facility’s reliance on emergency power results in a drop in available clinical services beyond the reduction that would likely accompany reliance on a properly functioning emergency power system, the facility must report its generator status as soon as possible. Subsequent status updates will also be required as soon as possible, but no longer than 30 minutes after fuel levels for any generator drop below 24 hours of generator run time, or a further drop in clinical services occurs due to reliance on emergency power. For Tier 2 hospitals or sub-acute SNFs that experience a mechanical problem or failure of any generator that triggers a call to a generator service provider, they must report their generator status through ReddiNet immediately. ReddiNet is the communications system used by hospitals and sub-acute SNFs in LAC to provide status updates on a facility’s ability to treat and receive patients during incidents such as power outages. These updates are closely monitored by the LAC EMS Agency, which works closely with the LAC Department of Public Health to address threats facing sub-acute SNFs.

### Generator Status “Pill”

To accommodate the EMS Agency’s emergency power status reporting protocols and risk rating of hospital emergency power systems, ReddiNet has added a generator “pill” next to each hospital’s name on the ReddiNet dashboard under the Diversation Status screen. The generator “pill” is modeled after other dashboard “pills” that signal the status of available clinical services. (See Figure 1). (A generator “pill” was already in place for sub-acute SNFs and modifications have been made to ReddiNet to align sub-acute SNF generator status reporting with the new hospital reporting protocol.)

A hospital or sub-acute SNF will report its generator status during an outage, either within the 30-minute timeframe or sooner if a triggering event occurs, by answering a series of questions regarding generator status, any drop in clinical services below the reduced level expected when the facility is operating on emergency power, and available fuel. (See Figure 2). Based on the facility’s risk status as a Tier 1 or Tier 2 facility and the answers provided, the generator pill color will change to green, yellow, orange, or red to reflect the current risk level.



**Diversion Status**



Figure 1

A facility’s emergency power status will be reflected through the color of ReddiNet’s generator “pill” which will be monitored by the Medical Alert Center (MAC), staffed 24/7, 365 days per year by the LAC EMS Agency. MAC personnel currently monitor clinical service “pills” reflecting the status of clinical services at a facility and will now begin tracking the facility’s generator status. Anytime the color of a facility’s generator “pill” signals any severe threats to emergency power, or when a facility requests assistance, MAC personnel will notify appropriate county officials, who can then communicate with an impacted facility and help coordinate any support that may be needed. Any hospital that seeks to close for internal disaster and temporarily stop EMS transportation to their facility due to emergency power failure or any other reason, must receive approval from the MAC.

Given the responsibilities of the MAC during disasters, MAC personnel may be unable to constantly monitor ReddiNet’s clinical service pills and generator status pills. As such, hospitals and sub-acute SNFs should contact the MAC anytime a serious threat to emergency power occurs **(866-940-4401)**. This contact will augment status reports submitted via ReddiNet and enable a facility to explain their situation and address any potential assistance that may be sought.

The flow charts on the following pages illustrate the sequence of emergency power status reporting required from a Tier 1 or Tier 2 hospital or sub-acute SNF.

### Generator Status ✕

Off Generator     On Generator

**Question(s)**

Is your emergency power system functioning properly? Select ▼

Are you able to provide all of the clinical services normally available when operating on emergency power? Select ▲▼

Based on current fuel levels, how long can your emergency power system operate without refueling? Select ▲▼

**Comments**

Authorization	2nd	Operator
RD		SP

Close
Submit

Figure 2



# Los Angeles County Emergency Power Status Reporting Timeline with Generator Pill Colors Reflecting Risk Level for Tier 1 Hospitals

## Steady State and Sequence of Triggering Events with Reporting Timeline

Steady State - Utility Power Operating Normally

Generator off - Pill stays clear

### Power Outage Occurs

Status Reporting within **30 minutes** as long as the following conditions are met:

- Emergency power operating without problems
- Use of emergency power has not reduced clinical services below levels normally available when emergency power is functioning properly
- Run time exceeds 24 hours based on current fuel levels

**Immediate** reporting if any of the following conditions are met:

- Clinical services fall below reduced levels normally available when emergency power is functioning properly
- Run time is less than 24 hours based on current fuel levels

Initial Status Reporting Occurs by Clicking on Generator Pill Icon in ReddiNet and Answering these 3 Questions. Generator Pill Colors Will Reflect Risk Level Based on Answers.

**Question # 1:** Is your emergency power system functioning properly? Yes or No

**Question # 2:** Are you able to provide all the clinical services normally available when operating on emergency power? Yes or No

**Question # 3:** How long can emergency power run based on current fuel levels?

### Subsequent Status Reporting Triggers

**Immediate** status update required if any of the following conditions are met. Status updates can be provided by answering the three assessment questions in ReddiNet.

