

JOINT STATE GOVERNMENT COMMISSION

General Assembly of the Commonwealth of Pennsylvania

VOTING TECHNOLOGY IN PENNSYLVANIA

Report of the Advisory Committee on Voting Technology

December 2017



*Serving the General Assembly of the
Commonwealth of Pennsylvania Since 1937*

REPORT

Voting Technology in Pennsylvania

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The Joint State Government Commission was created in 1937 as the primary and central non-partisan, bicameral research and policy development agency for the General Assembly of Pennsylvania.¹

A fourteen-member Executive Committee comprised of the leadership of both the House of Representatives and the Senate oversees the Commission. The seven Executive Committee members from the House of Representatives are the Speaker, the Majority and Minority Leaders, the Majority and Minority Whips, and the Majority and Minority Caucus Chairs. The seven Executive Committee members from the Senate are the President Pro Tempore, the Majority and Minority Leaders, the Majority and Minority Whips, and the Majority and Minority Caucus Chairs. By statute, the Executive Committee selects a chairman of the Commission from among the members of the General Assembly. Historically, the Executive Committee has also selected a Vice-Chair or Treasurer, or both, for the Commission.

The studies conducted by the Commission are authorized by statute or by a simple or joint resolution. In general, the Commission has the power to conduct investigations, study issues, and gather information as directed by the General Assembly. The Commission provides in-depth research on a variety of topics, crafts recommendations to improve public policy and statutory law, and works closely with legislators and their staff.

A Commission study may involve the appointment of a legislative task force, composed of a specified number of legislators from the House of Representatives or the Senate, or both, as set forth in the enabling statute or resolution. In addition to following the progress of a particular study, the principal role of a task force is to determine whether to authorize the publication of any report resulting from the study and the introduction of any proposed legislation contained in the report. However, task force authorization does not necessarily reflect endorsement of all the findings and recommendations contained in a report.

Some studies involve an appointed advisory committee of professionals or interested parties from across the Commonwealth with expertise in a particular topic; others are managed exclusively by Commission staff with the informal involvement of representatives of those entities that can provide insight and information regarding the particular topic. When a study involves an advisory committee, the Commission seeks consensus among the members.² Although an advisory committee member may represent a particular department, agency, association, or group, such representation does not necessarily reflect the endorsement of the department, agency, association, or group of all the findings and recommendations contained in a study report.

¹ Act of July 1, 1937 (P.L.2460, No.459); 46 P.S. §§ 65 – 69.

² Consensus does not necessarily reflect unanimity among the advisory committee members on each individual policy or legislative recommendation. At a minimum, it reflects the views of a substantial majority of the advisory committee, gained after lengthy review and discussion.

Over the years, nearly one thousand individuals from across the Commonwealth have served as members of the Commission's numerous advisory committees or have assisted the Commission with its studies. Members of advisory committees bring a wide range of knowledge and experience to deliberations involving a particular study. Individuals from countless backgrounds have contributed to the work of the Commission, such as attorneys, judges, professors and other educators, state and local officials, physicians and other health care professionals, business and community leaders, service providers, administrators and other professionals, law enforcement personnel, and concerned citizens. In addition, members of advisory committees donate their time to serve the public good; they are not compensated for their service as members. Consequently, the Commonwealth of Pennsylvania receives the financial benefit of such volunteerism, along with their shared expertise in developing statutory language and public policy recommendations to improve the law in Pennsylvania.

The Commission periodically reports its findings and recommendations, along with any proposed legislation, to the General Assembly. Certain studies have specific timelines for the publication of a report, as in the case of a discrete or timely topic; other studies, given their complex or considerable nature, are ongoing and involve the publication of periodic reports. Completion of a study, or a particular aspect of an ongoing study, generally results in the publication of a report setting forth background material, policy recommendations, and proposed legislation. However, the release of a report by the Commission does not necessarily reflect the endorsement by the members of the Executive Committee, or the Chair or Vice-Chair of the Commission, of all the findings, recommendations, or conclusions contained in the report. A report containing proposed legislation may also contain official comments, which may be used in determining the intent of the General Assembly.³

Since its inception, the Commission has published more than 350 reports on a sweeping range of topics, including administrative law and procedure; agriculture; athletics and sports; banks and banking; commerce and trade; the commercial code; crimes and offenses; decedents, estates, and fiduciaries; detectives and private police; domestic relations; education; elections; eminent domain; environmental resources; escheats; fish; forests, waters, and state parks; game; health and safety; historical sites and museums; insolvency and assignments; insurance; the judiciary and judicial procedure; labor; law and justice; the legislature; liquor; mechanics' liens; mental health; military affairs; mines and mining; municipalities; prisons and parole; procurement; state-licensed professions and occupations; public utilities; public welfare; real and personal property; state government; taxation and fiscal affairs; transportation; vehicles; and workers' compensation.

Following the completion of a report, subsequent action on the part of the Commission may be required, and, as necessary, the Commission will draft legislation and statutory amendments, update research, track legislation through the legislative process, attend hearings, and answer questions from legislators, legislative staff, interest groups, and constituents.

³ 1 Pa.C.S. § 1939 ("The comments or report of the commission . . . which drafted a statute may be consulted in the construction or application of the original provisions of the statute if such comments or report were published or otherwise generally available prior to the consideration of the statute by the General Assembly").



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To the Members of the General Assembly of Pennsylvania:

The Joint State Government Commission is pleased to announce the release of the advisory committee report, *Voting Technology in Pennsylvania*, written in response to Senate Resolution 394 of 2016.

SR394 directed the Commission to appoint an advisory committee to study the issue of voting system technology. Specifically, the resolution directed that the study include information gathered from other states regarding the administration of elections and technology, a survey of counties in the Commonwealth regarding the administration of elections, and information regarding the cost to administer elections and to improve, upgrade, modernize or replace election system technology. The report is available on our website, at <http://jsg.legis.state.pa.us>.

We thank the members of the SR394 Advisory Committee for their participation and contributions to this report.

Respectfully submitted,

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INTRODUCTION

Senate Resolution No. 394 of 2016 directed Joint State Government Commission (JSGC) to study the issue of voting system technology. Specifically, the resolution directed that the study include information gathered from other states regarding the administration of elections and technology, a survey of counties in the Commonwealth regarding the administration of elections, and information regarding the cost to administer elections and to improve, upgrade, modernize or replace election system technology.

To facilitate the study, the resolution also directed JSGC to assemble an Advisory Committee consisting of the Secretary of State or a designee; the Commissioner for the Bureau of Commissions, Elections and Legislation or a designee; representatives from groups advocating for individuals who are hearing impaired, physically disabled, and blind or visually impaired; county commissioners, who must be from geographically and politically diverse areas of the Commonwealth; county election officials, who must be from geographically and politically diverse areas of the Commonwealth; and other individuals selected by JSGC.

The Advisory Committee met in person and via teleconference to discuss numerous issues that the members identified as relevant to voting technology. Ultimately, the Advisory Committee came to consensus on a number of recommendations. Those recommendations, as well as relevant background information, are presented in this report pursuant to Senate Resolution No. 394 of 2016.

RECOMMENDATIONS

While many members of the Advisory Committee felt that the laws governing elections in Pennsylvania needed to be reviewed and updated in their entirety, the focus of this report is voting technology, as directed by Senate Resolution No. 394. As a result, the recommendations on which the Advisory Committee reached consensus presume the continuation of the status quo regarding the administration of elections under current law. If the current law is amended, the following recommendations may not reflect the most efficient use of taxpayer dollars or be in the best interests of the Commonwealth and its citizens.

Recommendation 1

The Advisory Committee recommends that the act of June 3, 1937 (P.L.1333, No.320), known as the Pennsylvania Election Code, be amended in several ways to provide a greater incentive to poll workers to attend training, to allow counties to conduct elections more efficiently by taking into account actual voter participation levels when determining how many ballots to print, and to improve election security and integrity. These amendments can be found in the proposed legislation at the end of this report.

Recommendation 2

Furthermore, the Advisory Committee recommends that the Pennsylvania Election Code be amended at Article X (relating to ballots), Article XI (relating to voting machines), and Article XI-A (relating to electronic voting systems) to eliminate obsolete or redundant provisions and to ensure the Pennsylvania Election Code is technology-neutral in order to avoid future obsolescence.

Much of Article XI was reproduced in Article XI-A when the Pennsylvania Election Code was amended to allow for the use of electronic voting machines. In the time since that amendment, every county has discontinued the use of older, mechanical, lever-style voting machines. As a result, much of Article XI is obsolete. As voting technology continues to advance, such a fate may befall Article XI-A as well. Therefore, the Advisory Committee recommends that the Pennsylvania Election Code be amended to harmonize these three articles with each other, to eliminate redundancy, and to prevent obsolescence in the future.

Recommendation 3

As described in this report, elections are expensive to conduct. Particularly, voting machines are expensive to purchase or lease and to operate and maintain. Counties bear this burden, and many Advisory Committee members expressed concern that their jurisdictions would

not be able to afford voting technology that satisfies the recommended amendments in this report. Many Advisory Committee members also expressed concerns that their jurisdictions would not be able to maintain their current electronic voting systems for much longer due to the age of the machines, the scarcity of parts, and the costs of repairs and maintenance.

Therefore, the Advisory Committee recommends that the General Assembly provide funding to assist counties in the purchase or lease of new equipment that complies with the requirements for a voter-verifiable paper record and adequate security measures.

Recommendation 4

The Advisory Committee recommends that the General Assembly create a commission as follows:

- The Speaker of the House of Representatives, the House Minority Leader, the President Pro Tempore of the Senate, and the Senate Minority Leader, or their designees, shall be members;
- The Secretary of State, or a designee, shall be a member;
- Twenty members appointed by the Governor:
 - Members shall represent geographically and politically diverse areas of the Commonwealth;
 - Members shall represent groups advocating for individuals with disabilities;
 - Members shall represent groups advocating for minorities;
 - Members shall represent groups advocating for voting rights;
 - Members shall represent county commissioners;
 - Members shall represent county election officials;
 - Members shall be experts in the fields of computer security, network security, cyber risk and resilience assessment, internal controls accounting, information technology auditing, and statistics; and
- The commission shall cooperate with other agencies of the Commonwealth on election-related issues.

The purpose of the commission would be to advise the General Assembly regarding proposed amendments to the Pennsylvania Election Code, as well as other election-related matters. The creation of this commission should be accompanied by an appropriation to support its operation in order to achieve its purpose.

Recommendation 5

Finally, the Advisory Committee recommends that Article 5 of The Constitution of the Commonwealth of Pennsylvania be amended as follows:

§ 15. Tenure of justices, judges and justices of the peace.

(b) A justice or judge elected under section 13(a), appointed under section 13(d) or retained under this section 15(b) may file a declaration of candidacy for retention election with the officer of the Commonwealth who under law shall have supervision over elections on or before the first Monday of January of the year preceding the year in which his term of office expires. If no declaration is filed, a vacancy shall exist upon the expiration of the term of office of such justice or judge, to be filled by election under section 13(a) or by appointment under section 13(d) if applicable. If a justice or judge files a declaration, his name shall be submitted to the electors without party designation[, **on a separate judicial ballot or in a separate column on voting machines,**] at the municipal election immediately preceding the expiration of the term of office of the justice or judge, to determine only the question whether he shall be retained in office. If a majority is against retention, a vacancy shall exist upon the expiration of his term of office, to be filled by appointment under section 13(b) or under section 13(d) if applicable. If a majority favors retention, the justice or judge shall serve for the regular term of office provided herein, unless sooner removed or retired. At the expiration of each term a justice or judge shall be eligible for retention as provided herein, subject only to the retirement provisions of this article.

The emphasized language suggests that a separate ballot is not required for “voting machines.” While this language has not been addressed by the courts, different counties, using various types of “voting machines,” have interpreted this language differently, resulting in some printing separate paper ballots, some printing the judicial retention question on the back of their ballots, and some using either a separate column or screen in the case of electronic or touchscreen interfaces. The Constitution does not define “voting machine” or provide an explanation for this requirement. This requirement results in ambiguity and inefficiency. Advisory Committee members agreed that the resulting ambiguity results in inconsistencies and inefficiencies due to printing costs.

ADMINISTRATION OF ELECTIONS AND TECHNOLOGY USED IN OTHER STATES

Administration of Elections

Across the country, states have implemented a number of different models for administering elections. Some, like Pennsylvania, have retained a traditional model, with voting occurring only on Election Day and only at polling places, while others have explored alternative models.

Early Voting

Early voting is an option for voters in 37 states and the District of Columbia.⁴ Early voting allows voters to cast a vote in person some period of time before Election Day. Voters may cast their ballots at election officials' offices or at other locations, depending on state law.

The early voting period of time varies between states. The longest is 45 days before the election, and the shortest is the Friday before the election; however, the average is 22 days before the election.⁵ The early voting period of time typically ends before Election Day, again depending on state law.⁶ Some end seven days before Election Day, others end on the Thursday, Friday, or Saturday before Election Day, but the most common is the Monday before Election Day.⁷ Most of the states that allow early voting provide for some weekend voting.⁸

No-Excuse Absentee Voting

Registered voters in all 50 states can request an absentee ballot.⁹ In many states, an excuse for absence is required, but in 27 others and the District of Columbia, an excuse is not necessary.¹⁰ In at least eight states, registered voters meeting certain criteria can apply for permanent absentee

⁴ Nat'l Conf. of State Legislatures, "Absentee and Early Voting," Aug. 17, 2017, <http://www.ncsl.org/research/elections-and-campaigns/absentee-and-early-voting.aspx>.

⁵ *Id.*

⁶ *Id.*

⁷ *Id.*

⁸ *Id.*

⁹ *Id.*

¹⁰ *Id.*

status, having ballots sent to them for every future election.¹¹ In nine more states, all registered voters can apply for permanent absentee status.¹²

In what is referred to as in-person absentee voting, some states allow voters to receive, fill out, and cast absentee ballots in person at the election officials' office or at another location rather than returning it through the mail.¹³

Vote Centers

Vote centers are different from traditional precincts.¹⁴ If a jurisdiction uses vote centers, voters are able to cast votes at any vote center within that jurisdiction on Election Day.¹⁵ Colorado was the first state to allow vote centers.¹⁶ Some states now allow jurisdictions to implement vote centers, or require them statewide.¹⁷ Three states allow jurisdictions to use vote centers on Election Day only, while 12 states and the District of Columbia allow jurisdictions to use vote centers for early voting only, and eight states allow jurisdictions to use vote centers on Election Day and for early voting.¹⁸

There are pros and cons to using vote centers. These centers are intended to be more convenient for voters, allowing them to vote near their place of work or school, and financial savings could result from having to hire fewer poll workers on Election Day.¹⁹ On the other hand, the use of vote centers may take away from the traditional experience of voting. Also, voters may be confused by the new system if they are not educated about it and it is not advertised sufficiently ahead of the actual election.²⁰

Furthermore, special equipment is essential in making vote centers work. The proper ballot must be available to each voter, which may be accomplished with a touch screen machine that features all necessary ballots or with paper ballots that are printed on demand.²¹ Additionally, electronic poll books would likely be needed in order to track voting and ensure that each voter only votes once.²² This could require a connected network of computers, and as with any cyber-related action, proper security mechanisms and software must be in place.²³ For example, if an electronic poll book system relies on a network connection to function and the connection is lost,

¹¹ *Id.*

¹² *Id.*

¹³ *Id.*

¹⁴ Nat'l Conf. of State Legislatures, "Vote Centers: Introduction," <http://www.ncsl.org/research/elections-and-campaigns/vote-centers.aspx>.

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ *Id.*

²¹ *Id.*

²² Nat'l Conf. of State Legislatures, "Electronic Poll Books (E-Poll Books)," Mar. 22, 2017, <http://www.ncsl.org/research/elections-and-campaigns/electronic-pollbooks.aspx>.

