Emergency and standby power systems are required to provide reliable backup to the utility and deliver electricity to critical building systems during a utility outage. Proper inspection, testing, and maintenance (ITM) are necessary for these systems to perform as intended in an emergency.

**DID YOU KNOW?** According to the U.S. Energy Information Agency, nearly all electrical customers experience at least one electrical utility outage each year. On average, each outage lasts 60 minutes or more.

**The Importance of ITM**

Each emergency power supply system comprises complex subsystems with many internal components, all of which are required for reliable operation. The failure of one or more of these subsystems could compromise the ability of the emergency power system to deliver electricity in an emergency. Diligent upkeep of your emergency power supply system — including routine inspections, system testing, and frequent maintenance — helps ensure that the system is always in optimum operating condition.

**The Role of NFPA 110**

The installation and performance requirements of emergency power supply systems are outlined in the 2016 edition of NFPA 110, *Standard for Emergency and Standby Power Systems*. This standard is invoked as a mandated code by direct reference in several major codes and standards, including NFPA 101®, NFPA 99, the NEC®, and the International Building Code. The requirements of NFPA 110 cover installation, operation, maintenance, and testing for the proper performance of the emergency power supply system.

**Routine Maintenance and Operational Testing**

Chapter 8 of NFPA 110 contains the requirements for routine maintenance and operational testing, which must be based on the following:

- Manufacturer’s recommendations
- Instruction manuals
- The authority having jurisdiction

In the absence of manufacturer instructions or recommendations, the following tools provided by NFPA 110 can be used for assistance:

1. **A suggested maintenance schedule for emergency power supply systems** [Figure A.8.3.1(a)]
2. **A sample maintenance log for documenting routine maintenance, operation, and testing** [Figure A.8.3.1(b)]
Operational Inspection and Testing
The emergency power supply system and all its components must be inspected at least weekly and exercised under load at least monthly, as illustrated in the following table. The requirements of Section 8.4 should be consulted for more details specific to your system.

<table>
<thead>
<tr>
<th>Generator set type</th>
<th>Run frequency</th>
<th>Run duration</th>
<th>NFPA 110 section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel</td>
<td>Monthly</td>
<td>30 minutes</td>
<td>8.4.2</td>
</tr>
<tr>
<td>Spark-ignited (i.e., natural gas, propane, gasoline)</td>
<td>Monthly</td>
<td>30 minutes, or until the water temperature and oil pressure have stabilized</td>
<td>8.4.2.4</td>
</tr>
</tbody>
</table>

Documentation
All inspections, tests, system exercising, repairs, and modifications must be recorded. These records must be properly maintained and made available to the authority having jurisdiction upon request.

nfpa.org/110
Visit NFPA 110’s document information page (www.nfpa.org/110) and click the Free Access link to view the entire standard. For more resources, click the Related Products link for access to the following:

- Standards and handbooks
  - NFPA 110, Standard for Emergency and Standby Power Systems
  - NFPA 110, Emergency and Standby Power Systems Handbook
  - NFPA 111, Standard on Stored Electrical Energy Emergency and Standby Power Systems

- Training
  - NFPA 110 and NFPA 111 (2016) Online Training Series, which includes:

- Certification
  - Certified Emergency Power Systems Specialist (CEPSS) Certification
  - Certified Emergency Power Systems Specialist for Health Care (CEPSS-HC) Facility Managers Certification

For more of these resources, become an NFPA member