- Clinical services further impacted by reliance on emergency power
- Run time falls below 24 hours based on current fuel levels

### If Run Time For Any Generator Falls Below 24 Hours

If run time for any generator falls below 24 hours, facilities must provide an immediate status update via ReddiNet with subsequent updates every six hours. These updates are achieved by answering Question # 3. Facilities must also provide information about the status of refueling.

**LAC EMS Agency Medical Alert Center Response Based on Risk Level as Indicated by Generator Pill Color**



= No active monitoring



= Stepped up monitoring



= Initial monitoring



= Initiate contact, alert EMS Agency leadership, active monitoring

# Los Angeles County Emergency Power Status Reporting Timeline with Generator Pill Colors Reflecting Risk Level for Tier 2 Hospitals

## Steady State and Sequence of Triggering Events with Reporting Timeline

Steady State - Utility Power Operating Normally

Generator off - Pill stays clear

### Power Outage Occurs

Status Reporting within **30 minutes** as long as the following conditions are met:

- Emergency power operating without problems
- Use of emergency power has not reduced clinical services below levels normally available when emergency power is functioning properly
- Run time exceeds 24 hours based on current fuel levels

**Immediate** reporting if any of the following conditions are met:

- Mechanical problem arises that requires call to service provider
- Clinical services fall below reduced levels normally available when emergency power is functioning properly
- Run time is less than 24 hours based on current fuel levels

Initial Status Reporting Occurs by Clicking on Generator Pill Icon in ReddiNet and Answering these 3 Questions. Generator Pill Colors Will Reflect Risk Level Based on Answers.

**Question # 1:** Is your emergency power system functioning properly? Yes or No

**Question # 2:** Are you able to provide all the clinical services normally available when operating on emergency power? Yes or No

**Question # 3:** How long can emergency power run based on current fuel levels?

### Subsequent Status Reporting Triggers

**Immediate** status update required if any of the following conditions are met. Status updates can be provided by answering the three assessment questions in ReddiNet.

- Clinical services further impacted by reliance on emergency power
- Run time falls below 24 hours based on current fuel levels

### If Run Time For Any Generator Falls Below 24 Hours

If run time for any generator falls below 24 hours, facilities must provide an immediate status update via ReddiNet with subsequent updates every six hours. These updates are achieved by answering Question # 3. Facilities must also provide information about the status of refueling.

**LAC EMS Agency Medical Alert Center Response Based on Risk Level as Indicated by Generator Pill Color**



= No active monitoring



= Stepped Up monitoring



= Initial monitoring



= Initiate Contact, alert EMS Agency leadership, active monitoring

## New Data on Hospital Emergency Power Systems Will Enhance Response When Emergency Power is Threatened

The LAC EMS Agency conducted an emergency power census in 2021, collecting hospital emergency power system data from 80 acute care hospitals. This confidential information, which can help accelerate the LAC EMS Agency's response to an impacted facility, includes:

- The number, size, and age of generators
- The amount of onsite fuel storage capacity and generator run time
- The names of generator service, fuel and rental providers
- The name of electric utility provider
- Information about the presence of quick-connect devices

This confidential information, which will be available to LAC EMS Agency personnel on a need-to-know basis, will be valuable on multiple fronts. For example, knowing the size of a facility's generators can hasten the process of identifying appropriate government-owned generators suitable for temporary deployment to specific facilities. Knowing the size of hospital fuel tanks can help inform decisions about how to equitably ration fuel should this be required. Having quick access to the contact information of a hospital's generator service provider can facilitate faster communication between the LAC EMS Agency and the service provider. This communication may be critical when quick decisions need to be made about whether a government-owned or private-sector generator can be deployed faster to an impacted hospital. This communication is especially important for single-generator hospitals on the brink of an emergency evacuation due to a problem with their only generator.

Identifying facilities with quick-connect devices can help government officials prioritize the deployment of temporary generators. Consider a scenario in which two hospitals are requesting the only available generator and one of the facilities has a quick-connect device. In this situation, the LAC EMS Agency and/or the LAC OEM may decide to provide the generator to the facility with a quick-connect device since the generator can be hooked up much faster than the hospital without a quick-connect. Having quick access to information about a facility's electric utility will facilitate faster coordination between government officials and electric utilities regarding prioritized power restoration for impacted facilities.