²³ *Id.*

voters may be prevented from voting. The potential for cyberattacks and system malfunctions will never disappear, so having a paper alternative on hand at each center is a wise precaution to take.²⁴

All-Mail Voting

All-mail voting is another alternative to the traditional election process. Generally, all registered voters receive a ballot in the mail.²⁵ Voters fill out their ballots, place them in secure envelopes, and then place the secure envelopes in mailing envelopes.²⁶ After sealing the envelopes, voters sign an affidavit on the exterior of the mailing envelopes and then send them in through the mail or drop them off at a designated location.²⁷

While all voters receive ballots by mail, states with all-mail voting may also allow them to cast their votes at vote centers or polling places during an early voting period or on Election Day.²⁸ Colorado, for example, still allows voters to cast a ballot at a vote center during the early voting period or on Election Day.²⁹

Oregon, Washington, and Colorado hold all elections by mail.³⁰ At least 19 other states allow some elections to be held by mail.³¹ These other 19 states hold all-mail elections in certain situations, like municipal elections, elections where the candidate is running unopposed, or when the county clerk is given special discretion.³²

As with vote centers, all-mail elections are thought to be a convenient option for voters.³³ Financial savings may result if jurisdictions staff or rent fewer polling places, or do not have to purchase or maintain as many voting machines.³⁴ Conversely, jurisdictions' printing and postage costs may increase.³⁵ Therefore, the financial impact will vary depending on the system a jurisdiction is using prior to implementation, and how it implements all-mail voting. There are also security risks with sending voted ballots through the mail.³⁶

All-mail voting also poses a significant challenge for individuals who are unable to read printed text due to disability, literacy challenges, or language fluency. If a voter is forced to rely on another person to read the ballot to them and mark their selections, their privacy is lost. Providing an alternative method of accessible ballot delivery, or providing accessible voting machines at an election official's office or polling place, may be necessary to address such issues.

²⁴ *Id.*

²⁵ Nat'l Conf. of State Legislatures, "All-Mail Elections (AKA Vote-by-Mail)," Jan. 12, 2017, <http://www.ncsl.org/research/elections-and-campaigns/all-mail-elections.aspx>.

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.*

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.*

³² *Id.*

³³ *Id.*

³⁴ *Id.*

³⁵ *Id.*

³⁶ *Id.*

Automatic Voter Registration

The National Voter Registration Act of 1993 (NVRA) requires the Federal Election Commission to develop a national voter registration form, and requires state election offices to collaborate with various state departments and agencies, such as the departments of motor vehicles, to offer voter registration.³⁷ For this reason, the act is commonly referred to as “motor voter.”³⁸ The Help America Vote Act of 2002 requires states to establish centralized statewide voter registration databases.³⁹

Building on those innovations, nine states and the District of Columbia have implemented systems to automatically register voters, often through their motor vehicle agencies, unless they decide to opt out of voter registration.⁴⁰ When citizens apply for, renew, or replace a driver’s license or identification card, their relevant information is shared electronically with the state election agency.⁴¹ Their registration application is then verified for eligibility and compared to the information already in the statewide voter registration database and if there are no existing registrations, they are added to the voter rolls.⁴² While Pennsylvania’s systems allow for this connection between agencies, voters must opt in when presented with the option during their motor vehicle agency transactions.

States have addressed the ability of voters to opt out of registration in different ways.⁴³ In some states, individuals are given the opportunity to opt out at the point of contact with the motor vehicle agency.⁴⁴ In others, the election agency mails the individual a registration notification card after the transaction at the motor vehicle agency.⁴⁵ The individual is assigned a “pending” status for 21 days, during which time they can do one of three things: choose a party affiliation and mail back a completed card, select the option declining to be registered and mail back the postcard, or take no action and thus become registered as an unaffiliated voter after 21 days.⁴⁶

³⁷ Nat’l Conf. of State Legislatures, “Election Costs: What States Pay,” July 21, 2017, <http://www.ncsl.org/research/elections-and-campaigns/election-costs.aspx>.

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ Nat’l Conf. of State Legislatures, “Automatic Voter Registration,” Aug. 31, 2017, <http://www.ncsl.org/research/elections-and-campaigns/automatic-voter-registration.aspx>.

⁴¹ *Id.*

⁴² *Id.*

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *Id.*

Same Day Registration

In most states, voters must register by a deadline prior to Election Day.⁴⁷ The deadline varies by state, but most fall between eight and 30 days before Election Day.⁴⁸ However, 16 states and the District of Columbia offer same-day registration (SDR), which allows qualified residents of the state to go to the polling place, vote center, or election official's office, either before or on Election Day, and register to vote and cast a ballot.⁴⁹

Proof of residency is a key requirement for voter registration.⁵⁰ In states that offer SDR, the prospective voter must present proof of residency at the time of registration.⁵¹ Typically, a current driver's license or state-issued identification card will suffice.⁵² In some states, documents such as a paycheck or utility bill with an address are acceptable for proving residency.⁵³ A few states even permit a registered voter to vouch for the residency of an Election Day registrant.⁵⁴

All of the states that offer SDR also require that voters who register and vote on Election Day present documentation to verify their identity.⁵⁵ Some states require a state-issued identification card, while others accept identification without a photo.⁵⁶

In addition to requiring proof of residency and identity, states that offer SDR often employ other measures to prevent fraud, including:⁵⁷

- In Iowa and New Hampshire, a non-forwardable mailing is sent to each same-day registrant. If it is returned as undeliverable, a second notice is sent. If the second mailing is also returned as undeliverable, the case is forwarded to law enforcement for investigation of fraud.
- In Montana, SDR is conducted only at county election officials' offices. Same-day registrants who are unable to meet the identification requirements must vote a provisional ballot, and then must return within three days to provide proof of identity in order to have the ballot counted. Same-day registrants are also sent confirmation cards after the election, following a procedure similar to Iowa's.
- In Maine, SDR takes place at town offices and city halls.

⁴⁷ Nat'l Conf. of State Legislatures, "Same Day Voter Registration," July 27, 2017, <http://www.ncsl.org/research/elections-and-campaigns/same-day-registration.aspx>.

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² *Id.*

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ *Id.*

- Wisconsin and Wyoming use provisional voting processes similar to Montana's.
- In Minnesota, the data provided by a same-day registrant is verified with the Division of Vehicle Services, the Social Security Administration, the Department of Corrections, and the Department of Public Safety.
- In states that use electronic poll books with real-time access to the statewide voter database, it is possible to verify that a prospective voter has not already registered and cast a ballot at another polling site or via mail prior to allowing the voter to register and vote.

Online Registration

In 2002, Arizona became the first state to implement online voter registration.⁵⁸ Today, 36 states and the District of Columbia offer online registration and another two states have authorized, but not yet implemented, online registration.⁵⁹

Online voter registration supplements traditional paper-based registration; new voters fill out a form on a website and the form is submitted electronically to election officials.⁶⁰ In most states, the application is reviewed electronically; if the request is confirmed to be valid, the new registration is added to the list of registered voters.⁶¹

In most states, registrants provide their driver's license numbers or the last four digits of their Social Security numbers, and the online voter registration system compares their information against information provided by the same individuals when they received their driver's licenses or other state-issued identification cards.⁶² Therefore, in most states, online voter registration only works for individuals who possess one of these forms of identification.⁶³

Many online voter registration systems use human test boxes, where registrants must decode images that a computer cannot decode, multi-screen systems with one question per screen, and data encryption to prevent hacking.⁶⁴ When information submitted by a registrant does not match the state records, or when data logs highlight unusual activity, applications are sent to officials for further review or action.⁶⁵

⁵⁸ Nat'l Conf. of State Legislatures, "Online Voter Registration," Oct. 2, 2017, <http://www.ncsl.org/research/elections-and-campaigns/electronic-or-online-voter-registration.aspx>.

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² *Id.*

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.*

Table 1
Election Administration Innovations - 2017

State	Early Voting	No Excuse Absentee	Absentee Excuse Required	Vote Centers	All-Mail Voting	Permanent Absentee Status	Voter Registration
Alabama			✓				OR
Alaska	✓	✓			✓*		AR, OR
Arizona	✓	✓		✓(c)	✓*	✓	OR
Arkansas	✓		✓	✓(c)	✓*		
California	✓	✓			✓*	✓	AR, SDR, OR
Colorado	✓			✓(c)	✓		AR, SDR, OR
Connecticut			✓			✓	AR, SDR, OR
Delaware			✓				OR
D.C.	✓	✓		✓(b)		✓	AR, SDR, OR
Florida	✓	✓		✓(b)	✓*		OR
Georgia	✓	✓		✓(b)			OR
Hawaii	✓	✓			✓*	✓	SDR (1), OR
Idaho	✓**	✓			✓*		SDR, OR
Illinois	✓	✓		✓(b)			AR, SDR, OR
Indiana	✓**		✓	✓(c)			OR
Iowa	✓**	✓		✓(a)			SDR, OR
Kansas	✓	✓		✓(b)	✓*		OR
Kentucky			✓				OR
Louisiana	✓		✓	✓(b)			OR
Maine	✓**	✓					SDR
Maryland	✓	✓		✓(b)	✓*		SDR (2), OR
Massachusetts	✓***		✓	✓(b)			OR
Michigan			✓				
Minnesota	✓**	✓			✓*	✓	SDR, OR
Mississippi			✓				
Missouri			✓		✓*		OR
Montana	✓**	✓			✓*	✓	SDR
Nebraska	✓	✓			✓*		OR
Nevada	✓	✓		✓(b)	✓*		OR
New Hampshire			✓				SDR
New Jersey	✓**	✓			✓*	✓	
New Mexico	✓	✓		✓(c)	✓*		OR

Table 1
Election Administration Innovations - 2017

State	Early Voting	No Excuse Absentee	Absentee Excuse Required	Vote Centers	All-Mail Voting	Permanent Absentee Status	Voter Registration
New York			✓				OR
North Carolina	✓	✓		✓(b)			SDR (3)
North Dakota	✓	✓		✓(c)	✓*		
Ohio	✓**	✓		✓(b)			OR
Oklahoma	✓**	✓					OR
Oregon	✓				✓		AR, OR
Pennsylvania			✓				OR
Rhode Island			✓				AR, OR
South Carolina			✓				OR
South Dakota	✓**	✓		✓(a)			
Tennessee	✓		✓	✓(b)			OR
Texas	✓		✓	✓(c)			
Utah	✓	✓		✓(c)		✓	OR
Vermont	✓**	✓					AR, SDR, OR
Virginia			✓				OR
Washington	✓				✓		OR
West Virginia	✓		✓	✓(b)			AR, OR
Wisconsin	✓**	✓					SDR, OR
Wyoming	✓**	✓		✓(a)			SDR
TOTALS	37 states and D.C.	27 states and D.C.	20 states	23 states and D.C.	3 states	8 states and D.C.	43 states and D.C.

Election Administration Innovations - 2017

Key

(a)	Jurisdictions may use vote centers on Election Day only.
(b)	Jurisdictions may use vote centers during early voting only.
(c)	Jurisdictions may use vote centers during early voting and on Election Day.
*	Only certain elections are held by mail, not all.
**	No early voting in a traditional sense, but voter can apply in-person for absentee ballot without an excuse and cast that ballot in one trip to the election official’s office.
***	Early voting during even-year elections in November.
AR	Automatic Registration
SDR	Same-Day Registration
OR	Online Registration
(1)	Not implemented until 2018.
(2)	Same-day registration is only available during the early voting period for each regularly scheduled primary and general election.
(3)	In North Carolina, the U.S. 4th Circuit Court of Appeals struck down the 2013 law that eliminated same-day registration. Therefore, same-day registration was available in North Carolina during the early voting period for the 2016 general election.

Source: Compiled by JSGC staff from Nat’l Conf. of State Legislatures, “Absentee and Early Voting,” Aug. 17, 2017, <http://www.ncsl.org/research/elections-and-campaigns/absentee-and-early-voting.aspx>, “Vote Centers: Introduction,” <http://www.ncsl.org/research/elections-and-campaigns/vote-centers.aspx>, “Electronic Poll Books (E-Poll Books),” Mar. 22, 2017, <http://www.ncsl.org/research/elections-and-campaigns/electronic-pollbooks.aspx>, “All-Mail Elections (AKA Vote-by-Mail),” Jan. 12, 2017, <http://www.ncsl.org/research/elections-and-campaigns/all-mail-elections.aspx>, “Automatic Voter Registration,” Aug. 31, 2017, <http://www.ncsl.org/research/elections-and-campaigns/automatic-voter-registration.aspx>, “Same Day Voter Registration,” July 27, 2017, <http://www.ncsl.org/research/elections-and-campaigns/same-day-registration.aspx>, and “Online Voter Registration,” Oct. 2, 2017, <http://www.ncsl.org/research/elections-and-campaigns/electronic-or-online-voter-registration.aspx>.

Electronic Transmission of Voted Ballots

Some states permit the submission of voted absentee ballots electronically, especially for voters who fall under the Federal Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA).⁶⁶ UOCAVA, as amended by the Military and Overseas Voter Empowerment (MOVE) Act, requires election officials to send absentee ballots to covered voters at least 45 days before federal elections in at least one electronic format.⁶⁷ However, UOCAVA and MOVE do not require states to accept voted ballots electronically.⁶⁸ UOCAVA voters include U.S. citizens who are active members of the Uniformed Services, the Merchant Marine, and the Commissioned Corps of the Public Health Service and the National Oceanic and Atmospheric Administration, their eligible family members, and U.S. citizens residing outside the United States.⁶⁹

Five states allow some voters to return voted ballots using a web portal.⁷⁰ Missouri only allows electronic ballot return for military voters serving in a “hostile zone.”⁷¹ Alabama only allowed electronic ballot return for UOCAVA voters located outside of U.S. territorial limits and only as a pilot project for the 2016 Primary Election.⁷² North Dakota and Arizona allow electronic ballot return for any UOCAVA voter, and Alaska allows electronic ballot return for any voter.⁷³

Twenty-one states and the District of Columbia allow some voters to return voted ballots using email or fax.⁷⁴ Six states allow some voters to return voted ballots using fax.⁷⁵ Eighteen states do not permit the submission of voted absentee ballots electronically.⁷⁶

Electronic transmission of voted ballots allows voters to cast ballots quickly and easily, and to meet absentee ballot deadlines, but it also poses many challenges. For example, because election officials are able to identify the person who sent a voted ballot electronically, ballots are not anonymous.⁷⁷ Furthermore, cybersecurity experts are concerned that internet connections could be vulnerable to hacking or other cyberattacks.⁷⁸ Electronic transmission does not allow a voter to verify if the ballot received matches the one sent, and without a paper record, a cyberattack may be undetectable, threatening auditability.⁷⁹ Verifying the identity of the voter is another challenge.⁸⁰

⁶⁶ Nat’l Conf. of State Legislatures, “Electronic Transmission of Ballots,” Jan. 16, 2017, <http://www.ncsl.org/research/elections-and-campaigns/internet-voting.aspx>.

⁶⁷ Fed. Voting Assistance Program, “The Uniformed and Overseas Citizens Absentee Voting Act Overview,” <https://www.fvap.gov/info/laws/uocava>.

⁶⁸ *Id.*

⁶⁹ *Id.*

⁷⁰ *Supra* note 66.

⁷¹ *Id.*

⁷² *Id.*

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.*

Because of these challenges, a number of organizations have expressed concern regarding electronic transmission of voted ballots and online voting in general. For example, in 2013, the Department of Defense reported to Congress that “[e]lectronic delivery of a blank ballot, when combined with the postal return of the voted ballot, remains the most responsible method for moving forward until such time applicable Federal security guidelines are adopted by the [Election Assistance Commission].”⁸¹ Congress repealed its previous directive to the Department of Defense that required it to carry out an electronic voting demonstration project.⁸²

An official in the Office of Cybersecurity and Communications at the Department of Homeland Security stated that “[w]e believe that online voting, especially online voting in large scale, introduces great risk into the election system by threatening voters’ expectations of confidentiality, accountability and security of their votes and provides an avenue for malicious actors to manipulate the voting results.”⁸³ Furthermore, the official stated that his division “does not recommend the adoption of online voting for elections at any level of government at this time.”⁸⁴

The National Institute of Standards and Technology (NIST) has studied technologies to improve uniformed and overseas U.S. citizens’ ability to vote a number of times and concluded that electronic transmission of voted ballots poses significant challenges.⁸⁵

Table 2 details the accepted electronic methods of ballot submission by each state.

