



Comparing Annual Costs of DRE and Optical Scan Systems

When comparisons of annual maintenance costs of touch-screen/pushbutton direct recording electronic (DRE) devices and paper ballot/precinct based optical scanner (PBOS) systems are made, critics of PBOS systems typically point to increased ballot printing costs as evidence that these systems have higher annual per election expenses. But critics leave some other ongoing costs out of the equation, and often misstate the variables involved in estimating printing costs for each system. This brief analysis evaluates in more detail the ballot printing cost argument, and adds storage and transportation costs to the picture.

✓ **Ballot Printing Costs**

When comparing annual ballot printing costs for DRE and PBOS systems, many PBOS critics assume that PBOS systems require sufficient ballots be printed for greater than 100% of registered voters. They also incorrectly assume that no traditional paper ballots at all must be printed with DREs. To do an accurate comparison however, several questions about each system must be answered:

1) How many ballots must be printed for each type of system?

- ❖ How many traditional paper ballots must be printed with DREs?
 - Absentee ballots.
 - Affidavit (provisional) ballots.
 - Sufficient emergency ballots in case of DRE failure.
 - DREs could require ballots printed for 33% or more of registered voters.
 - Per ballot printing costs are higher than PBOS due to smaller quantities.
- ❖ How many ballots must be printed with PBOS?
 - Practices of states currently using PBOS should be analyzed.
 - Oklahoma prints ballots for only 90% of registered voters.

2) What is the per ballot printing cost?

- ❖ In states using precinct based optical scan, printing costs are 10¢ to 30¢ per ballot.
- ❖ Large volume discount costs are negotiated by state or counties.
 - Print shops commonly charge a small up-charge for local ballot differences and will give volume pricing for large batches that are substantially similar.
 - Modern print shops use computer typesetting so small layout changes are less expensive.
 - Competitive bidding process will guarantee lower per ballot prices.
 - New York State has over 11 million registered voters.

✓ **Lifetime of the System**

The lifetime of the voting equipment must also be considered. Optical scanners have been used for 20 years in many precincts around the United States and have proven to be very robust and long lasting. DREs have not been used long enough to know their anticipated lifetime, but no touch screen device is warranted for more than 5 years, due to the high failure rate of touch screens. Also, the DREs with voter verified paper ballots are untested and their useful lifespan is still unknown.

- ❖ Optical Scanner lifetime – minimum 15 Years
 - In Oklahoma, existing optical scanners have been in use for 14 years and are still going strong.
- ❖ DRE lifetime – 5 Years?
 - Unknown, but touch screen are notoriously fragile components and are not warranted longer than 5 years.
 - If 50% or more of DREs must be replaced within 5 years, this is a huge cost to counties that will not be covered by HAVA funds.

Comparing Annual Costs of DRE and Optical Scan systems, continued

✓ **Storage Costs**

Full face DREs are large and heavy and require much greater storage and transportation costs compared to PBOS systems. Also, due to their greater number and size, DREs require a great deal more climate controlled storage space than is needed for PBOS systems.

❖ Full face ballot DREs

- Weigh over 200 pounds and take up 28 cubic feet when stored.
- At least one or more DREs are required for each existing lever machine.
- Full face ballot DRE Size and weight
 - 3.5 Ft. wide x 4 Ft. high x 2 Ft. deep
 - 28 Cubic Feet
 - Weight – app. 225 pounds

❖ Optical scanners / Ballot Markers

- Weigh 19-39 pounds and take up less than 4 cubic feet per device.
- They can be stacked up in storage, requiring far less space.
- Only one scanner and ballot marker is needed per polling place, except in the largest precincts.
- Optical Scanner Size and weight
 - 2 Ft. wide x .75 Ft. high x 2.5 Ft deep
 - 3.75 Cubic Feet
 - Weight – app. 19 - 39 pounds.

✓ **Transportation Costs**

Moving the large, heavy, full face DREs is going to take a lot of time, and require a lot of space. Since DREs are quite sensitive, very heavy, and must be handled carefully, it is unlikely that election workers will be able to move the DREs to and from polling places during elections. Professional movers will need to be hired, a huge hidden expense.

- ❖ DREs are large, heavy, and extremely delicate. At least one DRE, perhaps more, is required for each existing lever machine.
 - DREs may require professional movers to move to and from polls on Election Day.
- ❖ PBOS systems are smaller and lighter, and fewer machines are required.
 - In states currently using PBOS, election workers move the scanners.