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## Appendix H - Electric Utility Communications Protocols for Healthcare Facilities During Power Outages

During power outages, whether caused by Public Safety Power Shutoffs, or other factors, it is vitally important for hospitals and sub-acute SNFs to remain in frequent and close contact with their electric utility provider using established communication protocols. These protocols should be detailed in a facility's Emergency Operations Plan (EOP). This communication will allow facilities to receive timely updates from their utility on the estimated restoration time and share critical information with their utility if a facility faces a threat to emergency power during an outage. In such a scenario, knowing when electricity is likely to be restored will help drive decisions about whether to request the deployment of temporary generators or initiate evacuation protocols.

In some power outage scenarios, utility companies may be able to expedite power restoration if a threat to emergency power suddenly arises. This possibility underscores the importance of keeping utilities apprised of emergency power status as close to real-time as possible. When utility power is restored in these situations, the immediate threat a failing generator poses to a facility and its patients is eliminated, giving the facility more time to address any mechanical problems prior to the next outage. A utility's ability to expedite power restoration will depend on several factors, including the cause and extent of the outage and whether the utility has more than one feeder line into a facility.

The two largest electric utilities in LAC are Southern California Edison (SCE) and the City of Los Angeles Department of Water and Power (LADWP). These utilities employ key account liaisons to support the needs of the hospital and skilled nursing facility clients during blue-sky days and disasters. When large scale disasters trigger the activation of the LAC OEM's emergency operations center, representatives from SCE often deploy to the LAC EOC to help coordinate with county officials on restoration priorities. Updated generator status reporting submitted by hospitals and sub-acute SNFs through ReddiNet can be shared with LAC OEM leadership and SCE representatives by the staff at the Medical and Health Branch Coordination desk at the LAC OEM's EOC. This process will serve as a secondary communications channel for emergency power status reporting, which can augment direct status reporting between a facility and SCE.

When a large-scale outage triggers activation of the City of Los Angeles' emergency operations center, LADWP deploys its representatives to the city EOC to help coordinate prioritized power restoration for critical customers such as hospitals and sub-acute SNFs. At this time, LAC officials do not deploy representatives to the city of Los Angeles' EOC to support a Medical and Health Branch Coordination role. This makes it imperative for hospitals and sub-acute SNFs served by LADWP to adhere to communication protocols during power outages and to provide the fastest possible notification to LADWP when a threat to emergency power arises during a power outage.

Smaller electric utilities operated by municipal governments in Los Angeles County include:

- Burbank Water & Power
- Glendale Water & Power
- Pasadena Water & Power Department

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## Appendix I - Emergency Power Quick Connects: A Smart Investment for Hospitals and Sub-Acute Skilled Nursing Facilities

Installation of a quick-connect device, also known as a pigtail connection, is one of the smartest investments a hospital or sub-acute SNF can make to safeguard emergency power during an outage. Quick-connect devices establish a standby connection into a facility's electric distribution system that allows a temporary generator to be rapidly installed to replace or augment existing generators. Facilities without quick-connect devices that suddenly need to connect a temporary generator during a power outage can face hours of electrical work. This delay could force an emergency evacuation.

Several hospitals in Los Angeles County have made the wise decision to install quick-connect devices, providing an added level of safety, not only during power outages but also when routine maintenance requires a permanent generator to be taken offline. In these scenarios, being able to connect a temporary generator through a quick-connect device ensures that a facility maintains its normal level of emergency power during extended maintenance work on a generator.

The LAC EMS Agency strongly encourages hospitals and sub-acute SNFs to invest in quick-connect devices, an especially important step for the single-generator, acute care hospitals, and sub-acute SNFs caring for life support patients. If emergency power were threatened at these single-generator facilities during a power outage, a quick-connect would enable rapid connection of a temporary generator from either a rental provider or the LAC EMS Agency.



### **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.

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## Appendix J - Understanding the Role of the Los Angeles County Emergency Power Industry Work Group

A common maxim in emergency management is that parties trying to work together to solve a problem during an emergency shouldn't be meeting for the first time during the emergency. The LAC EMS Agency applied this maxim and created the LAC Emergency Power Industry Work Group in January 2020 as part of its emergency power preparedness initiative. This work group was created to facilitate stepped-up coordination between government officials and generator service, rental, and fuel providers when prolonged power outages could trigger multiple resource requests. In such a scenario, readily available information about a facility's generator service, fuel, and rental providers maintained by EMS Agency personnel will make it easier for government officials to communicate with service providers when a coordinated response is needed to support an impacted facility. This coordinated response may include decisions over whether to deploy government or private-sector generators or fuel to a facility. In situations in which roadblocks, flooding, or other impediments restrict the ability of service, rental, or fuel providers to access client sites quickly, timely communication between government officials and these providers may enable government agencies to remove impediments rapidly.