⁸¹ Dep’t of Def., “2010 Electronic Voting Support Wizard (EVSW) Technology Pilot Program Report to Congress,” May 2013 (Revised July 2013), https://www.fvap.gov/uploads/FVAP/Reports/evsw_report.pdf, p. 7.

⁸² See Carl Levin and Howard P. “Buck” McKeon Nat’l Def. Authorization Act for Fiscal Year 2015, Pub. L. No. 113-291, § 593.

⁸³ Sari Horwitz, *More Than 30 States Offer Online Voting, But Experts Warn It Isn’t Secure*, WASH. POST, May 17, 2016, https://www.washingtonpost.com/news/post-nation/wp/2016/05/17/more-than-30-states-offer-online-voting-but-experts-warn-it-isnt-secure/?utm_term=.c0b499f358e2.

⁸⁴ *Id.*

⁸⁵ See Andrew Regenscheid & Nelson Hastings, Nat’l Inst. of Standards & Tech., “NISTIR 7551: A Threat Analysis on UOCAVA Voting Systems,” Dec. 2008, <https://www.nist.gov/sites/default/files/documents/itl/vote/uocava-threatanalysis-final.pdf>, and Nelson Hastings, Rene Peralta, Stefan Popoveniuc, & Andrew Regenscheid, Nat’l Inst. of Standards & Tech., “NISTIR 7770: Security Considerations for Remote Electronic UOCAVA Voting,” Feb. 2011, <https://www.nist.gov/sites/default/files/documents/itl/vote/NISTIR-7700-feb2011.pdf>.

Table 2
Electronic Transmission of Voted Ballots - 2017

States	Email	Fax	Web Portal	Who is eligible?
Alabama			✓	UOCAVA voters who are located outside of the territorial limits of the U.S. (pilot program in 2016 primary election only)
Alaska		✓	✓	Any voter
Arizona		✓	✓	UOCAVA voters
Arkansas				
California		✓		UOCAVA voters
Colorado	✓	✓		Only UOCAVA voters and only in circumstances where a more secure method, such as mail, is not available or feasible
Connecticut				
Delaware	✓	✓		UOCAVA voters
D.C.	✓	✓		UOCAVA voters
Florida		✓		UOCAVA voters
Georgia				
Hawaii	✓			In addition to UOCAVA voters, all permanent absentee voters who do not receive a mailed ballot within five days of the election
Idaho	✓	✓		Only citizens directly affected by "a national or local emergency" declared by the secretary of state
Illinois				
Indiana	✓	✓		UOCAVA voters
Iowa	✓	✓		Only UOCAVA voters in an area eligible for imminent danger pay or active military members located outside of the U.S.
Kansas	✓	✓		UOCAVA voters
Kentucky				
Louisiana		✓		UOCAVA voters
Maine	✓	✓		UOCAVA voters
Maryland				
Massachusetts	✓	✓		UOCAVA voters
Michigan				
Minnesota				
Mississippi	✓	✓		UOCAVA voters
Missouri	✓	✓	✓	UOCAVA voters serving in a "hostile fire area"
Montana	✓	✓		UOCAVA voters
Nebraska	✓	✓		UOCAVA voters
Nevada	✓	✓		UOCAVA voters
New Hampshire				
New Jersey	✓	✓		UOCAVA voters, who must also send a hard copy of the ballot via postal mail

Table 2
Electronic Transmission of Voted Ballots - 2017

States	Email	Fax	Web Portal	Who is eligible?
New Mexico	✓	✓		UOCAVA voters
New York				
North Carolina	✓	✓		UOCAVA voters
North Dakota		✓	✓	UOCAVA voters
Ohio				
Oklahoma		✓		UOCAVA voters
Oregon	✓	✓		UOCAVA voters
Pennsylvania				
Rhode Island		✓		UOCAVA voters
South Carolina	✓	✓		UOCAVA voters
South Dakota				
Tennessee				
Texas		✓		Only active duty uniformed service members (or their family members) who are eligible for hostile fire/imminent danger pay or who are in an area designated as a combat zone by the President of the U.S.
Utah	✓	✓		UOCAVA voters and voters with a disability
Vermont				
Virginia				
Washington	✓	✓		UOCAVA voters
West Virginia	✓	✓		UOCAVA voters
Wisconsin				
Wyoming				
TOTALS	22 states and D.C.	30 states and D.C.	5 states	

Source: Compiled by JSGC staff from Nat'l Conf. of State Legislatures, "Electronic Transmission of Ballots," Jan. 16, 2017, <http://www.ncsl.org/research/elections-and-campaigns/internet-voting.aspx>.

Voting Technology

The Help America Vote Act of 2002 (HAVA) requires states to replace lever and punch card voting machines with optical scan or direct recording electronic (DRE) voting machines.⁸⁶ As a result, there are now four main types of voting technology in use throughout the United States.

Hand Counted Paper Ballots

Many jurisdictions manually count paper ballots cast in polling places, and even more count absentee and provisional ballots by hand.⁸⁷

Ballot Marking Devices and Systems

These systems provide an interface for voters to mark a paper ballot, which is then scanned or counted manually.⁸⁸ Some ballot marking devices (BMDs) provide a touchscreen interface with audio guidance and feedback or other accessibility features to assist voters with disabilities.⁸⁹

Optical Scan Paper Ballot Systems

These systems allow voters to mark paper ballots that are subsequently tabulated by scanning devices.⁹⁰ On most systems, voters indicate their selections by filling in an oval or box, or completing an arrow.⁹¹ The marked ballots are either scanned at the polling place (precinct count) or placed in a ballot box and scanned at a central location (central count).⁹²

DRE Voting Machine Systems

These systems provide a pushbutton, touchscreen, or dial interface to voters, and votes are recorded directly into computer memory.⁹³ Some DRE systems also include a voter verifiable paper audit trail (VVPAT) printer that allows voters to review their selections before they are recorded into computer memory.⁹⁴

⁸⁶ *Supra* note 37.

⁸⁷ Verified Voting, “Voting Equipment in the United States: Overview of Voting Equipment,” <https://www.verifiedvoting.org/resources/voting-equipment/>.

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *Id.*

⁹² *Id.*

⁹³ *Id.*

⁹⁴ *Id.*

Blended Systems

Many modern voting machines feature elements from several of the four types of voting machines described above. For example, some include a touchscreen like a DRE, but then produce a marked paper ballot that is scanned like an optical scan system. The Technical Guidelines Development Committee (TGDC) of the Election Assistance Commission (EAC) maintains the Voluntary Voting System Guidelines (VVSG).⁹⁵ In its latest version, VVSG 2.0, which is in the process of adoption, the TGDC has moved away from specific categories of machines and instead lays out a set of 17 core voting system functions.⁹⁶ The new VVSG structure is anticipated to be: principles, which describe high level system design goals; guidelines, which will be broad descriptions of the functions that make up a voting system; requirements, which will include technical details necessary for manufacturers to design devices that meet the principles and guidelines of a voting system; and test assertions, which will set forth technical specifications required for laboratories to test a voting system against the requirements.⁹⁷

Map 1 shows the voting technology currently used throughout the United States. On this map, hand counted paper ballots, BMDs, and optical scan paper ballots are all considered “paper ballots.”

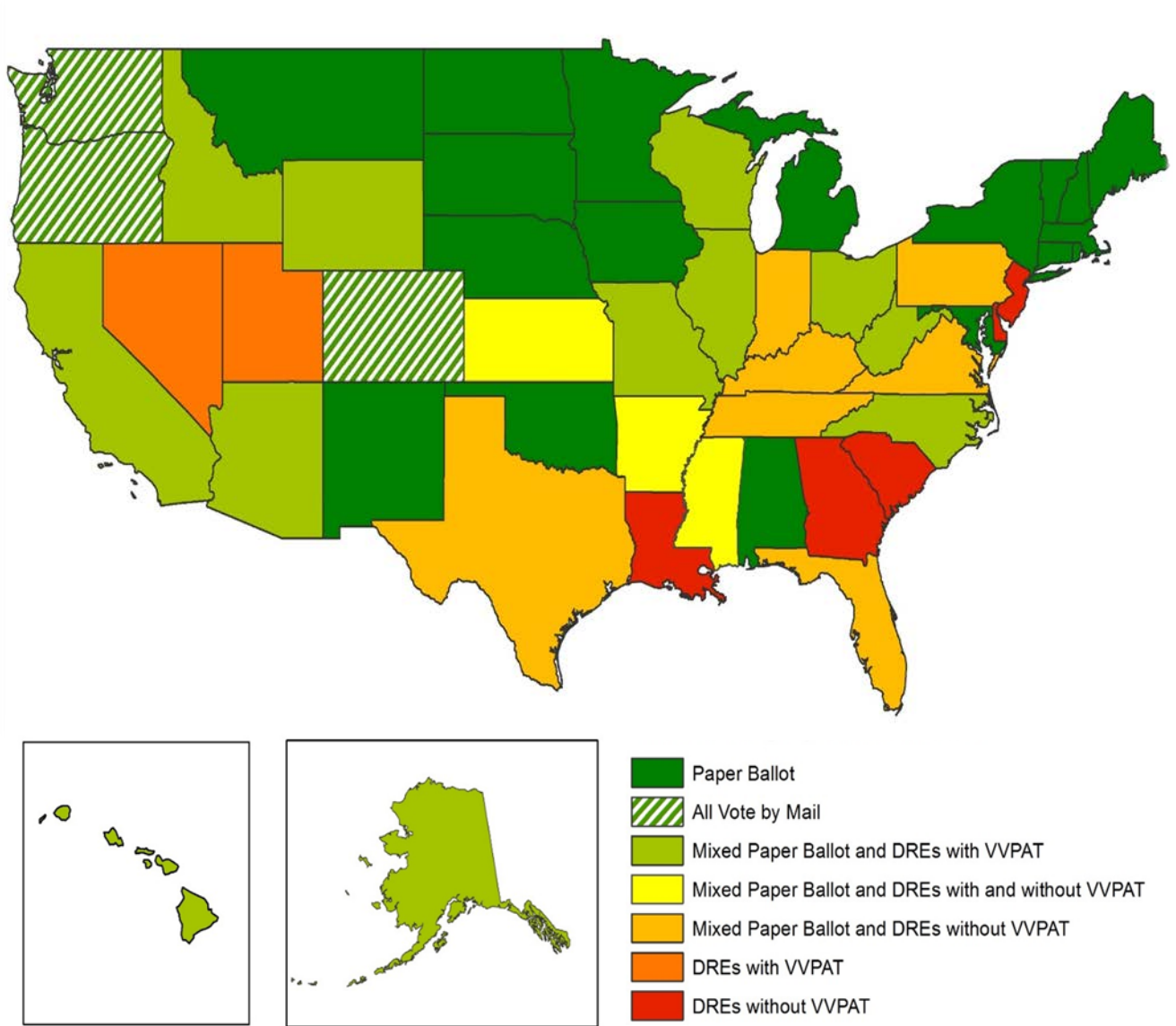
⁹⁵ Election Assistance Comm’n, “About U.S. EAC: Technical Guidelines Development Committee,” <https://www.eac.gov/about/technical-guidelines-development-committee/>.

⁹⁶ Election Assistance Comm’n, “EAC Standards Board Unanimously Approves the 17 Core Voting System Principles,” May 1, 2017, <https://www.eac.gov/news/2017/05/01/eac-standards-board-unanimously-approves-the-17-core-voting-system-principles/>.

⁹⁷ *Id.*

Map 1

United States Voting Systems - 2017



Note: On September 8, 2017, Virginia decertified the DRE voting machines used in the state. See Va. Dep’t of Elections, “Virginia Decertifies Paperless Voting Equipment,” Sept. 8, 2017, <https://www.elections.virginia.gov/Files/Media/ELECTNewsRelease9-8-17.pdf>.

Source: Compiled by JSGC staff from Verified Voting, “The Verifier - Polling Place Equipment - November 2016,” <https://www.verifiedvoting.org/verifier/>.

Accessibility

A number of federal laws have been enacted to protect the right to vote of people with disabilities. The Voting Rights Act of 1965 requires election officials to allow a voter who is blind or has another disability to receive assistance from a person of the voter's choice. The Voting Rights Act also prohibits conditioning the right to vote on the ability to read or write, attaining a particular level of education, or passing an interpretation "test."⁹⁸

The Voting Accessibility for the Elderly and Handicapped Act of 1984 requires accessible polling places in federal elections for elderly individuals and people with disabilities, and where no accessible location is available to serve as a polling place, voters must be provided an alternative means of voting on Election Day.⁹⁹

The Americans with Disabilities Act of 1990 (ADA) is a federal law intended to ensure that people with disabilities are treated equally in all aspects of life. Title II of the ADA requires state and local governments to ensure that people with disabilities have an equal opportunity to vote.¹⁰⁰ The ADA applies to all aspects of voting, including voter registration, polling place site selection, and the casting of ballots, whether on Election Day or during an early voting process.¹⁰¹

The National Voter Registration Act of 1993 (NVRA) requires all offices that provide public assistance or state-funded programs that primarily serve persons with disabilities to also provide the opportunity to register to vote in federal elections.¹⁰²

The Help America Vote Act of 2002 (HAVA) requires jurisdictions responsible for conducting federal elections to provide at least one accessible voting system for persons with disabilities at each polling place in federal elections.¹⁰³ Under HAVA, the accessible voting system must provide the same opportunity for access and participation, including privacy and independence, that other voters receive.¹⁰⁴

States have met these requirements differently. Some have chosen to use both non-accessible and accessible voting equipment, while others have chosen to use accessible voting equipment for all voters. Map 2 shows the different types of accessible voting equipment used throughout the country.

⁹⁸ U.S. Dep't of Justice, Civil Rights Div., Disability Rights Section, "The Americans with Disabilities Act and Other Federal Laws Protecting the Rights of Voters with Disabilities," https://www.ada.gov/ada_voting/ada_voting_ta.htm.

