



EAC Decision on Request for Interpretation 2009-03 (Battery Back Up for Central Count)

EAC Decision on Request for Interpretation 2008-06 (Battery Back Up for Central Count)

2002 VVSS Volume I, Sections 3.2.2.4c, 3.2.2.5

**2005 VVSG Volume I, Version 1.0, Sections 4.1.2.4c (Electrical Supply), 4.1.2.5
(Electrical Power Disturbance)**

Date:

September 28, 2009

Question:

EAC Decision on Request for Interpretation 2008-06 does not address whether provision for a graceful shutdown can be done by means of user intervention or whether it has to be done by systematic means only.

In addition, the test sequence requires that the method used to stop the picking of ballots rather than allowing the batch to finish scanning and then providing for a graceful shutdown. With the speed of the coming generation of central scanners, the time needed to complete the input hopper is very short, requiring reasonable backup resources to allow for a graceful shutdown.

Section of Standards or Guidelines:

2002 VVSS Volume I, Sections 3.2.2.4c, 3.2.2.5

3.2.2.4c: All systems shall also be capable of operating for a period of at least 2 hours on backup power, such that no voting data is lost or corrupted, nor normal operations interrupted. When backup power is exhausted the system shall retain the contents of all memories intact.

3.2.2.5: Vote scanning and counting equipment for paper-based systems, and all DRE equipment, shall be able to withstand, without disruption of normal operation or loss of data:

- a. Surges of 30% dip @10 ms;
- b. Surges of 60% dip @100 ms & 1 sec
- c. Surges of >95% interrupt @5 sec;
- d. Surges of +15% line variations of nominal line voltage; and

e. Electric power increases of 7.5% and reductions of 12.5% of nominal specified power supply for a period of up to four hours at each power level.

2005 VVSG Volume I, Version 1.0, Sections 4.1.2.4c (Electrical Supply), 4.1.2.5 (Electrical Power Disturbance)

4.1.2.4c: All voting machines shall also be capable of operating for a period of at least 2 hours on backup power, such that no voting data is lost or corrupted nor normal operations interrupted. When backup power is exhausted the voting machine shall retain the contents of all memories intact.

4.1.2.5: Vote scanning and counting equipment for paper-based voting systems, and all DRE voting equipment, shall be able to withstand, without disruption of normal operation or loss of data:

- a. Voltage dip of 30% of nominal @ 10 ms;
- b. Voltage dip of 60% of nominal @ 100 ms & 1 sec
- c. Voltage dip of >95% interrupt @ 5 sec
- d. Surges of +15% line variations of nominal line voltage
- e. Electric power increases of 7.5% and reductions of 12.5% of nominal specified power supply for a period of up to four hours at each power level

Discussion:

The EAC Decision on Request for Interpretation 2008-06 requires a central count system to provide for a graceful shutdown to allow switching to an alternate power source. It also states that the graceful shutdown shall meet the following requirements:

- 1. All ballots shall 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 shall be fully read and saved.
- 3. A report, including the final state of all ballots, timestamps and of the final state of the unit, shall be printed or saved in a file. The report shall be part of the permanent election record and shall be available when power is restored to the system.
- 4. The system shall be capable of resuming operation from the point it stopped once power is restored.

This new RFI clarifies the issue of whether or not the interpretation provided by RFI 2008-06 requires the shut down of the central count system to be a systematic (controlled by the system) or by user intervention.

Conclusion:

The intent of RFI 2008-06 is that the required shut down shall be done in a graceful manner to prevent data loss or the necessity of having to re-run the ballots. The method of shutdown needs to be clarified. The shut down can be implemented either by means of a user controlled intervention or an automatic systematic operation.

The method of notification to the user that the system has lost power and is shutting down (systematic) or needs to be shut down (user intervention) is an important attribute for a manufacturer to consider. The alert should be easily recognizable and documentation should be provided to illustrate the proper course of action that needs to be taken. There are many ways for the user to be notified that the system has lost power. However all implementations must satisfy the high-level requirements for graceful shut down and protection of election data enumerated in the discussion section above. Also, all actions taken by the system or the user to initiate the shut down are considered “events” and shall be logged per VSS section 2.2.4.1g & i and VVSG section 2.1.4 g & i.

In addition RFI 2008-06 states that a stipulation of a graceful shut down is that “A report, including the final state of all ballots, timestamps and of the final state of the unit, shall be printed or saved in a file. The report shall be part of the permanent election record and shall be available when power is restored to the system.” This report does not need to be a special report created for this instance. Any report currently offered by the EMS is acceptable as long as it contains the above mention criteria.

Applicability:

Immediate- for all voting system test plans submitted after the date of this document.