### **Power Reliability Tip** – Confirm Power Outage Communications Protocols with Electric Utility.

Hospitals and SNFs should contact their electric utility to confirm the protocol for power outage communications, including details about how any threat to emergency power should be communicated. Facilities should ask for secondary points of contact in case they are unable to reach an assigned liaison during an emergency situation.

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## Appendix K - Post Power Outage Hotwash Template of Key Questions

NOTE: Use this simple form to guide internal hotwash discussions. Use additional sheets as necessary to document responses. NOTE: This template is available as a downloadable Word file on the EMS Agency's website.

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.

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## Appendix L - Key Emergency Power Contacts Worksheet

Facilities should fill in key vendor contact information below and periodically update as needed. NOTE: This worksheet is available as a downloadable Word file on the EMS Agency's website.

<b>Contact</b>	<b>Updated as of:</b>
<b>Electric Utility Provider</b>	
Utility Name:	
Address:	
Point of Contact:	
Office phone:	
Cell phone:	
Outage Reporting phone number:	
<b>Primary Generator Service Provider</b>	
Company Name:	
Address:	
Point of Contact:	
Office phone:	
Cell phone:	
<b>Secondary Generator Service Provider</b>	
Company Name:	
Address:	
Point of Contact:	
Office phone:	
Cell phone:	
<b>Primary Fuel Provider</b>	
Company Name:	
Address:	
Point of Contact:	
Office phone:	
Cell phone:	

<b>Secondary Fuel Provider</b>	
Company Name:	
Address:	
Point of Contact:	
Office phone:	
Cell phone:	
<b>Generator Rental Provider</b>	
Company Name:	
Address:	
Point of Contact:	
Office phone:	
Cell phone:	
<b>LAC EMS Agency's Medical Alert Center (MAC) 24/7/365: 866-940-4401</b>	
Additional contact notes:	

## Appendix M - Inventory of Key Generator Parts and Fuel Consumption Rates

NOTE: This worksheet is available as a downloadable Word file on the EMS Agency's website.

<b>Key Part</b> <i>(Use one sheet for each generator in a facility's emergency power system)</i>	Manufacturer	kW Rating	# of Units on Hand (as of ___/___/___) Pre-Disaster	Fuel Consumption per hour under full load (See Appendix S)	Size of tank supplying fuel	# of Units on Hand (as of ___/___/___) Post-Disaster
Generator # _____						
Air Filter						
Coolant						
Fanbelt(s)						
Fuel Filter						
Fuel Water Separator Filter						
Fuse (multiple sizes)						
Heater Hose						
Motor Starter						
Oil						
Oil Filter						
Thermostat (Engine)						
Thermostat (Water Heater Jacket)						
Water Heater Jacket						
NOTES:						

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## Appendix N - FEMA D-1 Checklist for Emergency Power Planning Prior to a Power Outage

### **1. Combustion Air Intake and Exhaust Systems**

- Exhaust piping has no foreign object blockage, i.e., bird and rodent nesting, condensation drained
- Louvers operational with no restricted movement and no obstructions
- Rain cap has no restricted movement

### **2. Batteries**

- Batteries installed in conditioned air space to avoid temperature extremes
- Cable connections corrosion free and tight on both ends
- Charging system operational and alarms tested
- Interconnecting cables sized to compensate for voltage drop
- Specific gravity and voltages checked and acceptable

### **3. Generator set controller**

- All lock-out faults investigated, corrected, and cleared
- AUTO start engaged

### **4. Output circuit breakers**

- Closed or ready and able to close if electrically operated

### **5. Load cables**

- Clean and terminations checked for proper spacing and torque

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

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

### **7. Fuel Delivery System**

- Fuel quality tested and storage vessels maintained to prevent water accumulation and bacterial growth
- Fuel transfer pumps powered by the emergency system and periodically tested
- Preferred customer agreements in place with fuel suppliers to assure delivery
- Storage vessels, including day tanks, topped to appropriate levels

## 8. Engine oil

- Leaks inspected and corrected
- Level proper
- Low run time, capable of at least 48 hours continuous run time
- Scheduled oil sample results reviewed and proper actions taken
- Spare oil and delivery methods, i.e. funnels, pumps, drum carts, etc. nearby

## 9. Consumables – 10-day supply (minimum) in on-site storage

- Air filters
- Coolant
- Fuel filters
- Oil
- Oil filters

## 10. Local, state, and federal authorities and service organizations

- 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
- Emergency plans implemented
- 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

## 11. Communications

- Portable cell towers available and capable of being placed and made operational in a short time
- Site data reception and transmission systems inspected and proper operation tested with remote facilities and personnel
- Site two-way radios and cell phones charged and fully operational