⁹⁹ *Id.*

¹⁰⁰ *Id.*

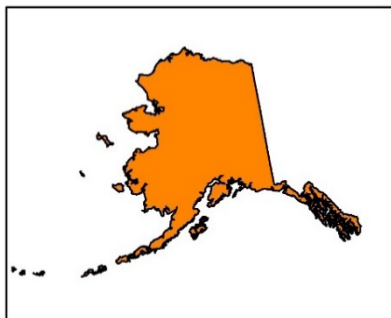
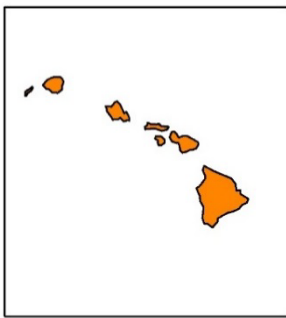
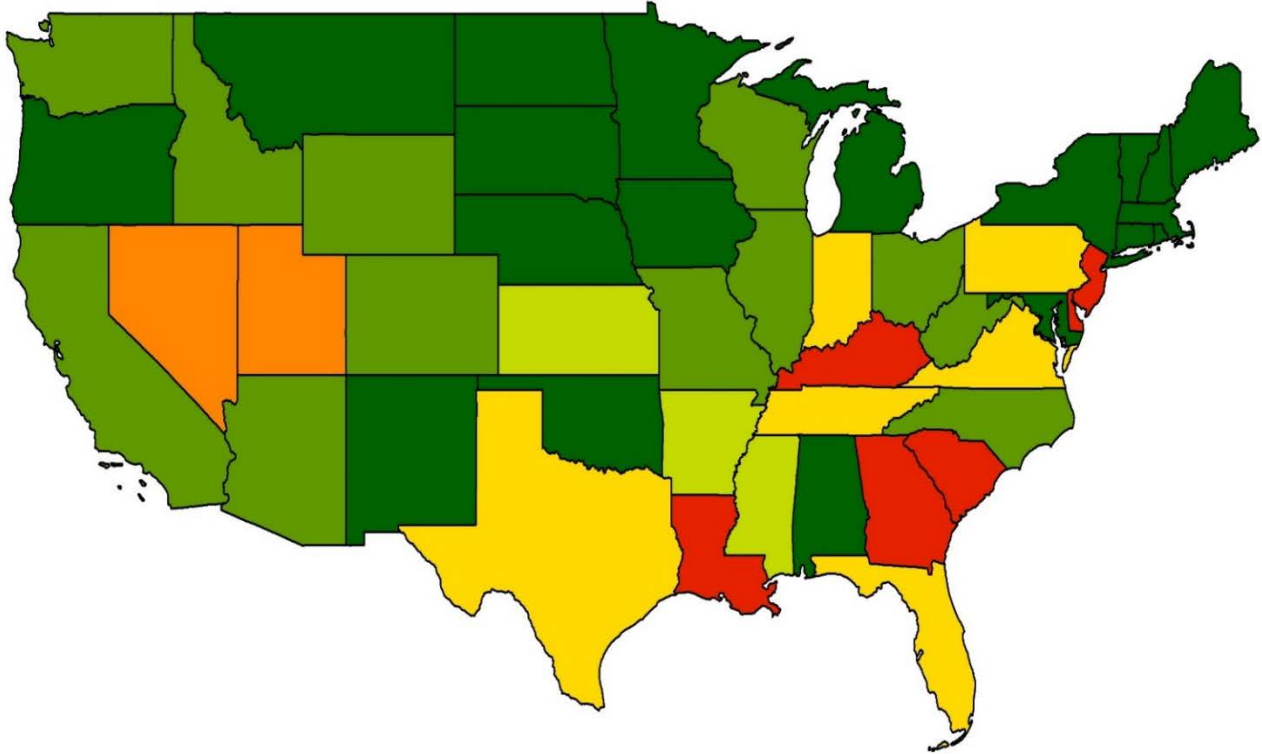
¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *Id.*

¹⁰⁴ *Id.*

Map 2 Accessible Voting Equipment - 2017



- BMDs
- BMDs and DREs with VVPAT
- BMDs and DREs with and without VVPAT
- BMDs and DREs without VVPAT
- DREs with VVPAT
- DREs without VVPAT

Source: Compiled by JSGC staff from Verified Voting, “The Verifier - Accessible Equipment - November 2016,” <https://www.verifiedvoting.org/verifier/>.

The Voting Systems Industry and the Alternatives

In the words of the Presidential Commission on Election Administration (PCEA), there is an “impending crisis in voting technology.”¹⁰⁵ The crisis is the result of “widespread wearing out of voting machines purchased a decade ago, the lack of any voting machines on the market that meet the current needs of election administrators, a standard-setting process that has broken down, and a certification process for new machines that is costly and time-consuming.”¹⁰⁶ The PCEA made this observation in its January 2014 report.¹⁰⁷

According to the report, a large share of the voting machines in operation at the time were purchased with federal funds appropriated in 2003 as part of HAVA.¹⁰⁸ Unlike voting machines used in the past, modern systems were not designed to last for decades.¹⁰⁹ According to a 2015 report from the Brennan Center for Justice, “[w]hile it is impossible to say how long any particular machine will last, experts agree that for those purchased since 2000, the expected lifespan for the core components of electronic voting machines is between 10 and 20 years, and for most systems it is probably closer to 10 than 20.”¹¹⁰

Because the HAVA funds were a one-time appropriation, “jurisdictions do not have the money to purchase new machines, and legal and market constraints prevent the development of machines they would want even if they had the funds.”¹¹¹ As a result, the “majority of machines in use today are either perilously close to or exceed...” their estimated lifespan of 10 to 20 years.¹¹² Risks associated with obsolete voting technology include “increased failures and crashes, which can lead to long lines and lost votes,” as well as serious security and reliability flaws, all of which could shake public confidence in the election process and the American system of republican democracy.¹¹³

Researchers from the Brennan Center for Justice found that “[n]early every state is using some machines that are no longer manufactured and many election officials struggle to find replacement parts.”¹¹⁴ Researchers noted high-profile issues, such as machines with wireless networking components that could allow external parties to access machines, modify data, record voting data, or inject malicious data.¹¹⁵ Researchers also noted that aging touchscreen machines can suffer alignment or calibration problems and register votes incorrectly as the glue holding the components of the screen together degrades over time.¹¹⁶

¹⁰⁵ Election Admin. Comm’n, “The American Voting Experience: Report and Recommendations of the Presidential Commission on Election Administration, Jan. 2014, <https://www.eac.gov/assets/1/6/Amer-Voting-Exper-final-draft-01-09-14-508.pdf>, at p. 62.

¹⁰⁶ *Id.*

¹⁰⁷ *Id.*

¹⁰⁸ *Id.*

¹⁰⁹ Brennan Ctr. For Justice, “America’s Voting Machines at Risk,” Sept. 15, 2015, http://www.brennancenter.org/sites/default/files/publications/Americas_Voting_Machines_At_Risk.pdf, at p. 4.

¹¹⁰ *Id.*

¹¹¹ *Supra* note 105.

¹¹² *Supra* note 109.

¹¹³ *Id.* at p. 4-5.

¹¹⁴ *Id.* at p. 4.

¹¹⁵ *Id.* at p. 13.

¹¹⁶ *Id.*

Elections officials reported that motherboards and memory cards are beginning to die, and wiring needs to be replaced.¹¹⁷ The components used in voting machines are comically out-of-date compared to consumer electronics: one official reported that his machines use PCMCIA cards, which cost \$100 each to replace and only store 512 kilobytes of data.¹¹⁸ Many systems still rely on operating systems, such as Windows 2000 or Windows XP, that are no longer supported by their developers and cannot run on modern equipment.¹¹⁹ Machines that use paper ballots become more likely to experience paper jams as they age.¹²⁰ According to the report, 43 states and the District of Columbia are using machines that are no longer manufactured.¹²¹ Some officials reported purchasing additional voting machines to use for parts, or have resorted to websites like eBay to find spare parts.¹²² Members of the Advisory Committee reported experiencing some of these same problems, and have relied on many of these same solutions.

Furthermore, elections officials report that they are dissatisfied with the current offerings of voting equipment and technology. The existing election equipment marketplace consists almost solely of complex, single-use, end-to-end systems, and for the most part, these systems are not customizable or interchangeable, and employ software that is outdated.¹²³ Although all election officials do not agree on what they would like in new machines, the researchers from the Brennan Center found several themes.¹²⁴ Many officials would like to use systems that employ commercial-off-the-shelf (COTS) hardware, such as an iPad or Android tablet, in combination with COTS printers that produce a paper ballot for the voter to review.¹²⁵ The voter would then submit this paper ballot into a scanner that both tabulates ballots and stores an image of the ballot.¹²⁶ This type of system would have many advantages:

- COTS hardware are less expensive than current voting machines;
- Mass-produced COTS hardware can be easily and cheaply replaced;
- Election officials and voters would have the added benefit of paper records to verify votes without the expense of specially-printed ballots;
- Voting on a tablet would make it easier to implement changes to election law;
- Tablets could easily provide the multiple ballot styles required for vote centers and early voting.¹²⁷

¹¹⁷ *Id.*

¹¹⁸ *Id.* at p. 14.

¹¹⁹ *Id.* at p. 15.

¹²⁰ *Id.* at p. 17.

¹²¹ *Id.* at p. 15.

¹²² *Id.* at p. 13, 14.

¹²³ *Supra* note 105, at p. 63

¹²⁴ *Supra* note 109, at p. 21.

¹²⁵ *Id.*

¹²⁶ *Id.*

¹²⁷ *Id.*

Another advantage of employing new technologies is the possibility of making post-election auditing easier, cheaper, and more reliable. According to researchers at the Brennan Center for Justice, “[n]ew approaches to auditing, such as ‘risk-limiting audits,’ can confirm election results at a high probability by sampling just a few ballots,” but they require voting systems to provide a link between paper ballots and electronic ballot data so that officials can compare a physical paper trail to the electronic count, and they must still protect voter anonymity.¹²⁸

Elections officials in at least two large jurisdictions have decided to develop their own voting systems. Los Angeles County is the most populous county in the country, and is home to roughly 5 million registered voters who speak 12 languages.¹²⁹ The county has more than 4,800 polling places in an area twice the size of Rhode Island, and centrally counts the ballots on equipment that dates back to the 1960s.¹³⁰ In its plan to replace the aging equipment, the county “‘wanted to design a system around the voter’s experience, not around the limitations of the market and the current regulatory environment.’”¹³¹ The county described its approach as “‘human-centered.’”¹³²

The proposed design combines touchscreen technology with a human-readable and auditable paper ballot.¹³³ Voters would use a touchscreen ballot marking device to fill out a ballot, print it, and then place it in a ballot box.¹³⁴ The county is also considering new services, such as an interactive sample ballot that voters can scan into a machine and start the voting process with their choices already pre-selected to expedite the voting experience.¹³⁵ The new system will also make it easier to conduct risk-limiting audits.¹³⁶

However, before the county could proceed with the project, it needed state law to change, because although the county never spent its HAVA or state grant funds, California law required that voting systems be federally certified before they could be purchased using HAVA and state funds.¹³⁷ In 2013, California law was changed, separating the state from federal certification processes.¹³⁸ The county is currently working with designers and manufacturers, and plans to implement the system in 2017.¹³⁹

¹²⁸ *Id.* at p. 22.

¹²⁹ *Id.*

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² *Id.*

¹³³ *Id.*

¹³⁴ *Id.*

¹³⁵ *Id.*

¹³⁶ *Id.*

¹³⁷ *Id.* at p. 22-23.

¹³⁸ *Id.* at p. 23.

¹³⁹ *Id.*

In 2009, Travis County, Texas, assembled a group of local political leaders, elections experts, cryptographers, and computer scientists to consider replacing the county’s machines.¹⁴⁰ The group recommended that the county replace its system after the 2012 presidential election.¹⁴¹ Dissatisfied with the machines on the market, the county clerk asked a group of experts to design a new system.¹⁴² The result of these efforts is the STAR-Vote system.¹⁴³ STAR is an acronym for secure, transparent, auditable, and reliable.¹⁴⁴

The STAR-Vote system would use a COTS tablet running open-source software as an electronic ballot that voters fill out.¹⁴⁵ Voters would confirm their selections on printed paper receipts, and then feed the printed paper receipts into a ballot scanner.¹⁴⁶ The system would provide voters with tangible receipts to confirm that the machine recorded their choices correctly.¹⁴⁷ Voters could use the receipt to log into a website and confirm their ballots were cast and counted.¹⁴⁸ The system was also designed to allow for risk-limiting audits.¹⁴⁹

Travis County estimated the STAR-Vote system would cost about \$8 million, almost \$6 million less than a vendor-designed system, with software development accounting for most of the cost, at approximately \$5.5 million.¹⁵⁰ The county estimated that the COTS hardware would be less expensive than proprietary hardware sold by vendors, and since STAR-Vote would be publicly owned, the county would be in a better position to negotiate with vendors for ongoing maintenance.¹⁵¹ The county issued a request for proposals (RFP), and hoped to have the system in place for the 2018 election.¹⁵²

In September 2017, the Travis County Clerk announced that “[t]he proposals received in response to the STAR-Vote RFP were not sufficient to build a complete voting system.”¹⁵³ As a result, the Travis County Commissioners’ Court voted to reject all proposals for the STAR-Vote project, and instead, the county will acquire a new voting system using the more traditional vendor-based model.¹⁵⁴

¹⁴⁰ *Id.* at p. 24.

¹⁴¹ *Id.*

¹⁴² *Id.*

¹⁴³ *Id.*

¹⁴⁴ *Id.*

¹⁴⁵ *Id.*

¹⁴⁶ *Id.*

¹⁴⁷ *Id.*

¹⁴⁸ *Id.*

¹⁴⁹ *Id.*

¹⁵⁰ *Id.*

¹⁵¹ *Id.*

¹⁵² *Id.* at p. 24-5.

¹⁵³ Travis County Clerk, “STAR-Vote - A Change of Plans,” Sept. 28, 2017, <http://www.traviscountyclerk.org/eclerk/Content.do?code=star-vote-a-change-of-plans>.

¹⁵⁴ *Id.*

Election Costs

A number of federal laws have contributed to a shift towards more centralized elections.¹⁵⁵ The NVRA and HAVA affected how voters registered. HAVA also gave states funds to update and maintain voting equipment, and charged the states with developing plans for the disbursement of these funds.¹⁵⁶ UOCAVA and MOVE also gave states additional responsibilities relating to registration and voting for overseas citizens.¹⁵⁷

The voluntary Electronic Registration Information Center (ERIC) program has also contributed to further centralization of elections. ERIC is a non-profit organization that was formed in 2012, with assistance from The Pew Charitable Trusts, to assist states in improving the accuracy of voter rolls and increasing access to voter registration for all eligible citizens.¹⁵⁸ It is governed and managed by the states that choose to join, and currently includes Alabama, Alaska, Colorado, Connecticut, Delaware, the District of Columbia, Illinois, Louisiana, Maryland, Minnesota, Nevada, New Mexico, Ohio, Oregon, Pennsylvania, Rhode Island, Utah, Virginia, Washington, West Virginia, and Wisconsin.¹⁵⁹ ERIC provides data matching services to the member states in order to improve their ability to identify inaccurate and out-of-date voter registration records, as well as eligible but unregistered residents.¹⁶⁰

However, determining how much it costs to administer an election is quite difficult because several levels of government still participate in running and paying for the elections.¹⁶¹ States, counties, municipalities, and special districts all play a role in the process.¹⁶² Although the majority of election-related costs are still borne by counties, some states may contribute funds for statewide voter registration databases, certain types of elections (such as special elections, state-only elections, or presidential primary elections), voting equipment, training and compensation for local election officials or poll workers, some election-related supplies (such as ballots), and voter information dissemination.¹⁶³ The following tables and maps summarize how different states handle the costs of elections.

¹⁵⁵ *Supra* note 37.

¹⁵⁶ *Id.*

¹⁵⁷ *Id.*

¹⁵⁸ Elec. Registration Info. Ctr., “Ensuring the Efficiency and Integrity of America's Voter Rolls,” <http://www.ericstates.org/>.

¹⁵⁹ *Id.*

¹⁶⁰ Elec. Registration Info. Ctr., “ERIC: Technology and Security Overview,” Mar. 3, 2015, http://www.ericstates.org/images/documents/ERIC_Tech_and_Security_Brief_v2.1.pdf.

¹⁶¹ *Supra* note 37.

¹⁶² *Id.*

¹⁶³ *Id.*

Table 3
What States Pay For - 2017

Category	State	Details
State pays all expenses for federal or state elections.	Alaska Alaska Stat. §15.15.032, §15.10.110, §15.15.060 et seq., §15.15.380, §15.15.390	State pays for and conducts federal and state elections, which are combined, and for certain local elections.
	Delaware Del. Code tit. 15 §4514, §201A, §215	The State Department of Elections has responsibility for and bears the cost of all election administration in the state.
State pays all expenses if only state candidates or issues are on the ballot. If other local issues are also on the ballot, state pays a portion of election expenses.	Alabama Ala. Code. §17-16-2 to §17-16-6	State pays for half of elections that include federal, state and county races, or an election to amend the constitution. The state pays for the total cost of an election that contains only federal or state offices.
	Colorado Colo. Rev. Stat. §1-5-505.5	State reimburses counties for all election costs if the only item on the ballot is a statewide ballot issue. For any other election where there is a statewide ballot issue/question on the ballot, the state reimburses at 90 cents per active registered voter in counties with 100,000 or fewer active registered voters, or 80 cents per voter in counties with more than 100,000 voters.
State pays all expenses if only state candidates or issues are on the ballot. If other local issues are also on the ballot, state pays a portion of election expenses.	Hawaii Hawaii Rev. Stat. §11-182 to §11-184	State pays all expenses for state elections which do not involve county offices. When both state and county offices are on the ballot, counties pay a prorated amount based on the proportion of total registered voters and the state pays remaining expenses.
	Louisiana La. Rev. Stat. §18:1400.1 to §18:1400.8	State pays for election expenses for gubernatorial and congressional general and primary elections and presidential primary elections, unless local candidates or questions also appear on the ballot, in which case the state pays half. The remaining half is split between the state and local or municipal jurisdictions participating in the election.
State bears a portion of the cost of all elections.	Kentucky Ky. Rev. Stat. §117.345	State reimburses counties for the cost of elections at a set rate of \$255 per precinct annually.
	Rhode Island R.I. Gen. Laws §17-6-3 et seq. §17-7-5 §17-9.1-2 §17-19-2 et seq.	Local jurisdictions in Rhode Island pay for poll workers and polling sites. The state bears all other costs of the election, including voting equipment, polling place supplies and ballots.

