



U.S. ELECTION ASSISTANCE COMMISSION

633 3rd St. NW, Suite 200
Washington, DC 20001

EAC Decision on Request for Interpretation

2023-05 2.7-H Power outages, sags, and swells

Sections of Standards or Guidelines:

2.7-H – Power outages, sags, and swells

The voting system must be able to withstand, without disruption of normal operation or loss of data, a complete loss of power lasting two hours.

Discussion

Essentially, battery backup must keep the voting system operational so that voting can continue for a minimum of two hours.

Date:

September 29, 2023

Question(s):

Does the 2-hour battery backup apply to non-voter facing devices and workstations including the EMS and Central Count?

Given the size and power needs of a central count voting system regarding a battery backup requirement, is a central count voting system required to have a battery back up?

Can a graceful shutdown be done by means of user intervention or whether it must be done by systematic means only?

Discussion:

In a polling place, without the two-hour backup operational time, a loss of power would render the Ballot Marking and Ballot on Demand devices to be unusable. A loss of power to the polling place would cause undue strain on the process and prevent voting through accessible means. As a result, there is a minimum requirement for two hours' continued use of battery power. The two-hour backup ensures that all voting systems can operate on backup power, such that no voting data is lost or corrupted, nor normal operations interrupted.

Central count systems and EMS systems must meet the electrical power disturbance standard requirements whether that power source is the facility's main or backup power source. However, non-voter facing devices cannot assume an uninterrupted transition to facility backup power or the availability of facility backup power. Both central count and EMS devices may have exceptionally large power requirements, being unable to operate for 2 hours on battery power, or a standard Uninterruptible Power Supply (UPS). Due to these power requirements, non-voter facing devices are not required to have a 2-hour battery backup. Instead, a non-voter



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facing devices must be capable of performing a graceful shutdown to allow switching to an alternate power source.

The graceful shutdown of the central count systems must meet the following requirements:

1. All ballots must reside in either the input or output hopper with no ballots in process at the end of the shutdown process.
2. All ballots in the output hopper must be fully read and saved.
3. A report, including the final state of all ballots, timestamps and of the final state of the unit, must be printed or saved in a file. The report must be part of the permanent election record and must be available when power is restored to the system.
4. The system must be capable of resuming operation from the point it stopped once power is restored.

The graceful shutdown of the non-voter facing systems, that are not a central counting tabulator, must meet the following requirements:

1. A report, including the final state of all ballots, timestamps and of the final state of the unit, must be printed or saved in a file. The report must be part of the permanent election record and must be available when power is restored to the system.
2. The unit must be shut down in accordance with the manufacturer's instructions for powering down without loss of, or corruption of, data or applications.
3. The system must be capable of resuming operation from the point it stopped once power is restored.

A graceful shutdown is meant to prevent data loss or the necessity of having to re-run the ballots. This requirement is to confirm that the system will stop processing further ballots, complete ballots in process, and save a report that accurately identifies the final state of the ballots and the system. The second part of the test must restore power to the system and confirm that the system restarts properly, and that the status report accurately reflects the state of the ballots and the system.

The shutdown may be implemented by user-controlled intervention or automatic systematic operation. Whichever method is used to shut down the device must be documented and clarified by the voting system manufacturer. Once power is lost, the system must notify the election official that the system has lost power and is shutting down (systematic) or needs to be shut down (user intervention). Alerts produced by the voting system regarding power loss must be both audible and visual in nature.

Also, the voting system must log all events during the graceful shutdown period and create a report of the final state. All actions taken by the system or the user to initiate the shutdown are considered "events" and must be logged. The report will include the final state of all ballots,



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timestamps, and the final state of the unit. This report must be printed or saved in a file and must be available when power is restored to the system.

Conclusion:

All voting devices must meet the requirements of the electrical power disturbance standards. Devices must operate without disruption of normal operation or have a loss of data. With the non-voter facing devices requiring more power than an average UPS system can maintain for two hours, it will instead be required to perform a graceful shutdown. This graceful shutdown requires that all non-voter facing devices process all ballots currently being tabulated. If power is lost during the tabulation process, the device must provide a report available upon power being restored and ensure that it can resume operations from the point of power loss. The shutdown may be implemented by user-controlled intervention or automatic systematic operation.

Effective Date:

As of the date this document is published.