## 12. Generator

- Air intake and exhaust air parts cleaned of dirt, debris, and obstructions
- Bearings properly greased
- Space heaters operational
- Windings clean

## 13. Cooling System

- Leaks inspected and corrected as needed
- Proper Levels

## Appendix O - FEMA D-2 Checklist for Emergency Power Planning During a Power Outage

### **1. Combustion Air Intake and Exhaust Systems**

- Louvers operational with no restricted movement and no obstructions

### **2. Output Circuit Breakers**

- Closed or ready and able to close if electricity operated

### **3. Fuel Delivery System**

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

### **4. Engine Oil**

- Level checked periodically and determined proper

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

- Air filters
- Coolant
- Fuel filters
- Oil
- Oil filters

### **6. Local, state, and federal authorities and service organizations**

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

### **7. Communications**

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

## 8. Generator

- Air intake and exhaust air paths cleared of debris and obstructions
- Bearings properly greased
- 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.
- Stable output voltage and frequency
- Winding temperatures acceptable
- Beyond fuel system problems, cooling system failures are the second most common source of failure during extended run times. Be sure that the coolant is topped off to the proper level and that all hoses are free of leaks. Ensure that the radiators are free of debris and that the radiator fan is working properly.
- Make sure that generators, switchgear, transfer switches, and pumps are all in the On and/or Auto setting

## 9. Condition Monitoring

- Receiving data
- Results normal

## Appendix P - FEMA D-3 Checklist for Emergency Power Planning Following a Power Outage

### **1. Combustion Air Intake and Exhaust Systems**

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

### **2. Batteries**

- Cable connections corrosion free and tight on both ends
- Charging system operational and alarms tested
- Specific gravity and voltages checked and acceptable

### **3. Generator set controller**

- All lock-out faults investigated, corrected, and cleared
- AUTO start engaged

### **4. Output circuit breakers**

- Closed or ready and able to close if electrically operated

### **5. Load cables**

- Cleaned and terminations checked for proper spacing and torque

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

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

### **7. Fuel Delivery System**

- Fuel quality tested and storage vessels maintained to prevent water accumulation and bacterial growth
- Storage vessels, including day tanks, topped to appropriate levels

### **8. Engine oil**

- Change oil and filter (s) and sample as needed
- Ensure proper level

**9. Consumables – Re-stock 10-day supply (minimum) in on-site storage**

- Air filters
- Coolant
- Fuel filters
- Oil
- Oil filters

**10. Local, state, and federal authorities and service organizations**

- Emergency plans reviewed and improved
- Road maintenance crews remove debris and repair damage to allow site access
- Service organizations' emergency plans reviewed and improved

**11. Communications**

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

**12. Insulation system test conducted and results analyzed to detect erosion**

- 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
- Air intake and exhaust air paths cleared of debris and obstructions
- Excitation system inspected and tested
- Insulation system test conducted and results analyzed to detect erosion properly operating
- Space heaters operational
- Voltage regulator connections inspected and properly torqued

**13. Cooling System**

- Drain, flush, and replace coolant as needed
- Ensure proper levels
- Inspect and correct leaks

Appendix Q – Los Angeles County EMS Agency Medical and Health Resource Request Form  
(and Completion Instructions)

- 1. Incident Name:** Name assigned by Incident Commander. Keep as general as possible, i.e.; March 2011 EQ or IED at Staples Center.
- 2. a. Date:** Use MM/DD/YYYY format
- b. Time:** Military Time is preferred, i.e. 1900 = 7:00 pm. If unable to use Military Time indicate am or pm.
- c. Requestor Tracking Number:** This will be your facility/department code, a dash “-”, and 1-digit number (in sequential order). Example CSM-001 is Cedars Sinai Medical Center and their first RRMH.
- 3. Requestor Name:** To be completed by whomever is filling this form.
- 4. Describe Mission/Tasks:** Give a brief description of reason for request.
- 5. Order Sheets:** Check which box applies to your order. Fill out one RRMH sheet for each type of request.
- 6. Order**
- Item #:** Each new line item is numbered.
- Priority:** (E)mergent <12 hours, (U)rgent >12 hours or (S)ustainment. If completing form electronically, there is a drop-down menu.
- Detailed Description:** Specifically describe the requested item by using brand, sizes, model #, dose, form (tabs vs caps vs suspension), strength, volume. Example: 3M N-95 Mask, Model #1234 size Medium or Penicillin 500mg tablets or Normal Saline1000ml IV fluid.
- Qty:** Quantity wanted based upon each, this is to simplify the ordering process. Example: Doxycycline 500mg Tabs quantity 50 = the hospital will receive 50 tablets.
- Expected duration of use:** This only applies to equipment and personnel. Supplies will not be returned.
- 7. Confirm Requirements:** Facility must confirm these requirements have been met prior to submission of request.
- 8. Command Review & Verification:** Authorized management staff review and approve. Printed name and signature are required.