Table 3
What States Pay For - 2017

Category	State	Details
State pays for statewide special elections or statewide elections that do not coincide with regularly scheduled elections when there is only a state candidate or question on the ballot. If other local issues are also on the ballot, state may pay a portion of election expenses.	Arkansas Ark. Code Ann. §7-7-201, §7-4-101(11) Ark. Admin. Code 108.00.5-501 to 108.00.5-507	Arkansas reimburses counties for statewide special elections and nonpartisan general elections on an estimated average cost per voter basis, by county, which is established by the State Board of Election Commissioners.
	Florida Fla. Stat. §100.102	State reimburses the “actual expenses” of holding a statewide special election.
	Iowa Iowa Code Ann. §49A.9	State reimburses for special elections for constitutional amendments or statewide public measures that are not held at the same time as the general election.
	Michigan Mich. Comp. Laws Ann. §168.487	State reimburses localities for actual costs of statewide special elections.
State pays for statewide special elections or statewide elections that do not coincide with regularly scheduled elections when there is only a state candidate or question on the ballot. If other local issues are also on the ballot, state may pay a portion of election expenses.	Missouri Mo. Rev. Stat. §115.061 to §115.065	State pays for statewide elections when only state questions or candidates are on the ballot. State reimburses localities for the cost of conducting statewide elections in off-years and special elections that do not coincide with primary or general elections in even-numbered years. State shares a proportional cost of elections when state questions or candidates are submitted to a vote at the same time as questions or candidates from other political subdivisions.
	New Jersey N.J. Rev. Stat. §19:45-1.1	State pays expenses for special elections held to fill vacancies in the Senate or General Assembly.
	North Dakota N.D. Cent Code §16.1-01-02.3	State reimburses counties for all costs incurred in conducting a statewide special election not held on the date of a statewide primary or general election.
State pays for statewide special elections or statewide elections that do not coincide with regularly scheduled elections when there is only a state candidate or question on the ballot. If other local issues are also on the ballot, state may pay a portion of election expenses.	Ohio Ohio Rev. Code §3501.17 §3513.301 et seq. §3521.03	State pays for the entire cost of an election when a statewide ballot measure is the only thing on the ballot. When a special election contains both a constitutional amendment posed by the legislature and ballot measures from a political subdivision, the state pays a proportional division of costs. State pays for special elections in certain instances when a candidate withdraws or dies prior to an election, or if there is a vacancy in the offices of representative to congress or governor.

Table 3
What States Pay For - 2017

Category	State	Details
<p>State pays for statewide special elections or statewide elections that do not coincide with regularly scheduled elections when there is only a state candidate or question on the ballot. If other local issues are also on the ballot, state may pay a portion of election expenses.</p>	<p align="center">Oregon Or. Rev. Stat. §254.660 §246.179 §246.710</p>	<p>State pays for special elections, statewide recall or other statewide special elections not regularly scheduled. If a county is in fiscal distress that compromises the county's ability to conduct elections at an adequate level, the state may perform services necessary and seek reimbursement from the Emergency Board.</p>
	<p align="center">Pennsylvania 25 P.S. §2645</p>	<p>State reimburses county boards of elections for those additional costs incurred in any special election held to fill a vacancy in the Pennsylvania General Assembly.</p>
	<p align="center">Tennessee Tenn. Code Ann. §2-12-109</p>	<p>State reimburses for all expenses for special elections when only a state assembly member is on the ballot.</p>
	<p align="center">Washington Wash. Rev. Code §29A.04.410 to §29A.04.430</p>	<p>State reimburses prorated share of costs when state officers or measures are voted on in a state primary or general election in an odd-number year, and for a vacancy election to fill the position of U.S. senator or representative.</p>
	<p align="center">West Virginia W. Va. Code §3-10-9</p>	<p>State reimburses for reasonable expenses for special elections to fill a vacancy not held on a regular election date.</p>
<p>State pays for statewide primary and presidential primary elections.</p> <p><i>Note: When states pay some or all election costs (the first three categories) this is also usually applicable to statewide and presidential primary elections.</i></p>	<p align="center">Arkansas Ark. Code Ann. §7-7-201, §7-4-101(11) Ark. Admin. Code 108.00.5-501 to 108.00.5-507</p>	<p>State reimburses counties for presidential primary elections and statewide primary elections on an estimated average cost per voter basis, by county, which is established by the State Board of Election Commissioners.</p>
	<p align="center">South Carolina S.C. Code Ann. §7-13-15 §7-11-20 §7-11-25</p>	<p>State pays all costs associated with primaries for state offices, offices including more than one county, countywide offices and special district offices. State conducts and pays for presidential preference primaries. Political parties may charge filing fees (not to exceed \$20,000) for each candidate certified to appear on the presidential primary ballot, which are then transmitted to the state for use in conducting the election. Parties may choose instead to conduct advisory primaries according to the party's own rules and at the party's expense.</p>

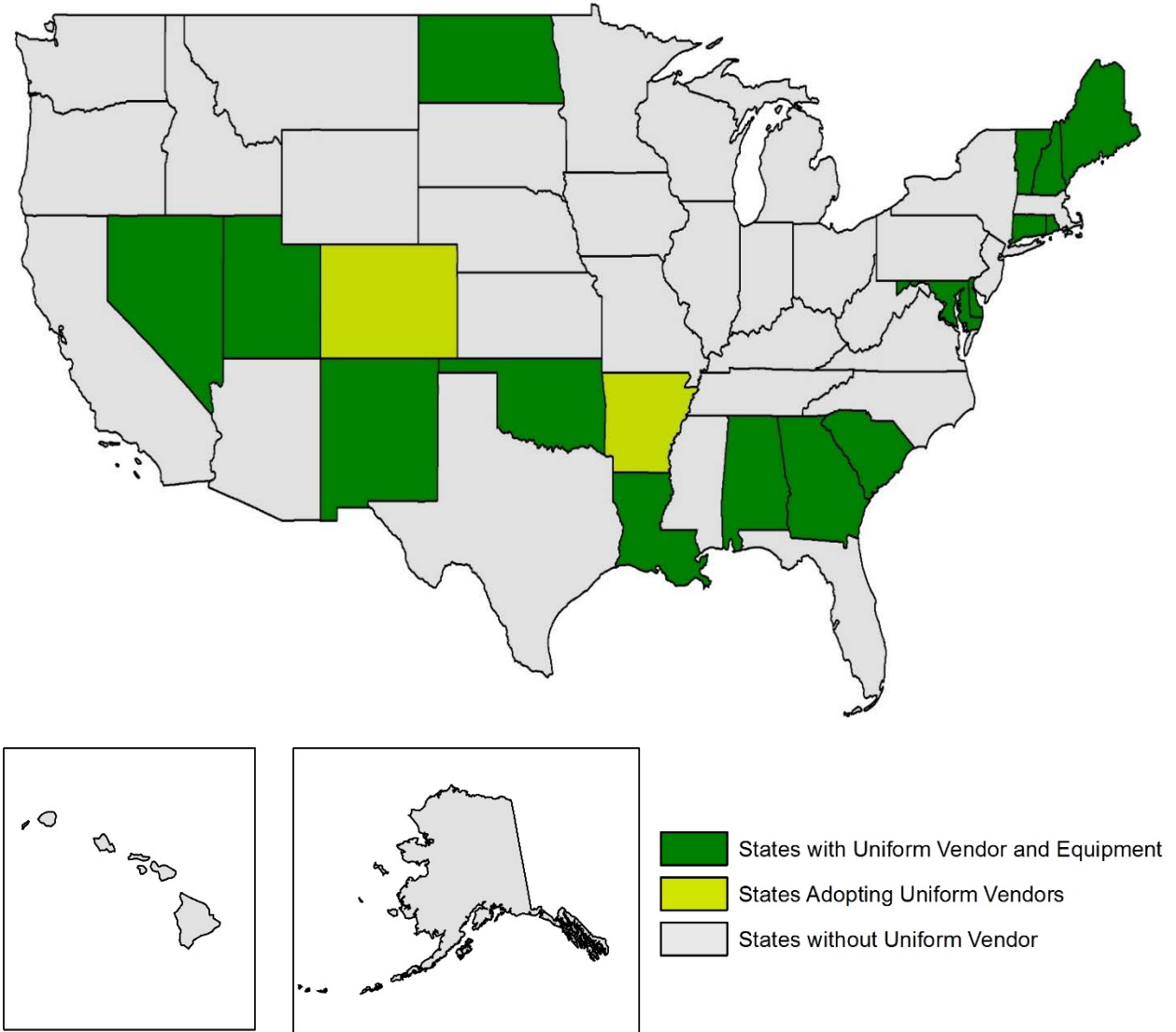
Table 3
What States Pay For - 2017

Category	State	Details
State pays for statewide primary and presidential primary elections. <i>Note: When states pay some or all election costs (the first three categories) this is also usually applicable to statewide and presidential primary elections.</i>	Texas Tex. Election Code §173.001 to §173.088 §191.006	State reimburses for the majority of costs of all primary elections.
State pays for presidential primary elections.	Arizona Ariz. Rev. Stat. §16-250	State reimburses counties for presidential primary elections at the rate of \$1.25 per active registered voter, though if the secretary of state determines that reimbursement at this rate would jeopardize the ability of a county to comply with federal and state laws the county may be released from that rate of reimbursement.
	Idaho Idaho Code §34-738	State reimburses all costs related to a presidential primary.
	Kansas Kan. Stat. Ann. §25-4508	State reimburses counties for direct expenses of a presidential preference primary election; however Kansas typically holds caucuses to select presidential nominees and has not held a presidential primary since 1992.
	Michigan Mich. Comp. Laws Ann. §168.624g	State reimburses localities for actual costs of presidential primaries.
State pays for presidential primary elections.	Missouri Mo. Rev. Stat. §115.785	State pays for all costs of presidential preference primaries unless there are political subdivisions holding an election on the same day, in which case the cost is proportional.
	Tennessee Tenn. Code Ann. §2-12-109	State reimburses all expenses for presidential preferences primaries.
	Virginia Va. Code Ann. §24.2-545	State pays for presidential primary elections.
	Washington Wash. Rev. Code §29A.56.060	State reimburses for all of the costs associated with a presidential primary election if it is held alone, and a prorated share of the costs otherwise.

Source: Compiled by JSGC staff from Nat’l Conf. of State Legislatures, “Election Costs: What States Pay,” July 21, 2017, <http://www.ncsl.org/research/elections-and-campaigns/election-costs.aspx>.

Map 3

States with Uniform Vendor and Voting Equipment - 2017



Source: Compiled by JSGC staff from Nat'l Conf. of State Legislatures, "Election Costs: What States Pay," July 21, 2017, <http://www.ncsl.org/research/elections-and-campaigns/election-costs.aspx>.

Table 4	
States That Pay for a Portion of the Equipment Used To Cast and Tabulate Votes - 2017	
State	Details
Maryland	The state pays for 50 percent of the purchase cost, counties pay for the other 50 percent.
Michigan	New equipment will be implemented between August 2017 and August 2018. The new equipment will be paid for with \$30 million in federal HAVA money that the state had saved for more than a decade, and with \$10 million approved by the legislature with the support of the governor. This funding will cover most of the up-front cost for the new systems. Cities and townships will pay for the remaining cost, which will vary, depending on which vendor is selected, and for extended service and maintenance, which will begin in the sixth year of the contract period.
Mississippi	50 percent of the state’s Elections Support Fund goes to counties to assist with the acquisition, maintenance and upgrade of voting equipment.
Missouri	The secretary of state administers a series of grant, loan and subsidy funds to assist election authorities with upgrades or improvements to the voting process or equipment.
Vermont	The state pays for vote tabulators, maintenance and configuration of memory cards for towns with more than 1,000 registered voters, as long as HAVA funds are still available.
<i>Notes</i>	
California	California has a process to reimburse counties for the cost of new state mandates, though funds have not been available in order to do this in recent years.
Georgia	Maintenance, upgrades, and the testing of voting equipment are all done by The Center for Election Systems at Kennesaw State University, and paid for by the state.
Idaho	Idaho passed an election consolidation bill in 2009 that included an appropriation for voting machine upgrades should they be necessary to implement the law.
Montana	Montana enacted post-election audits in 2009 and made funds available to counties for equipment updates associated with the new law's implementation.
Wyoming	There is a state plane available in Cheyenne for trouble-shooters from the state’s main voting system vendor to take them to counties that might be experiencing problems.
<p>Source: Compiled by JSGC staff from Nat’l Conf. of State Legislatures, “Election Costs: What States Pay,” July 21, 2017, http://www.ncsl.org/research/elections-and-campaigns/election-costs.aspx, and Mich. Sec’y of State, “Secretary Johnson Announces Next-generation Voting Equipment,” http://www.michigan.gov/documents/sos/SecJohnsonAnnounce_549600_7.pdf.</p>	

Table 5
How States Work with Local Elections Officials - 2017

Category	States
State is responsible for hiring, training, and paying local election officials.	Alaska, Delaware
State certifies local election officials or provides mandatory training (* denotes states with a certification program).	Arizona*, Arkansas, Colorado*, Connecticut*, Georgia*, Hawaii, Illinois, Indiana, Iowa*, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan*, Minnesota*, Mississippi*, Montana*, Nebraska, New Mexico, North Carolina*, Oklahoma, Ohio, Oregon, Rhode Island, South Carolina*, Tennessee(1), Vermont, Virginia*, Washington*, Wisconsin*, West Virginia
State provides voluntary training for local election officials, or training on certain aspects of elections (such as using the statewide voter registration system).	California, Florida(2), Idaho, Louisiana(3), Missouri, New Hampshire, North Dakota, Pennsylvania, South Dakota, Texas, Utah, Wyoming
State does not provide a training program for local election officials, but may publish digests, handbooks, or compilations of election laws.	Alabama, Nevada, New Jersey, New York

Notes

(1) In Tennessee all election officials must go through training provided by the state, and they can also choose to take a certification exam that can qualify them for a higher salary rate.

(2) In Florida election officials may choose to go through a certification program in order to qualify for a higher salary rate.

(3) Local election officials in Louisiana may choose to complete the Louisiana Voter Registration Administrators' Certification Program, through Auburn University and the Election Center, to receive an increase in salary.

