CALTECH/MIT VOTING TECHNOLOGY REPORT
WHAT IS; WHAT COULD BE
July, 2001

FAST FACTS

The Problem

- The election process lost 4 to 6 million presidential votes in 2000. *(Page 8)*
- An estimated 1.5 million presidential votes were not recorded in 2000 because of difficulties using voting equipment. *(Pages 8-9)*
- Up to 3.5 million Senate and governor votes were lost because of technology over the last election cycle for these offices. *(Page 21)*
- According to the US Census Bureau, in the 2000 election, 7.4 percent of registered voters who did not vote (approximately 3 million) reported that trouble with their registration was the main reason they did not vote. *(Pages 8-9)*
- According to the US Census Bureau, in the 2000 election 2.8 percent of registered voters who did not vote (approximately 1 million) reported that long lines, inconvenient hours, or polling place locations were the main reason they did not vote. *(Page 32)*

Equipment

- There are five types of voting equipment: hand-counted paper, mechanical lever machines, punch card ballots, optically scanned paper, and electronic voting machines. *(Page 18)*
- Hand-counted and optically scanned paper have had the lowest rates of unmarked, uncounted, and spoiled ballots in presidential, Senate and governor elections over the last 12 years. *(Page 21)*
- Punch cards have the highest rate of unmarked, uncounted, and spoiled ballots over the last four presidential elections. *(Page 21)*

- Lever machines have the highest rate of unmarked, uncounted, and spoiled ballots in Senate and governor elections over the last 12 years. *(Page 21)*

- Electronic machines have the second highest rate of unmarked, uncounted and spoiled ballots in presidential, Senate, and governor elections over the last 12 years. *(Page 21)*

Voter Registration

- Voter registration is a large system to manage: There are about 150 million voter registrations in the United States. *(Page 28)*

- Counties maintain voter registration in almost all states. *(Page 28)*

- There are a large number of duplicate registrations. Michigan found 1 million duplicate registrations throughout the state when that state created a unified statewide registration system. *(Page 28)*

Absentee Voting

- Two decades ago, five percent of all ballots were cast absentee or early. *(Page 50)*

- In 2000, fourteen percent of all ballots were cast absentee or early. *(Page 28)*

Cost

- Counties and municipalities pay for election administration, including for state and federal elections. *(Page 50)*

- Total county election expenditures in 2000 were an estimated $1 billion, or about $10 per voter for the year. *(Page 50)*

- Costs are split roughly equally into one-third for voter registration, one-third for election office operations, and one third for equipment and polling place operations (combined). *(Page 51)*

- Over a fifteen to twenty year span, the cost of acquiring and operating either an optically scanned ballot system or an electronic voting system is approximately the same, about $2 per voter per year. *(Page 53)*

RECOMMENDATIONS

The United States can improve the rate of lost votes immediately.

- Optical scanning has the best track record of all equipment types currently in use. We recommend replacing punch cards, lever machines, and older electronic machines with optical scanned ballot systems, or any electronic voting system proven to perform similarly well in extensive field tests. This would cost approximately $2 per voter, or $200 million, per year (over a fifteen to twenty year span). *(Pages 17-25)*

- Before Election Day, voter registration presents counties with an enormous database management problem. We recommend that states develop Qualified Voter Files and Systems. *(Page 26)*

- It is cumbersome to provide paper lists of all county voter registrations to all polling places. Lease laptops for each polling place with access to all county or state voter registration information. This would cost approximately $2 per voter per year. *(Page 26-31)*

- Problems with voter registration can be a barrier to voting and can create lines at polling places. We recommend aggressive use of "provisional ballots" to take care of such problems. *(Page 30)*

- Integrity of absentee balloting is a real concern. We recommend use of early voting instead of absentee voting on demand. *(Pages 36-41)*

- Remote Internet voting poses serious security risks. We recommend a delay on Internet voting until suitable criteria for security are in place. *(Pages 42-47)*

Electronic voting will change how we vote in the near future. To capture the full potential of electronic voting, a substantial change in the development and evaluation of equipment is required. The federal government should develop a coherent national approach to the development of this technology.

- A standard equipment platform must be develop to guarantee that voters can verify their votes and that voters can create a copy of their votes that can be used in the event of a recount (full auditability). We recommend that this platform consist of modular voting equipment, which allows for the separate

development of equipment for generating votes and of equipment for casting and for counting votes. This will allow for development of very secure equipment for casting and counting votes and for continual improvement in the ballot and interface design. *(Pages 58-64)*

- We must build to the best of breed in other sorts of electronic technology. The federal government must establish and fund an election technology research program for the development of equipment. The program will focus on ballot and interface design, on security, and on handicap accessibility. *(Pages 65-68)*

- The federal government must create and fund a system for evaluating equipment, based on lab and field testing of equipment. This will be more efficient than the current system, which, at its best, relies on demonstration projects run by the firms that develop and sell equipment. *(Pages 68-70)*

- New standards must be developed focusing on appropriate standards for security, human usability, and handicap accessibility. These standards must evolve, based on the lessons learned through the research and evaluation program. *(Page 70)*

- Many election officers know little about voting systems used elsewhere in the country. The federal government should fund a clearinghouse for information about election equipment, election administration costs, and voter registration and polling place practices. This clearinghouse will act as a sort of "Consumer Reports" for counties. *(Page 54)*