E-mail completed form to: [laemsadutyofficer@dhs.lacounty.gov](mailto:laemsadutyofficer@dhs.lacounty.gov)  
 or fax: **number will be provided at time of event**

<b>Resource Request Medical and Health: FIELD/HCF<sup>2</sup> To Op Area</b>				
1. Incident Name:		2a. DATE:	2b. TIME:	
3. Requestor Name, Agency, Position, Address, Phone / Email:			2c. Requestor Tracking Number: Facility code+3 digit number (Assigned by requesting entity)	
4. Describe Mission/Tasks:				
5. ORDER SHEET(S) - ATTACH ADDITIONAL IF NEEDED		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		SUPPLIES	PERSONNEL	EQUIPMENT
6. ORDER <b>MEDICAL &amp; HEALTH REQUEST DETAILS</b>				
Item #	Priority <sup>3</sup>	Detailed Specific Item Description: Vital characteristics, brand, specs, diagrams, and other info. (Rx: Drug Name, Dosage Form, UNIT OF USE PACKAGE or Volume, etc.) (Attach product information pages, photos, In-House purchase order documentation)	Qty	Expected Duration of Use (does not apply to supplies)
7. Requesting facility must confirm that these 3 requirements have been met prior to submission of request				
<input type="checkbox"/> Is the resource(s) being requested exhausted or nearly exhausted? <input type="checkbox"/> Facility is unable to obtain resources within a reasonable time frame (based upon priority level below) from vendors, contractors, MOU/MOA's or corporate office? <input type="checkbox"/> Facility is unable to obtain resource from other non-traditional sources?				
8. COMMAND/MANAGEMENT REVIEW AND VERIFICATION (NAME, POSITION, AND SIGNATURE - SIGNATURE INDICATES VERIFICATION OF NEED AND APPROVAL)				

- 1-When EMS DOC activated MH-RR to be sent to Operations Section Coordinator
- 2-HCF = Health Care Facility
- 3-Priority: (E)mergent <12 hours, (U)rgent >12 hours or (S)ustainment



## Appendix R – The 10 Most Common Causes of Generator Failure

### **1. Weak or Dead Battery**

While there are many reasons generators fail, battery problems rank among the most frequent culprits. A variety of factors can adversely affect battery performance, including wires that come loose, dirty, or rusted connections, excessive age, or buildup of lead sulfates that accumulate on battery plates and impact the ability to provide sufficient electrical current. Usually, by the time this occurs, the battery will require replacement. Because batteries are so vulnerable to failure, it is critical to check them thoroughly during monthly, quarterly, and annual inspections. While a standard generator battery should last several years before needing to be replaced, routine maintenance can help extend that lifespan.

### **2. Leaks**

Oil, fuel, or coolant leaks are another common source of generator failure — and particularly deceptive because they tend to occur slowly over a period of time. As a result, you may not recognize there's a problem until it's too late. Oil leaks are sometimes a result of wet stacking, a condition in which oil, fuel and other liquids build up in a generator's exhaust pipes. Depending on the severity of the leak, you can potentially lose enough oil to damage your engine. When there is a fuel leak, it not only negatively impacts generator performance but can pose extreme danger, potentially leading to malfunctions and fires that can damage property and injure personnel. To prevent fuel leaks, make sure that the pump systems, fuel lines and storage tanks are inspected on a regular basis and promptly repaired. Finally, because coolant leaks usually occur in the hoses of the block heater, it is important to use only silicone hoses that are specifically designed to withstand extreme heat. Properly maintaining the cooling system and replacing hoses every few years will reduce the risk of failure. Additionally, since coolant can deteriorate over time, the system should be flushed and replaced per the manufacturer's guidelines.

### **3. Insufficient Coolant**

Another top reason for generator failure is inadequate coolant levels, which can result in sudden failure and cause damage from overheating. Because of this, it is important to check coolant levels frequently; if you are losing any, there may be a leak in the system. Also be aware of any visible puddles around your diesel generator. If you note either of these conditions, a qualified technician should inspect the unit right away.

### **4. Poor Maintenance**

Operators who neglect maintenance tend to experience a much higher rate of generators failing. For instance, because dirt builds up in filters over time — impacting air quality and making the generator system work harder — filters should be replaced annually. At a minimum, your generator should receive a quarterly inspection, as well as an annual major generator maintenance service call, which includes an oil change, filter replacement, checking of connections, and a run test.