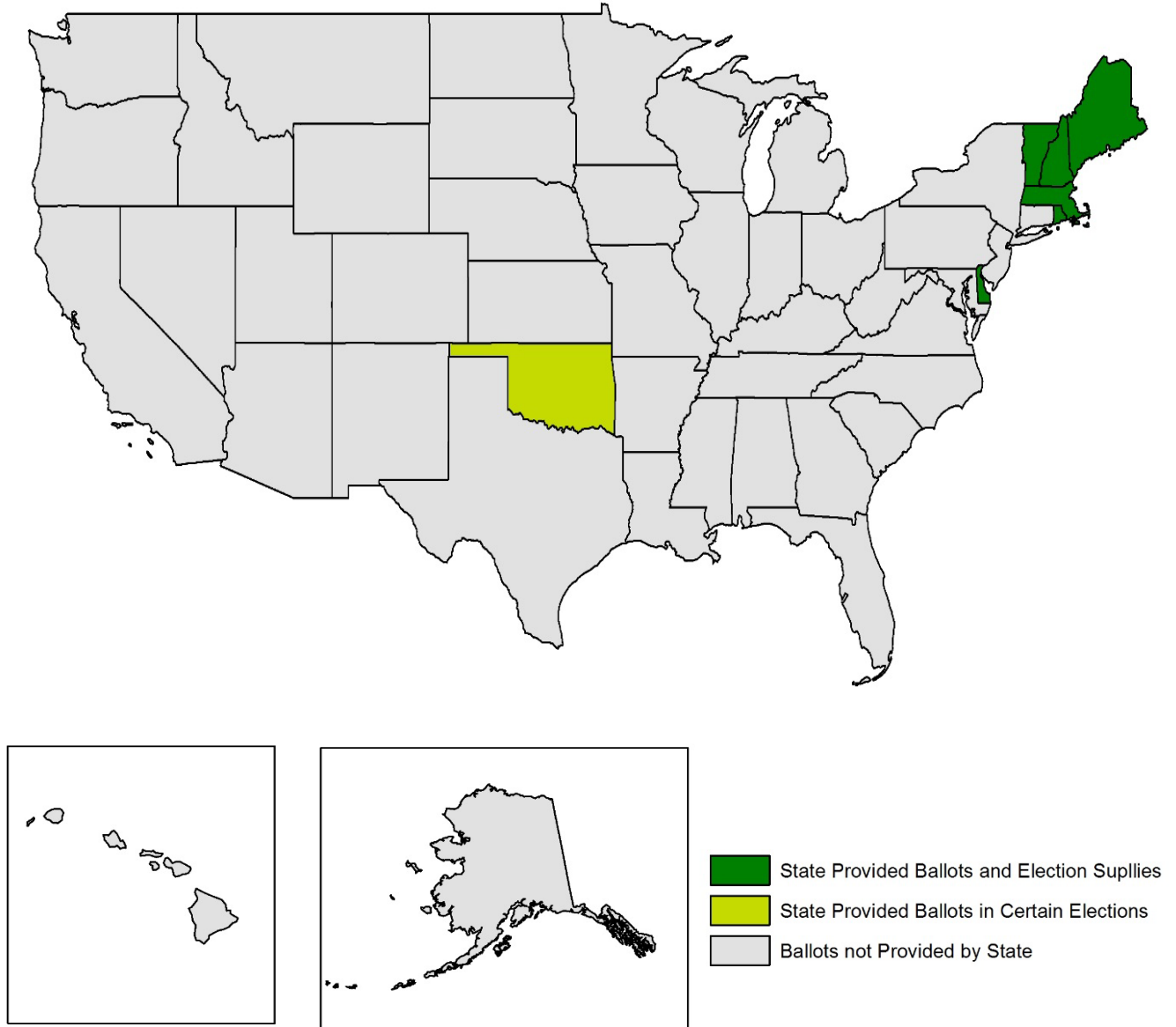
Source: Compiled by JSGC staff from Nat’l Conf. of State Legislatures, “Election Costs: What States Pay,” July 21, 2017, <http://www.ncsl.org/research/elections-and-campaigns/election-costs.aspx>.

Table 6
States That Pay for Personnel Costs - 2017

State	Details
Alabama	Poll workers who attend a precinct election official training school are entitled to an additional \$25 per day in compensation from the state (Ala. Code. §17-8-12)
Hawaii	The state provides mandatory training and stipends for Election Day poll workers. The state may also pay for overtime costs for local election officials if it is strictly related to state responsibilities (Hawaii Rev. Stat. §11-184)
Kentucky	Counties can request reimbursement from the state for personnel costs up to \$0.50 per registered voter per year (Ky. Rev. Stat. §117.343)
Louisiana	The state pays the salary of permanent and temporary employees that perform election duties and for law enforcement officers to maintain order for gubernatorial, congressional and presidential preference primary elections, unless local candidates or questions are on the ballot, in which case the state pays half. The state also reimburses for some expenses in providing training to poll workers and pays for personnel expenses incurred by early voting hours outside of regular business hours (La. Rev. Stat. §18:1400.1 to §18:1400.8)
New Jersey	Counties may apply for reimbursement for compensation for members of district boards of elections (N.J. Rev. Stat. §19:45-6.2, 19:45-7)
Oklahoma	The state reimburses counties for the chief election official's salary, and provides training for poll workers each even-numbered year, paying \$25 for attendance (Okl. Stat. Ann. tit. 26 §2-118, §3-105.1, §3-109 to §3-111)
Tennessee	The state covers part of local administrator of elections' salaries if they are state-certified (Tenn. Code Ann. §2-11-202)

Source: Compiled by JSGC staff from Nat'l Conf. of State Legislatures, "Election Costs: What States Pay," July 21, 2017, <http://www.ncsl.org/research/elections-and-campaigns/election-costs.aspx>.

Map 5
States Providing Ballots or Election Supplies - 2017



Source: Compiled by JSGC staff from Nat'l Conf. of State Legislatures, "Election Costs: What States Pay," July 21, 2017, <http://www.ncsl.org/research/elections-and-campaigns/election-costs.aspx>.

Table 7
Allocating Costs Between Counties and Other Political Subdivisions - 2017

Category	State	Details
Shared costs based on formulas	Arkansas	School elections that are combined with other county elections, the school district pays for expenses incurred for poll workers at individual polling places, with the share of the total being determined by the number of votes cast in the school election as a proportion of the total number of votes cast in the election (Ark. Code Ann. §6-14-118).
	Louisiana	If there are both state/federal candidates or statewide ballot questions as well as local candidates or questions on the ballot, the state pays for half of the election expenses, and the other half is shared pro rata by the local entities according to the “real estate” used on the ballot. The share that local entities pay is determined by dividing the entity’s number of offices, propositions or questions on the ballot by the total number of all offices, propositions or questions on the ballot (La. Rev. Stat. Ann. art. 18 §1400.4).
	Missouri	When more than one political subdivision has candidates or issues on the ballot, they share costs based on the number of registered voters in that subdivision as a percentage of the total number of registered voters eligible for the election (Mo. Rev. Stat. §115.065).
	Nebraska	When there are several political subdivisions participating in an election, costs chargeable to the subdivisions are determined by “dividing the total cost by the number of precincts participating in the election to fix the cost per precinct, prorating the cost per precinct by the inked ballot inch in each precinct for each political subdivision, and totaling the cost for each precinct for each political subdivision, except that the minimum charge for each primary and general election for each political subdivision shall be one hundred dollars” (Neb. Rev. Stat. § 32-1203).
Shared costs at discretion of county	Colorado	Counties conduct a “coordinated election” if more than one political subdivision (state, county, municipality, school district or special district) holds an election on the same day in November. In these cases, there is a “reasonable sharing of the actual cost,” which does not include the cost of maintaining the county election office (Colo. Rev. Stat. §1-7-116). It is left to the discretion of counties to determine exactly how to divide the costs, except that if there is a statewide ballot measure on the ballot the state pays its typical rate (90 cents per active registered voter for counties with 100,000 or fewer active registered voters or 80 cents per voter for counties with more than 100,000 voters) (Colo. Rev. Stat. §1-5-505.5).
	Montana	Political subdivisions bear a proportional share of the costs as determined by the county governing body (Mont. Code Ann. §13-1-302).
	Utah	The costs assessed by a county clerk to a municipality in Utah may not exceed the actual costs incurred, including costs or rental fees associated with election equipment, supplies and reasonable and necessary administrative costs (Utah Code Ann. §20A-5-403).

Table 7
Allocating Costs Between Counties and Other Political Subdivisions - 2017

Category	State	Details
Fees for using voting machines	Delaware	Cities or towns may use county-owned voting machines if they pay all associated costs and expenses (Del. Code Ann. tit. 15 §5003A).
	Georgia	Georgia law specifies that counties may not levy a fee for use of the state voting equipment but may require municipalities to reimburse the county for the actual expenses related to the election (Ga. Code Ann. §21-2-300).
	New Jersey	Counties may charge up to \$5 per voting machine for municipalities that would like to rent them for elections (N.J. Stat. Ann. tit. 19 §48-3.18).
	Wyoming	Counties may charge subdivisions a fixed fee per day for use of county-owned voting machines, which then goes back into the county fund used to acquire and maintain voting machines (Wyo. Stat. §22-10-105 et seq.)
Reimbursement of personnel expenses	Indiana	Most expenses for municipal elections are the responsibility of the county, but the county may charge a municipality for the wages of extra persons employed to provide additional assistance related to the election (Ind. Code §3-5-3-1).
	Oklahoma	Municipalities, school boards or other entities that authorize an election to be conducted by the county must pay the county upfront for compensation and employer’s share of benefits for poll workers involved in the election (Okla. Stat. Ann. tit. 26 § 3-105.1). The county may request reimbursement later for other expenses incurred during the election.
<p>Source: Compiled by JSGC staff from Nat’l Conf. of State Legislatures, “Election Costs: What States Pay,” July 21, 2017, http://www.ncsl.org/research/elections-and-campaigns/election-costs.aspx.</p>		

Colorado: A Case Study

For more than a decade, Colorado has worked to modernize its elections, and has implemented several election administration policies and technologies described in this report. In 2003, Larimer County piloted vote centers, and the state implemented them in 2004.¹⁶⁴ In 2008, Colorado’s General Assembly created the Election Reform Commission “to review, research, and make recommendations to ensure that every eligible citizen has the opportunity to register to vote, participate in fair, accessible, and impartial elections, and have the assurance that his or her vote will count.”¹⁶⁵

¹⁶⁴ *Supra* note 14; Colo. Sen. Bill 04-153.

¹⁶⁵ Colo. Sen. Bill 08-243.

In March 2009, the Election Reform Commission issued a report outlining 20 recommendations, including six recommendations pertaining to voter registration and voter databases, two recommendations pertaining to technology and auditing, and 12 recommendations pertaining to uniformity and simplification, and Colorado’s General Assembly subsequently enacted a number of bills based on the recommendations.¹⁶⁶

In 2013, Colorado’s Voter Access and Modernized Elections Act became law. The act fundamentally changed how elections were administered. Some of the changes included:

- Requiring that ballots be mailed to all registered voters while still accommodating in-person voting before and on Election Day.
- Directing counties to establish a minimum number—determined by the size of each county’s voting population—of voter service and polling centers (known as “vote centers” in many other states) where all eligible voters in the county can register to vote; update their voting information; cast their ballots, including provisional ballots when necessary; and drop off completed mail ballots.
- Allowing in-person same-day registration and extending the deadlines to register by mail, online, at a voter registration agency, or at a local driver’s license examination center.
- Shortening state residency requirements for voter registration from 30 days to 22 days and eliminating the minimum time that a voter must have resided within a precinct.¹⁶⁷

To determine the impact of this act, the Pew Charitable Trusts funded research to study its effects.¹⁶⁸ According to their 2016 report, initial findings included the following:

- Costs decreased by an average of 40 percent in five election administration-related categories. The 46 (of 64) counties with data available spent about \$9.56 per vote in the 2014 general election, compared with nearly \$16 in 2008.
- The use of provisional ballots declined nearly 98 percent. In the 2010 general election, voters in the state cast 39,361 provisional ballots. In 2014, that number dropped to 981. Thirty-six of the 64 counties had no provisional ballots cast in 2014, up from just eight in 2010. In the city and county of Denver, only 179 provisional ballots were issued in 2014—compared with more than 6,000 issued in 2010.
- Nearly two-thirds of voters in the 2014 general election said they returned their ballots in person, rather than by mail. Of these voters, almost 80 percent said it took them less than 10 minutes to get to a designated location, usually a drop box.¹⁶⁹

¹⁶⁶ Colo. Election Reform Comm’n, “Election Reform Commission Final Report,” Feb. 27, 2009, <https://www.colorado.gov/pacific/sites/default/files/ElectionReformCommissionFinalREport.pdf>.

¹⁶⁷ Pew Charitable Trusts, “Colorado Voting Reforms: Early Results,” Mar. 22, 2016, <http://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2016/03/colorado-voting-reforms-early-results>.

¹⁶⁸ *Id.*

¹⁶⁹ *Id.*

The following table shows the average per-vote expenses paid by counties across the five categories tracked by researchers.

<p style="text-align: center;">Table 8 Average Per-Vote Expenses Paid by Counties</p>		
Category	2008	2014
Printing	\$6.86	\$3.07
Labor	\$4.71	\$1.96
Postage	\$1.32	\$0.87
Miscellaneous	\$2.03	\$0.18
<p>Source: Compiled by JSGC staff from Pew Charitable Trusts, “Colorado Voting Reforms: Early Results,” Mar. 22, 2016, http://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2016/03/colorado-voting-reforms-early-results.</p>		

According to local and state election officials, the reduction of provisional ballots and the reduced need for preprinted ballots were major factors in the lower printing costs.¹⁷⁰

According to the researchers, the lower labor cost per vote is consistent with the elimination of traditional precinct polling places.¹⁷¹ In 2008, Colorado had over 16,000 poll workers at more than 1,800 polling locations across the state, with a mix of traditional precinct-based polling places and vote centers.¹⁷² In 2014, with vote centers required in all counties and most voters casting their ballots by mail, fewer than 4,000 poll workers were employed at approximately 300 voting locations statewide.¹⁷³

The researchers noted that one cost that rose after the act was implemented was the polling place rental cost per vote, but they noted that this may be attributable to the need for internet connections in vote centers to allow poll workers to access the statewide voter registration database, limiting the types of locations that can be used as vote centers to those that may have higher rental fees.¹⁷⁴

¹⁷⁰ *Id.*

¹⁷¹ *Id.*

¹⁷² *Id.*

¹⁷³ *Id.*

¹⁷⁴ *Id.*

Researchers also noted that effects in two areas, the rate at which mail ballots were returned and voter turnout, were difficult to identify.¹⁷⁵ The rate at which mail ballots were returned decreased from 78 percent in 2010 to 65 percent in 2014; however this is likely due to the significant increase in the number of ballots mailed out: in 2010, the state mailed out 1,615,308 ballots to voters, compared with 3,032,934 in 2014.¹⁷⁶ Similarly, while turnout grew from 51.7 percent in 2010 to 54.7 percent in 2014, Colorado had a competitive, high-profile Senate contest in 2014, and Colorado has seen turnout in midterm elections increase every year since 1994.¹⁷⁷

However, the impact on voter experience was clearer. In a survey of more than 1,500 individuals about the voter experience in Colorado, voters casting their ballots by mail and in-person voters reported high rates of satisfaction with their voting experience.¹⁷⁸ Among voters casting their ballots by mail, 95 percent indicated that they were satisfied or very satisfied with their voting experience, compared with 96 percent of in-person voters.¹⁷⁹ Although all Colorado voters receive mail ballots, 64 percent of respondents said they returned their ballot in person, and 78 percent of these voters said it took less than 10 minutes to get to a drop box location or voter service center.¹⁸⁰

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ *Id.*

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

¹⁸⁰ *Id.*

ELECTIONS IN PENNSYLVANIA

Administration of Elections in Pennsylvania

Elections in Pennsylvania are administered according to the Constitution of Pennsylvania, the Pennsylvania Election Code, Title 25 of the Pennsylvania Consolidated Statutes, and regulations promulgated by the Department of State. Ratified on April 23, 1968, the current Constitution of Pennsylvania provides for basic rights and general guidelines regarding elections, but leaves the details up to the General Assembly.¹⁸¹

Although Pennsylvania began modernizing and consolidating its statutes in the 1970s, many areas of law, including most of those pertaining to the administration of elections, have remained unconsolidated; as a result, Title 25 of the Pennsylvania Consolidated Statutes only addresses voter registration and uniform military and overseas voters.

Enacted in 1937, the Pennsylvania Election Code replaced 262 acts or parts of acts, some dating back to 1791.¹⁸² While the Pennsylvania Election Code has been amended at least 744 times and interpreted in countless court opinions, it still stands as the primary source of law governing the administration of elections in Pennsylvania.¹⁸³ While many members of the Advisory Committee felt that the Pennsylvania Election Code needed to be reviewed and updated in its entirety, the focus of this report is the voting technology, as directed by Senate Resolution No. 394.

