



भारत सरकार/Govt. of India

विद्युत मंत्रालय/Ministry of Power

केन्द्रीय विद्युत प्राधिकरण/Central Electricity Authority

मुख्य विद्युत निरीक्षणालय प्रभाग/Chief Electrical Inspectorate Division

To,

As per List

Subject: Guidelines for Training of Fire Safety Officials under CEA (Measures relating to Safety and Electric Supply) Amendment, 2026 for BESS Installations-reg.

Sir/Mam,

Central Electricity Authority (CEA) has notified CEA (Measures related to Safety and Electric Supply) Amendment Regulations, 2026, on 27.03.2026. Clause 122(M) (3) of the aforesaid regulations mandates that Directorate General of Fire Safety (DGFS) shall issue **guidelines for training of Fire safety officials** to address fires risks specific to BESS installations.

In view of the above, the **guidelines for training of Fire safety officials** have been prepared by DGFS. The same is forwarded for your information and necessary action.

This issues with the approval of competent authority.

Encl: as above

Digitally signed by
Alok Kumar
Date: 22-07-2026
16:11:34

(Alok Kumar)
Deputy Director

Copy for information to:

1. PPS to Secretary, Ministry of Power
2. SA to Chairperson, CEA
3. SA to Member (Power Systems), CEA

Guidelines for Training of Fire Services Officers/Personnel for addressing Fire Risks specific to Battery Energy Storage Systems (BESS)

(Issued under Clause 122(M) (3) of the Central Electricity Authority (Measures relating to Safety and Electric Supply), Amendment Regulations, 2026)

1. Short Title and Commencement

1.1

These guidelines may be called the *Guidelines for training of Fire Services Officers/Personnel for addressing Fire Risks specific to Battery Energy Storage Systems (BESS), 2026*.

1.2

These guidelines shall come into force from the date of notification of the Central Electricity Authority (Measures relating to Safety and Electric Supply) Amendment Regulations, 2026.

2. Objective

The objective of these guidelines is to establish a nationally uniform framework for capacity building of Fire Services personnel to effectively prevent, inspect, respond to, control and mitigate fire and emergency incidents involving Battery Energy Storage Systems (BESS).

These guidelines aim to:

- (a) Build technical competency among fire service personnel regarding BESS technologies.
- (b) Develop specialised emergency response capabilities for battery-related fire incidents.
- (c) Standardise firefighting procedures for BESS incidents across India.
- (d) Ensure safety of responding personnel.
- (e) Create a trained pool of competent officers capable of conducting fire safety inspections and audits of BESS facilities.

3. Applicability

These guidelines shall apply to:

- (a) Fire Services functioning under the Central Government Ministries/Departments
- (b) State Fire Services of all States and Union Territories.

- (c) Fire Services of Central and State Public Sector Undertakings (CPSUs & SPSUs).
- (d) Fire Services of Ports, Airports, Oil Sector installations, Railways, Defence establishments, Industrial Townships and other organised fire services.
- (e) Fire personnel deployed at renewable energy parks, grid substations, EV charging infrastructure and BESS facilities.
- (f) Fire prevention and inspection officers responsible for granting fire clearances.

4. Nodal Agency for Training

4.1

The National Fire Service College (NFSC), Nagpur shall be the nodal institution for development, standardisation and conduct of training programmes under these guidelines.

4.2

NFSC, Nagpur may collaborate with but not limited to:

- Central Electricity Authority
- Bureau of Indian Standards
- Battery manufacturers
- Renewable energy developers
- Testing laboratories
- Academic/research institutions

for curriculum development and technical expertise.

5. Categories of Training

Training shall be conducted under the following categories:

5.1 Basic Orientation Programme

Duration:

1-3 days

Target Group:

- Fire station personnel
- First responders
- Control room staff

- Safety officers

Objective:

To create awareness on basic hazards and immediate response protocols.

5.2 Advanced Operational Training Programme

Duration:

5 days

Target Group:

- Station Officers
- Sub Officers
- Shift In-charges
- Operational supervisors

Objective:

To develop operational competency for responding to BESS incidents.