### **5. Bad Fuel Mix**

Lack of fuel maintenance is another key factor in standby generator failure. Without proper service, microbes, debris, additives, and oxygen can build up in the system, diminishing fuel quality. Never use biofuel in any standby generator, as it breaks down over time. To protect your generator, make sure that storage tanks and fuel quality are regularly inspected, and fuel samples are taken at least annually by your service technician.

## **6. Water Damage**

When it comes to problems with emergency generators, water can also be a chief offender. If water accumulates on the outside of a unit, it can cause rust to form, which can lead to corroded wires and impede electrical connections. Similarly, if water reaches the inside of the engine, it can corrode parts and promote bacteria growth, which can clog filters and cause engine damage. This same type of damage can also occur in partially filled tanks, which attract water through condensation.

## **7. Air in Fuel System**

If your generator fails to start, another reason might be air in the fuel system. This tends to develop when the system isn't used on a regular basis, as is the case with most emergency generators. Air can block fuel from getting to the fuel injector, which then prevents the engine from starting. This issue can be avoided by turning on the generator once a week for at least five minutes, which enables air to clear from the fuel system.

## **8. Control Setting Errors**

Human error is another top reason that a generator may fail to start. Most standby generators rely on an automatic transfer switch (ATS) that enables the system to turn on during a power failure. However, this setting is often turned off during routine maintenance or testing. If you set the auto mode to "off," be sure to turn it back to auto when service is complete; if the proper resetting procedure is not followed, a control error could also occur after a fault shutdown. Ensure optimal efficiency and safe operation by regularly reviewing your generator's control setting parameters.

## **9. Electrical Faults**

Another common source of problems in standby generators can be attributed to fault currents. These high current flows within an electrical system can cause a generator's winding to heat up and become damaged. If such a fault occurs in your system, it is critical to have the unit checked immediately by a service technician.

## **10. Intake and Exhaust Valve Debris**

Issues originating within intake and exhaust valves can also negatively impact a generator's engine. Debris can impair key engine components, potentially leading to expensive repairs. To avoid this, be sure to perform valve adjustments based on manufacturer guidelines, as well as at regular intervals afterward. Valves that are not correctly adjusted can become damaged.

Information provided by [Unified Power](#), one of the largest critical power service providers in the U.S.

## Appendix S – Generator Fuel Consumption Rate Chart

This chart approximates the fuel consumption of a diesel generator based on the size of the generator and the load at which the generator is operating at. Please note that this table is intended to be used as an estimate of how much fuel a generator uses during operation and is not an exact representation due to various factors that can increase or decrease the amount of fuel consumed.

<b>Generator Size (kW)</b>	<b>¼ Load (gal/hr)</b>	<b>½ Load (gal/hr)</b>	<b>¾ Load (gal/hr)</b>	<b>Full Load (gal/hr)</b>
<b>20</b>	0.6	0.9	1.3	1.6
<b>30</b>	1.3	1.8	2.4	2.9
<b>40</b>	1.6	2.3	3.2	4
<b>60</b>	1.8	2.9	3.8	4.8
<b>75</b>	2.4	3.4	4.6	6.1
<b>100</b>	2.6	4.1	5.8	7.4
<b>125</b>	3.1	5	7.1	9.1
<b>135</b>	3.3	5.4	7.6	9.8
<b>150</b>	3.6	5.9	8.4	10.9
<b>175</b>	4.1	6.8	9.7	12.7
<b>200</b>	4.7	7.7	11	14.4
<b>230</b>	5.3	8.8	12.5	16.6
<b>250</b>	5.7	9.5	13.6	18
<b>300</b>	6.8	11.3	16.1	21.5
<b>350</b>	7.9	13.1	18.7	25.1
<b>400</b>	8.9	14.9	21.3	28.6
<b>500</b>	11	18.5	26.4	35.7
<b>600</b>	13.2	22	31.5	42.8
<b>750</b>	16.3	27.4	39.3	53.4
<b>1000</b>	21.6	36.4	52.1	71.1
<b>1250</b>	26.9	45.3	65	88.8
<b>1500</b>	32.2	54.3	77.8	108.5
<b>1750</b>	37.5	63.2	90.7	124.2
<b>2000</b>	42.8	72.2	103.5	141.9
<b>2550</b>	48.1	81.1	116.4	159.6

Information developed by [Generator Source](#), a multi-state generator sales, service, and rental provider.