Technology Used in Pennsylvania

There are 10 different models of voting equipment used throughout the Commonwealth. While some counties use one model, others use a combination of different models and types. Table 9 lists the different models used, and Map 6 shows the types of voting equipment used in each county.

¹⁸¹ See Pa. Const. art. I, § 5 & art. VII.

¹⁸² Pa. Gen. Assemb., “Chronological Table of Statutes Affected by Act 320 of 1937,
http://www.legis.state.pa.us/cfdocs/legis/CH/Public/ucons_view_affected_by.cfm?sess_yr=1937&sess_ind=0&act_nbr=0320. .

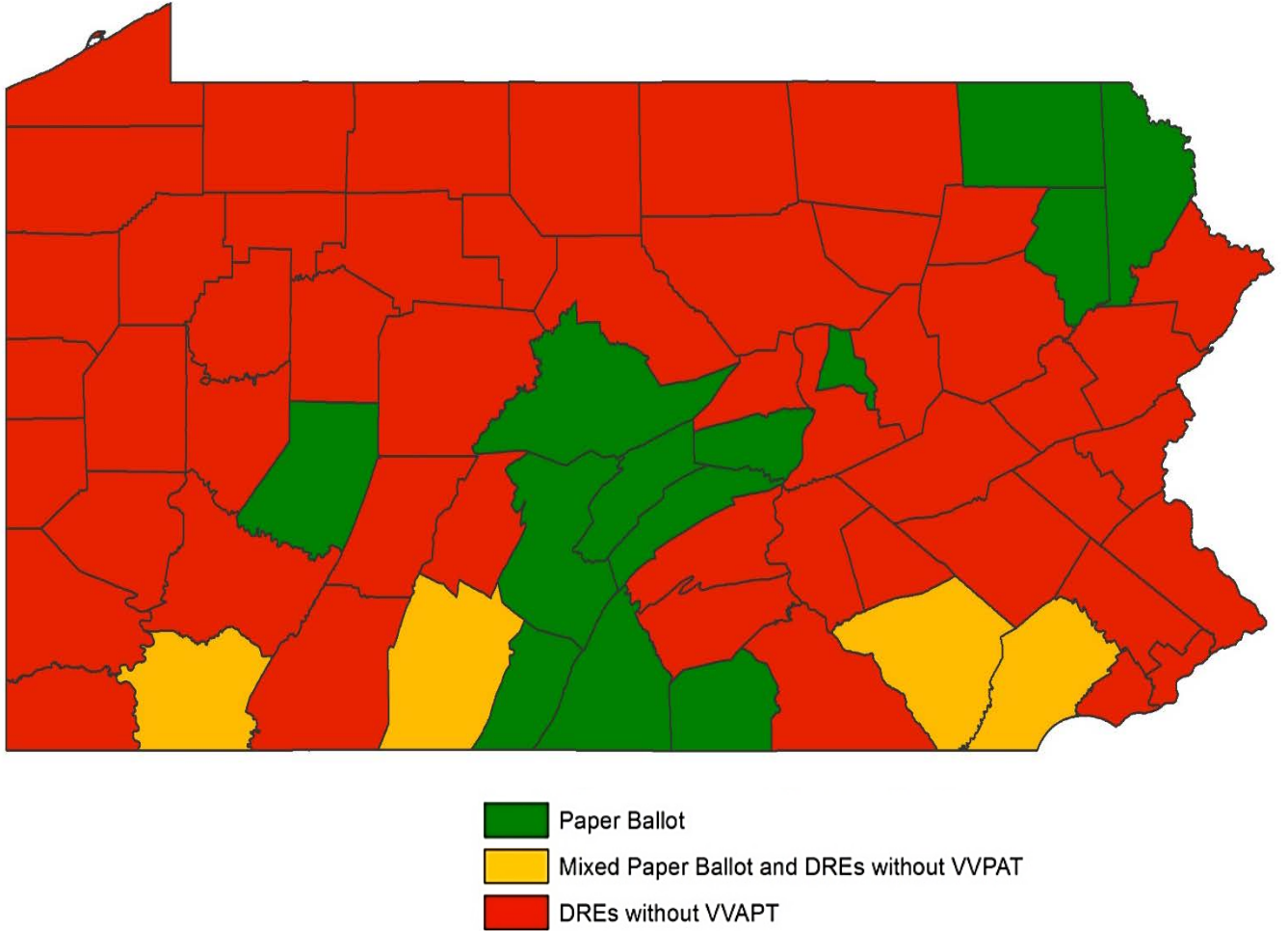
¹⁸³ Pa. Gen. Assemb., “Chronological Table of Statutes, Laws, Decisions and Rules of Court Affecting Act 320 of 1937,”
http://www.legis.state.pa.us/cfdocs/legis/CH/Public/ucons_view_affecting.cfm?sess_yr=1937&sess_ind=0&act_nbr=0320. .

Table 9
Polling Equipment in Pennsylvania - 2017

Manufacturer	Model	Type	VVPAT	Accessible
Election Systems & Software	AutoMARK	Ballot Marking Device or System	N/A	Yes
Hart InterCivic	eSlate	DRE-Dial	No	Yes
Sequoia (Dominion)	AVC Advantage	DRE-Push Button	No	Yes
Danahar	Shouptronic 1242	DRE-Push Button	No	Yes
Premier/Diebold (Dominion)	AccuVote TSX	DRE-Touchscreen	No	Yes
Sequoia (Dominion)	AVC Edge	DRE-Touchscreen	No	Yes
Election Systems & Software	iVotronic	DRE-Touchscreen	No	Yes
Hart InterCivic	eScan	Optical Scan	N/A	No
Election Systems & Software	Model 100	Optical Scan	N/A	No
Election Systems & Software	Model 650	Optical Scan	N/A	No

Source: Compiled by JSGC staff from Verified Voting, “The Verifier - Polling Place Equipment in Pennsylvania,” <https://www.verifiedvoting.org/verifier/#year/2017/state/42>.

Map 6
Pennsylvania County Voting Systems - 2017



Source: Compiled by JSGC staff from Verified Voting, “The Verifier - Polling Place Equipment in Pennsylvania,” <https://www.verifiedvoting.org/verifier/#year/2017/state/42>.

Survey of the Counties in Pennsylvania

Senate Resolution No. 394 directed JSGC to survey the counties of the Commonwealth concerning the administration of elections, current and future technology, needed improvements, the cost of administering elections, and the cost to improve, upgrade, modernize, or replace election systems. While some of these data points depend on the recommendations made by the Advisory Committee and legislative changes made by the General Assembly, most of the data points were gathered thanks to efforts by the Department of State and by Advisory Committee members.

Each county keeps records according to its own policies and needs, and as a result, not all counties were able to provide data at the same level of specificity. For example, counties that print their ballots in-house may not be able to separate those costs from other election-related costs, staff costs, etc. Furthermore, in some cases, the total for a category calculated from the data supplied by counties differed from the total value reported by counties. However, JSGC staff and Department of State staff have worked to make the results of the survey as useful as possible, facilitating a better understanding of the current election process in Pennsylvania. Table 10 is the result of these efforts.

The data in Table 10 represents the costs for the November 2016 election. The way counties administer elections, as well as various geographic and demographic factors, influence their costs. For example, Pennsylvania law requires each municipality to have at least one precinct. As a result, costs may increase as counties have to pay more poll workers, or costs may decrease as counties are able to divide the costs among more precincts. For these reasons, it is difficult to compare counties in an accurate and fair manner.

Table 10
Costs for the November 2016 Election

County Name	Cost of Voting Equipment Maintenance Contract	Cost of Ballot Printing	Cost of Ballot Definition and Setup	Cost of Logic and Accuracy Testing Support	Name of Maintenance Vendor	Name of Printing Vendor	Name of Ballot Definition and Setup Vendor	Name of Vendor Supporting Logic and Accuracy Testing	Total Cost of Voting Equipment Maintenance Contracts, Repairs, Printing, and Audio Files (calculated)	County Staff Salary	County Staff Overtime	Number of Precincts	Number of Poll Workers	Total Poll Worker Costs (includes Election Day costs, travel, and training)	Advertising	Rent	All Other Costs (Materials and Supplies, Etc.)	Total Cost of Election	Total Registered Voters	Total Votes Cast	Turnout Percentage
Adams	\$15,867.67	\$22,695.82	\$8,733.27	N/A	ES&S	ES&S	ES&S	In-House	\$47,296.76	\$53,944.10	\$2,421.09	49	260	\$43,609.80	\$2,189.81	\$1,320.00	\$7,879.69	\$158,661.25	66,718	48,253	72.32%
Allegheny	--	\$120,553.58	--	\$16,500.00	In-House	--	In-House	In-House	--	--	--	1,322	--	--	--	--	--	\$3,356,036.00	924,631	654,848	70.82%
Armstrong	\$35,049.92	\$751.40	\$0.00	\$0.00	Dominion/In-House	In-House	In-House	In-House	\$35,801.32	\$38,687.92	\$1,750.32	68	341	\$38,954.36	\$1,783.64	\$4,190.00	\$9,927.04	\$131,094.60	42,552	32,129	75.51%
Beaver	\$25,500.00	\$6,800.00	\$1,575.00	N/A	ES&S	ES&S	ES&S	In-House	\$39,335.00	\$116,825.00	\$39,950.00	129	591	\$112,000.00	\$10,650.00	\$11,270.00	\$26,172.00	\$356,202.00	113,598	84,978	74.81%
Bedford	\$6,600.00	\$12,397.96	\$5,609.20	--	Hart InterCivic	William Penn	Hart InterCivic	Hart InterCivic	\$28,024.36	\$22,532.25	--	40	119	\$18,724.60	\$470.00	--	\$1,674.27	\$71,425.48	34,460	23,811	69.10%
Berks	\$38,603.50	\$10,088.00	In-House	--	Elections USA	Electec	In-House	Elections USA	\$131,824.50	\$242,973.00	--	198	1,200	\$151,769.50	\$8,351.00	\$9,275.00	--	\$544,193.00	259,800	186,958	71.96%
Blair	--	--	--	--	In-House	In-House	In-House	In-House	\$35,641.32	\$91,662.66	\$3,378.69	93	456	\$49,171.00	\$3,385.20	\$1,740.00	\$4,400.76	\$189,379.63	77,834	56,331	72.37%
Bradford	\$30,077.74	\$1,087.60	--	--	--	--	--	--	\$31,165.34	\$62,652.57	\$752.56	61	--	\$35,159.62	\$3,131.08	\$2,800.00	\$14,524.16	\$150,185.33	37,649	26,404	70.13%
Bucks	\$85,679.36	\$50,798.40	N/A	N/A	Electec	Reliance Graphics	Electec	In-House	\$136,477.76	\$483,846.40	\$60,508.16	306	2,241	\$233,527.75	\$10,643.04	\$9,675.00	\$219,244.80	\$1,153,922.91	460,832	349,791	75.90%
Butler	--	--	--	--	In-House	In-House	In-House	In-House	\$32,893.51	\$134,750.45	\$6,703.48	89	623	\$88,197.19	\$1,821.83	\$3,300.00	\$4,252.42	\$271,918.88	129,728	97,156	74.89%
Cambria	--	--	--	N/A	William Penn (ES&S)	William Penn	William Penn	In-House	\$30,457.00	\$75,411.00	\$6,384.00	133	714	\$98,081.00	\$5,852.00	\$6,642.00	\$14,630.00	\$237,457.00	86,848	64,271	74.00%
Cameron	--	--	\$3,293.10	\$0.00	ES&S	In-House	ES&S	ES&S	\$6,843.10	\$23,563.00	--	10	33	\$3,837.23	\$794.90	\$450.00	\$2,193.30	\$37,681.53	3,232	2,231	69.03%
Carbon	--	--	--	--	In-House	In-House	In-House	In-House	\$24,855.36	\$40,477.17	\$1,360.68	51	256	\$45,900.00	\$4,166.70	\$5,000.00	\$6,997.71	\$128,757.62	42,228	29,275	69.33%
Centre	\$29,625.05	\$32,435.00	N/A	\$7,249.97	RBM	RBM	In-House	RBM	\$132,844.40	\$39,041.73	\$7,702.24	91	623	\$92,976.00	\$8,449.35	\$5,840.00	\$6,834.10	\$293,687.82	123,341	77,700	63.00%
Chester	\$43,607.50	\$129,432.26	N/A	N/A	William Penn (ES&S)	ES&S	In-House	In-House	\$173,039.76	\$563,772.89	\$85,440.00	228	2,675	\$263,348.30	\$9,720.00	\$6,795.00	\$97,570.02	\$1,199,685.97	354,459	274,877	77.55%
Clarion	\$15,750.00	\$736.23	In-House	\$10,000.00	In-House	William Penn & ElectionIQ	In-House	Election IQ	\$26,486.23	\$33,246.62	\$3,118.73	42	204	\$22,512.00	\$1,936.20	\$1,680.00	\$6,000.00	\$94,979.78	24,090	17,844	74.07%
Clearfield	\$18,970.00	In-House	In-House	In-House	William Penn (ES&S)	In-House	In-House	In-House	\$18,970.00	\$45,346.00	\$227.50	70	353	\$60,381.38	\$3,080.00	\$2,700.00	\$18,580.82	\$149,285.70	53,226	34,739	65.27%
Clinton	\$28,458.00	N/A	N/A	N/A	In-House	In-House	In-House	ES&S	\$29,308.00	\$33,830.00	\$0.00	34	176	\$27,404.00	\$1,258.00	\$1,725.00	\$7,276.00	\$100,801.00	22,303	15,623	70.05%
Columbia	--	--	--	--	In-House	In-House	In-House	In-House	\$17,536.45	\$43,000.00	--	42	205	\$27,100.00	\$1,156.00	\$2,040.00	\$8,100.00	\$98,932.45	40,868	28,705	70.24%
Crawford	\$27,650.16	\$8,000.00	--	\$125.80	ES&S	In-House	In-House	In-House	\$35,775.96	\$118,772.88	\$1,200.20	68	339	\$71,502.68	\$6,950.28	\$3,185.12	\$4,304.00	\$241,691.12	53,386	38,174	71.51%
Cumberland	\$33,206.25	\$7,705.80	In-House	In-House	ES&S	William Penn	In-House	In-House	\$46,164.74	\$264,933.19	\$14,105.00	118	1,053	\$131,343.60	\$17,039.87	\$12,855.00	\$4,716.46	\$491,157.86	166,965	124,421	74.52%
Dauphin	N/A	N/A	N/A	N/A	Electec	In-House	In-House	In-House/Electec	\$51,297.52	\$216,990.89	\$16,538.78	162	1,224	\$160,095.09	\$9,253.00	\$12,075.00	\$11,956.98	\$478,207.26	190,301	133,741	70.28%
Delaware	\$128,601.33	\$5,087.94	\$0.00	\$0.00	In-House	In-House	In-House	In-House	\$324,079.47	\$330,231.33	\$38,082.33	428	2,041	\$195,535.00	\$39,442.26	\$13,020.00	\$125,937.24	\$1,066,327.63	412,854	303,735	73.57%
Elk	\$8,209.20	\$497.40	\$7,203.30	In-House	ES&S	In-House	In-House	In-House	\$15,909.90	\$37,610.40	--	30	147	\$14,533.36	\$2,450.40	\$1,535.00	\$1,350.30	\$73,389.36	20,244	14,733	72.78%

