

Voting System Type Definitions

DRE SYSTEM: A Direct Recording Electronic (DRE) voting system directly records the voter's selections in each race or contest on the ballot in electronic form. Such systems can be compared with mechanical lever voting machines, which directly record votes on mechanical counters inside the machine. Neither DREs nor lever voting machines create a tangible physical record of the voter's selections on a physical ballot. Typical DRE machines have flat panel display screens with touch-screen input, although other display technologies have been used, including print on paper, and other input technologies have been used, such as push buttons. The defining characteristic of these machines is that votes are captured electronically and stored in that form. Such machines may print a durable paper record of the votes cast, for example, after the polls are closed or on an internal printer, but this record is not subject to voter verification. DRE machines also record event logs giving the time of each significant operation on the machine, such as when it was set up for an election, when the polls were opened, when the polls were closed, and when a ballot was cast (but not which ballot was cast then). At the close of polls, vote totals, the event log, and all votes cast may be printed. In addition, electronic records of these may be extracted from the machine (for example, on removable media such as disks or compact electronic memory modules), or the records may be transmitted electronically to a vote collection center (for example, by modem). Procedures for using these alternatives vary from jurisdiction to jurisdiction. Typically, the electronic transmission or the electronic memory module is delivered to a central vote-counting system (for example, in the county election headquarters), where jurisdiction-wide totals are computed.

There are three subtypes of DRE, based on the style of user interfaces/interaction:

1. The **touch screen DRE**. These systems use a touch screen to collect user input when not in an audio ballot mode.
2. The **full-face DRE**. These DRE systems generally involve electro-mechanical human interface using switches providing tactile feedback to the voter, and have no paging.
3. **DRE with off-screen mechanical control** in which the user views options displayed on a screen but provides input via buttons, switches, dials or other input devices.

Software is updated in DRE systems via various methods, specific to each voting system. In general, software updating involves someone (a technician or election official representative) installing new software over older software typically using whatever medium the DRE uses to transport votes or, in some cases, laptop computers with special software running on them provided by the vendors. One or a small number of DREs later function as a Ballot Definition System, producing election definition files which are installed in the DREs generally at a county warehouse facility. (Note that some DREs require a stand-alone PC to do ballot programming.)

DRE SYSTEM WITH VVPT: This is typically is a touch-screen DRE system designed to capture voter choices both internally in electronic form and, contemporaneously, on paper as a voter-verified record. It is a defining characteristic of a **DRE SYSTEM WITH VVPT** that voters are able to see and confirm the accuracy of the paper record although that record is often not physically handled by voters and remains at the polling place, mechanically stored within or near the DRE machine used to cast the vote.

DRE SYSTEMS WITH VVPT include those that ensure voter privacy by automatically separating and randomizing vote selections to store and those with reel-to-reel designs. Proponents of **DRE with VVPT** systems anticipate that in the case of a discrepancy between the electronic vote stored internally in a **DRE SYSTEM WITH VVPT** and the voter-verified physical ballot securely stored within or near the machine, laws, procedures and regulations would dictate that the physical ballots are the votes of record.

There are two subclasses of DRE with VVPAT that affect ballot secrecy:

1. Those that cut the ballots into individual sheets and deposit them separately
2. Those that use a reel-to-reel or other ordered way of storing the ballots

PRECINCT COUNTED OPTICAL SCAN BASED VOTING SYSTEM: (PCOS) is a voting system where voters mark paper ballots, typically with pencils, independent of any machine, and hand carry their sleeved ballots to un-sleeve and insert into scanners that optically sense their votes. Initial tabulation is generally done at the polling place after the polls close. Ideally, when a PCOS system is used, voters are warned of overvotes and undervotes and are given a chance to correct mistaken ballots. (Any system that cannot be configured to warn voters of over-votes and under-votes will not be considered PCOS.) Note: Given HAVA's requirement for accessibility, a PCOS system cannot be used as the only means to vote; it must be supplemented with a system that provides access for people with disabilities.

BALLOT MARKING DEVICE (BMD) BASED SYSTEM: typically an accessible computer-based voting system that produces a marked ballot (usually paper) that is the result of voter interaction with visual or audio prompts. The result is a voter-verified ballot that may or may not be accessibly verified. Some BMDs count votes internally (as do DRE systems) and may save voter selection information. For any BMD that does count, save or use cryptography or other techniques to make it difficult to insert, before, during or after actual polling, fraudulent ballots prepared on other devices, any discrepancy between records stored within a BMD and physical ballots produced would provide clear evidence of malfunction or fraud and initiate an investigation to determine the source of the discrepancy and the invalid ballots, whether electronic or physical.