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## Appendix T – California Department Of Public Health All Facilities Letter 19-30.1

CDPH November 4, 2019 letter regarding Public Safety Power Shutoff Power Outage Reporting – [AFL 19-30.1](#)



State of California—Health and Human Services Agency  
**California Department of Public Health**



November 4, 2019

AFL 19-30.1

**TO:** All Facilities

**SUBJECT:** Public Safety Power Shutoff Power Outage Reporting  
(Rescinds AFL 19-30)

### **All Facilities Letter (AFL) Summary**

- This AFL rescinds AFL 19-30 to clarify which facility types must report unusual occurrences as required by Title 22 California Code of Regulations.
- California energy companies may proactively turn off electric power to any electric customer in California as a part of a Public Safety Power Shutoff (PSPS) event.
- Facilities should ensure their local energy company is provided with the most up-to-date contact information to receive outage alerts.
- PSPS events, when used, are regarded as an unusual occurrence. Facilities must report the unusual occurrence of a PSPS event to the California Department of Public Health (CDPH), Licensing and Certification (L&C) Program.
- Facilities must report PSPS power outages, generator and fuel status, any impact to patients, and any resource needs to the local L&C district office (DO), local public health officer, and Medical Health Operational Area Coordinator (MHAOC).

### **Background**

In an effort to keep communities safe from wildfire and extreme weather events, your local energy company may need to turn off electric power if there are gusty winds and dry conditions creating a heightened fire risk. The power will remain out for as long as the weather conditions pose a potential fire risk. After a PSPS event, your energy company will inspect and repair power lines and equipment so that power can be safely restored.

Depending on the severity of the weather and other factors, power outages could last several hours or multiple days. It is important that your facility has an emergency plan in place.

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Center for Health Care Quality, MS 0512  
P.O. Box 997377 • Sacramento, CA 95899-7377  
(916) 324-6630 • (916) 324-4820 FAX  
[Department Website](http://www.cdph.ca.gov) (www.cdph.ca.gov)



**Notifications of PSPS**

CDPH strongly recommends facilities ensure their local energy company is provided with the most up-to-date contact information so they receive outage alerts. Please use the links and numbers below for instructions on how to update your contact information for your local energy company.

- [Southern California Edison \(SCE\)](#) or call 1-800-990-7788 or your assigned SCE Account Manager
- [Pacific Gas and Electric Company](#) or call 1-866-743-6589
- [San Diego Gas and Electric](#) or call 1-800-411-7343

**Unusual Occurrence Reporting**

CDPH considers any power outage related to a planned PSPS event as an unusual occurrence, reportable as required in Title 22 California Code of Regulations. Please report such occurrences according to the following guidelines:

If...	Then...
During normal business hours (Monday – Friday, 8:00 a.m. – 5:00 p.m.)	Contact the local L&C DO you customarily work with for your geographic location.
After-hours or if the local L&C DO is non-operational due to an emergency and/or disaster	For facilities outside Los Angeles County, contact the CDPH duty officer at 1-916-328-3605  For facilities in Los Angeles County, contact the Los Angeles County Operator at 1-213-974-1234. Ask that they notify the on-call Health Facilities Inspector Division supervisor.

In addition to contacting the DO, please notify your local Medical Health Operational Area Coordination (MHOAC) per the local notification protocols. Refer to the [MHOAC Program Contact Information](#) (PDF) for a listing of coordinators.

**Who is Required to Report**

The following facility types must report unusual occurrences:

- Acute Psychiatric Hospitals
- Adult Day Health Centers
- Chemical Dependency Recovery Hospitals
- Congregate Living Health Facilities
- Correctional Treatment Centers
- Intermediate Care Facilities
- Intermediate Care Facilities/Developmentally Disabled
- Intermediate Care Facilities/Developmentally Disabled - Habilitative
- General Acute Care Hospitals
- Pediatric Day Health and Respite Care Facilities
- Primary Care Clinics
- Psychology Clinics
- Skilled Nursing Facilities

### **What to Report**

Facilities must have contingency plans in place to deal with the loss of power. Please report the following details:

- Power is out due to a PSPS
- Generator is functioning and the number of days/supply of fuel currently available, and/or plans for obtaining more fuel or evacuating if necessary
- Any impact on patients
- Any resource needs

### **Updating Emergency Contact Information**

To improve emergency communication, CDPH plans to collect emergency contact information from all facilities. Please anticipate an upcoming AFL with directions on how to provide emergency contact information to CDPH.

### **Helpful links and Resources**

- [California Energy Commission](#)
- [CPUC Fire Safety Rulemaking Background](#)
- [California Emergency Medical Services Authority MHOAC](#)
- [Southern California Edison](#)
- [Pacific Gas and Electric Company](#)
- [San Diego Gas & Electric](#)
- [The Power of Being Prepared](#)

If you have any questions about this AFL, please contact your respective [L&C DO](#).

Sincerely,

**Original signed by Heidi W. Steinecker**

Heidi W. Steinecker  
Deputy Director