5.3 Specialist Certification Programme

Duration:

Minimum 7-10 days

Target Group:

- Senior fire officers
- Fire prevention officers
- Audit officers
- Technical officers

Objective:

To create specialised officers capable of:

- conducting inspections
- undertaking fire audits
- incident command
- post-incident investigation

6. Training Curriculum

The training curriculum will include but not limited to:

Module I - Introduction to BESS Systems

- Types of BESS installations
- Grid scale BESS
- Utility scale storage systems
- Rooftop systems
- EV charging integrated storage systems

Module II - Safety Challenges in BMS & Charging station

- Battery Safety
- Thermal Management.
- Electrical Safety
- Software Reliability & Cybersecurity Risks

Module III - Safety Challenges in Charging station

- Electrical Hazards
- Installation and Maintenance
- Compatibility and Standards
- User Safety (Tripping hazards, weather-related risks, and potential tampering or vandalism)
- Overloading Infrastructure

Module IV - Battery Chemistry

- Lithium-ion chemistry
- LFP (Lithium Iron Phosphate) Batteries
- NMC (Nickel Manganese Cobalt) Batteries
- Sodium-ion batteries
- Emerging Type of Batteries Technologies [Lithium Cobalt Oxide (LCO), Lithium Titanate (LTO), Lithium Nickel Cobalt Aluminium Oxide (NCA)]

Module V - Fire Hazards

- Thermal runaway
- Internal short circuit
- Overcharging
- Gas venting
- Re-ignition hazards
- Explosion hazards

Module VI - Electrical Hazards

- High voltage DC risks
- Arc flash hazards
- Isolation procedures
- Lockout-tagout systems

Module VII - Fire Protection Systems

- Detection systems
- Suppression systems
- Water-based systems
- Clean agent systems
- Gas suppression systems
- Ventilation systems

Module VIII - Firefighting Tactics

- Safe approach methods
- Cooling strategies
- Exposure protection
- Evacuation protocols
- Defensive firefighting strategy
- Extended duration operations

Module IX - Toxic Gas Hazards

- Hydrogen fluoride exposure

- Carbon monoxide exposure
- Smoke toxicity
- PPE requirements

Module X- Environmental & Other causes of malfunction

- Chemical exposure
- Too-cold conditions
- Too-hot conditions
- Cycling and maintenance-related causes
- Manufacturing causes

Module XI - Inspection Protocols

- Pre-commissioning inspection
- Periodic inspection
- Maintenance review
- Emergency preparedness verification

Module XII - Standards and Regulatory Framework

Training will cover but not limited to:

- Central Electricity Authority regulations
- Bureau of Indian Standards standards
- National Fire Protection Association Standard- 855
- IEC 62933
- UL 9540
- National Building Construction Standard provisions
- NITI Aayog Guidelines

Module XIII - Incident Investigation

- Cause analysis
- Preservation of evidence
- Reporting mechanisms
- Lessons learned

7. Practical Training Requirements

The training programme will include:

- (a) Table-top simulation exercises
- (b) Mock drills
- (c) Incident command exercises
- (d) Use of thermal imaging devices
- (e) Gas monitoring drills
- (f) Emergency isolation drills
- (g) Practical demonstrations on BESS systems wherever feasible

8. Training Frequency

8.1

Every fire service organisation covered under these guidelines shall nominate personnel for the training at least once in three years.

8.2

Refresher training shall be conducted every three years.

9. Certification

National Fire Service College, Nagpur shall issue certificates to successful participants.

Certification validity shall be:

- Basic Programme: Awareness certification only
- Advanced Programme: 3 years
- Specialist Programme: 5 years

10. Responsibilities of BESS Owners/Operators

Every BESS developer/operator shall:

- (a) Facilitate site visits for fire services personnel
- (b) Share emergency response plans
- (c) Provide technical documentation
- (d) Participate in joint drills
- (e) Support emergency familiarisation exercises

11. Record Keeping

All fire service organisations shall maintain records of:

- trained personnel
- certifications
- drills conducted
- incidents attended
- lessons learned

These records shall be produced before competent authorities whenever required.

12. Review of Guidelines

These guidelines shall be reviewed every three years or earlier based on:

- technological developments
- emerging battery technologies
- incident learnings
- international best practices