Table 10
Costs for the November 2016 Election

County Name	Cost of Voting Equipment Maintenance Contract	Cost of Ballot Printing	Cost of Ballot Definition and Setup	Cost of Logic and Accuracy Testing Support	Name of Maintenance Vendor	Name of Printing Vendor	Name of Ballot Definition and Setup Vendor	Name of Vendor Supporting Logic and Accuracy Testing	Total Cost of Voting Equipment Maintenance Contracts, Repairs, Printing, and Audio Files (calculated)	County Staff Salary	County Staff Overtime	Number of Precincts	Number of Poll Workers	Total Poll Worker Costs (includes Election Day costs, travel, and training)	Advertising	Rent	All Other Costs (Materials and Supplies, Etc.)	Total Cost of Election	Total Registered Voters	Total Votes Cast	Turnout Percentage
Erie	N/A	N/A	N/A	N/A	ES&S	In-House	In-House	In-House	\$78,053.65	\$41,000.33	\$15,999.62	150	836	\$104,607.00	\$4,058.76	\$7,098.20	\$27,386.20	\$278,203.76	190,222	126,360	66.43%
Fayette	\$10,177.50	\$6,716.80	N/A	N/A	Hart InterCivic	In-House	In-House	In-House	\$53,575.10	\$59,736.00	\$7,126.40	79	437	\$39,577.32	\$5,848.00	\$2,150.00	\$4,425.60	\$172,438.42	83,852	54,894	65.47%
Forest	N/A	N/A	N/A	N/A	In-House	In-House	In-House	In-House	\$7,939.44	\$28,390.68	\$201.51	9	44	\$4,036.02	\$134.55	N/A	\$1,668.42	\$42,370.62	3,330	2,444	73.39%
Franklin	\$35,973.50	\$19,036.50	\$6,860.84	N/A	William Penn (ES&S)	Beidel Printing	ES&S	In-House	\$61,870.84	\$104,228.14	\$5,754.57	75	491	\$61,135.20	\$4,549.85	\$5,720.00	\$20,040.35	\$263,298.95	93,018	70,985	76.31%
Fulton	\$3,318.61	\$3,545.17	\$785.00	N/A	ES&S	ES&S	ES&S	In-House	\$7,648.78	--	--	13	65	\$12,926.12	\$3,545.17	\$620.00	\$12,283.69	\$37,023.76	9,187	6,885	74.94%
Greene	--	--	--	--	In-House	In-House	In-House	In-House	\$11,111.32	\$55,971.96	\$476.08	44	226	\$32,370.62	\$1,946.12	\$2,150.00	\$2,904.44	\$106,930.54	22,590	16,044	71.02%
Huntingdon	\$32,804.22	\$8,028.36	\$8,538.18	--	ES&S	William Penn	ES&S	In-House	\$49,370.18	\$908.86	\$1,408.24	58	285	\$29,997.70	\$1,981.86	\$2,795.00	\$5,223.48	\$91,685.32	29,781	19,847	66.64%
Indiana	\$19,974.81	\$23,115.00	In-House	In-House	RBM	William Penn	In-House	In-House	\$63,439.98	\$81,411.03	\$0.00	69	357	\$57,760.87	\$4,259.37	\$5,955.00	\$31,962.18	\$244,788.43	51,853	38,333	73.93%
Jefferson	\$18,870.00	\$629.00	\$7,733.00	\$2,331.00	ES&S	William Penn	ES&S	William Penn	\$30,414.00	\$34,299.00	\$0.00	37	185	\$17,575.00	\$2,553.00	\$2,558.00	\$0.00	\$87,399.00	29,926	19,502	65.17%
Juniata	\$16,869.40	\$5,162.66	\$4,465.65	N/A	ES&S	ES&S	ES&S	ES&S	\$26,497.71	\$17,727.25	\$163.80	18	91	\$11,178.47	\$707.75	\$750.00	\$1,929.06	\$58,954.04	13,840	10,570	76.37%
Lackawanna	\$61,675.00	\$56,312.55	\$14,147.46	\$6,300.00	ES&S	ES&S	ES&S	ES&S	\$138,435.01	\$60,045.68	\$9,045.75	163	826	\$104,179.00	\$4,086.80	\$6,750.00	\$17,134.85	\$339,677.09	148,104	104,991	70.89%
Lancaster	\$136,462.00	\$79,624.80	N/A	N/A	Hart InterCivic	Integrated Voting Solutions	In-House	In-House	\$245,572.80	\$310,761.35	\$13,345.00	240	1,571	\$170,868.00	\$12,592.00	\$17,785.00	\$16,017.00	\$786,941.15	335,791	246,938	73.54%
Lawrence	\$58,777.50	\$6,366.00	N/A	\$1,100.00	ES&S	William Penn	In-House	William Penn	\$66,243.50	\$958.50	\$1,023.75	75	381	\$44,837.00	\$3,323.25	\$3,750.00	\$6,656.25	\$126,792.25	57,049	41,362	72.50%
Lebanon	\$4,500.00	\$0.00	\$8,500.00	\$6,100.00	ES&S	In-House	ES&S	William Penn	\$51,100.00	\$78,320.00	\$1,457.50	55	397	\$35,470.33	\$4,375.00	\$1,520.00	\$6,500.00	\$178,742.83	86,878	63,048	72.57%
Lehigh	N/A	\$47,075.20	\$38,152.00	N/A	In-House	Reliance Graphics	Election IQ	In-House	\$85,227.20	\$345,545.60	\$15,235.20	161	--	\$135,957.40	\$6,956.80	\$9,750.00	\$30,995.20	\$629,667.40	236,081	164,529	69.69%
Luzerne	\$77,977.98	\$5,765.20	\$0.00	\$0.00	ES&S	William Penn	In-House	In-House	\$83,743.18	\$237,985.20	\$8,044.20	180	1,030	\$127,131.50	\$149.40	\$8,800.00	\$56,140.20	\$507,693.22	205,332	137,549	66.99%
Lycoming	\$10,399.98	\$2,599.78	\$0.00	\$0.00	Dominion	In-House	In-House	In-House	\$12,999.76	\$65,550.06	\$3,399.58	86	494	\$62,639.00	\$2,050.24	\$5,375.00	\$15,000.12	\$167,013.76	69,764	52,056	74.62%
McKean	N/A	N/A	N/A	N/A	ES&S	In-House	In-House	In-House	\$28,258.86	\$39,085.62	\$1,124.76	42	221	\$39,759.79	\$2,146.20	\$3,150.00	\$3,213.84	\$116,739.07	24,911	16,652	66.85%
Mercer	\$17,740.00	\$9,113.51	\$16,840.95	N/A	ES&S	William Penn	ES&S	In-House	\$43,694.46	\$81,369.66	\$27,340.99	100	469	\$56,498.20	\$2,980.51	\$3,600.00	\$8,292.80	\$223,776.62	77,265	53,338	69.03%
Mifflin	--	--	--	--	ES&S	William Penn	ES&S	In-House	\$13,900.00	\$67,050.00	N/A	25	111	\$14,500.00	\$6,875.00	\$800.00	\$3,100.00	\$106,225.00	25,933	18,454	71.16%
Monroe	\$16,340.00	\$22,301.50	In-House	In-House	Electec	--	In-House	Electec	\$52,964.00	\$33,772.00	\$5,805.50	50	404	\$51,315.00	\$9,735.00	\$3,715.00	\$23,130.50	\$180,437.00	109,247	70,757	64.77%
Montgomery	\$28,940.63	\$26,767.24	\$9,406.25	N/A	Dominion	Reliance Graphics	D3 Technology	In-House	\$65,114.12	\$439,061.00	\$178,986.00	425	2,817	\$317,466.36	\$9,500.00	\$17,175.00	\$74,683.43	\$1,101,985.91	577,418	446,969	77.41%
Montour	\$10,344.47	\$12,637.29	\$8,871.52	\$8,250.00	William Penn (ES&S)	ES&S	ES&S	In-House	\$40,103.28	\$51,095.23	\$6,130.11	15	196	\$29,450.24	\$2,012.75	\$1,500.00	\$34,656.43	\$164,948.04	13,098	8,701	66.43%
Northampton	\$28,716.33	\$52,600.00	\$33,326.83	In-House	In-House	Reliance Graphics	Dominion	In-House	\$114,643.16	\$252,740.74	\$6,436.80	153	904	\$167,839.00	\$7,759.17	\$6,830.25	\$9,467.46	\$565,716.58	211,402	145,570	68.86%

Table 10
Costs for the November 2016 Election

County Name	Cost of Voting Equipment Maintenance Contract	Cost of Ballot Printing	Cost of Ballot Definition and Setup	Cost of Logic and Accuracy Testing Support	Name of Maintenance Vendor	Name of Printing Vendor	Name of Ballot Definition and Setup Vendor	Name of Vendor Supporting Logic and Accuracy Testing	Total Cost of Voting Equipment Maintenance Contracts, Repairs, Printing, and Audio Files (calculated)	County Staff Salary	County Staff Overtime	Number of Precincts	Number of Poll Workers	Total Poll Worker Costs (includes Election Day costs, travel, and training)	Advertising	Rent	All Other Costs (Materials and Supplies, Etc.)	Total Cost of Election	Total Registered Voters	Total Votes Cast	Turnout Percentage
Northumberland	--	\$230.00	--	N/A	In-House	In-House	In-House	In-House	\$19,159.94	\$94,720.00	--	74	444	\$49,556.58	\$2,643.28	\$3,700.00	\$2,999.96	\$172,779.76	56,496	37,241	65.92%
Perry	\$21,255.15	\$226.30	\$288.30	N/A	ES&S	William Penn	ES&S	In-House	\$22,970.07	\$11,412.03	\$400.21	31	164	\$17,730.22	\$1,493.58	\$3,100.00	\$140.74	\$57,246.85	28,727	20,744	72.21%
Philadelphia	--	--	--	--	In-House	In-House	In-House	In-House	\$519,583.00	\$1,420,988.51	\$794,808.44	1,686	8,476	\$968,115.00	\$591,257.73	\$74,880.00	\$705,880.21	\$5,075,512.89	1,102,560	728,577	66.08%
Pike	\$30,600.00	--	--	--	Dominion	In-House	Dominion	Dominion	\$71,298.00	\$43,884.90	\$634.14	18	141	\$25,242.40	\$1,501.92	\$2,125.00	\$3,759.84	\$148,446.20	40,087	26,505	66.12%
Potter	--	\$254.76	--	N/A	In-House	In-House	In-House	In-House	\$12,397.76	\$21,483.00	--	33	150	\$15,681.00	\$396.33	\$750.00	--	\$50,708.09	11,005	7,972	72.44%
Schuylkill	--	\$3,195.43	\$6,150.00	\$5,155.00	William Penn (ES&S)	William Penn	ES&S	ES&S	\$41,245.43	\$16,847.77	\$3,139.00	125	744	\$88,143.42	\$9,386.43	\$6,560.00	\$14,446.11	\$179,768.16	87,989	63,927	72.65%
Snyder	N/A	N/A	N/A	N/A	ES&S	ES&S	ES&S	In-House	\$19,669.75	\$34,357.75	\$989.75	25	125	\$13,902.00	\$2,574.75	\$1,800.00	\$7,016.75	\$80,310.75	22,264	16,616	74.63%
Somerset	\$17,374.68	N/A	N/A	\$1,754.40	Dominion	In-House	In-House	In-House	\$22,706.56	\$47,889.00	\$187.00	68	247	\$28,748.94	\$5,585.52	\$3,300.00	\$18,706.80	\$127,123.82	49,693	36,583	73.62%
Sullivan	N/A	N/A	N/A	N/A	In-House	--	In-House	In-House	\$8,070.00	\$18,099.90	--	15	65	\$7,556.00	\$3,000.00	\$360.00	\$2,499.90	\$39,585.80	4,404	3,195	72.55%
Susquehanna	\$20,720.17	\$5,832.80	\$8,379.99	N/A	ES&S	Badzik Printing	ES&S	In-House	\$34,932.96	\$58,692.73	\$804.01	41	212	\$31,730.00	\$1,027.05	\$2,050.00	\$6,963.03	\$136,199.78	26,373	19,473	73.84%
Tioga	--	--	--	\$6,929.00	In-House	In-House	In-House	In-House	\$25,819.34	\$2,012.69	\$430.09	41	228	\$38,038.00	\$2,406.29	\$1,275.00	\$23,197.39	\$93,178.80	26,592	18,747	70.50%
Union	\$6,194.88	N/A	N/A	\$1,837.00	ES&S	In-House	In-House	Election IQ	\$8,031.88	\$83,187.00	\$4,057.02	27	147	\$21,528.00	\$2,451.87	\$1,200.00	\$8,083.26	\$128,539.03	24,669	17,955	72.78%
Venango	\$31,813.99	--	\$3,810.48	\$7,000.00	ES&S	William Penn	In-House	In-House	\$42,624.47	\$14,866.08	--	46	237	\$22,235.45	\$1,698.61	\$1,602.50	\$6,352.80	\$89,379.91	32,655	23,733	72.68%
Warren	--	--	--	--	Dominion	In-House	In-House	In-House	\$5,973.00	\$9,306.00	\$0.00	33	212	\$22,961.56	\$3,663.00	\$3,200.00	\$1,980.00	\$47,083.56	30,146	19,143	63.50%
Washington	\$6,787.46	\$4,737.41	--	\$263,933.66	Dominion	William Penn	In-House/Dominion	Dominion	\$275,458.53	\$212,103.78	\$13,115.39	176	880	\$324,717.59	\$21,861.55	\$17,750.00	\$101,005.70	\$966,012.54	138,835	103,469	74.53%
Wayne	\$8,633.62	\$9,844.15	\$5,821.66	\$1,100.00	ES&S	William Penn	ES&S	ES&S	\$25,399.43	\$25,692.08	\$3,809.97	35	170	\$32,580.36	\$1,791.12	\$1,700.00	\$5,172.04	\$96,145.00	33,683	24,321	72.21%
Westmoreland	N/A	\$11,085.21	N/A	N/A	ES&S	William Penn	In-House	In-House	\$55,556.19	\$260,543.70	\$61,965.00	305	1,611	\$175,244.58	\$11,322.00	\$15,255.01	\$47,830.86	\$627,717.34	246,020	184,679	75.07%
Wyoming	\$9,770.10	\$3,799.80	N/A	N/A	ES&S	William Penn	ES&S	In-House	\$14,390.40	\$573.90	\$1,305.00	29	157	\$19,648.92	\$3,300.00	\$1,050.00	\$3,600.00	\$43,868.22	16,865	13,360	79.22%
York	--	--	--	--	In-House	In-House	In-House	In-House	\$30,523.25	\$89,803.01	\$17,979.72	159	1,142	\$130,375.79	\$6,940.35	\$3,917.50	\$35,593.43	\$315,133.05	295,895	212,357	71.77%
TOTAL	\$1,314,467.66	\$835,669.81	\$208,491.98	\$345,665.83	--	--	--	--	\$4,139,758.05	\$8,067,579.17	\$1,501,753.86	9,151	44,264	\$5,748,474.41	\$932,402.49	\$384,983.58	\$2,012,562.39	\$26,129,249.50	8,722,977	6,236,103	71.49%

Note: Where counties reported no information, -- appears. N/A or 0 appear as they were reported by counties

PROPOSED LEGISLATION

Amending the act of June 3, 1937 (P.L.1333, No.320), known as the Pennsylvania Election Code, in instruction of election officers, in number of ballots to be printed, and in requirements of electronic voting systems.

The General Assembly of the Commonwealth of Pennsylvania hereby enacts as follows:

Section 1. Section 414 of the act of June 3, 1937 (P.L.1333, No.320), known as the Pennsylvania Election Code, is amended to read:

Section 414. Instruction of Election Officers in Voting Machine Districts; Unqualified Officers Not to Serve.--In districts in which voting machines are to be used, the county board of elections, or the custodians appointed by them, shall instruct in the use of the machines, and in their duties in connection therewith, all judges and inspectors of election and machine inspectors who are to serve at the primary or election, and who have not been previously instructed and found qualified, and they shall give to each judge, inspector and machine inspector, who has received such instruction and is found qualified to conduct such primary or election with the voting machine, a certificate to that effect. For the purpose of giving such instructions, the county boards shall call such meeting or meetings of election officers as shall be necessary. Each judge, inspector and machine inspector shall, upon notice, attend such meeting or meetings called for his instruction and receive such instruction as shall be necessary for the proper conduct of the primary or election with voting machines, and, as compensation for the time spent in receiving such instruction, each judge, inspector and machine inspector who shall qualify for and serve at such primary or election, shall receive the sum of [five (\$5.00)] **at least twenty (\$20)** dollars, to be paid to him at the same time and in the same manner as compensation is paid to him for his services on election day. No

judge, inspector or machine inspector shall serve at any primary or election at which a voting machine is used, unless he shall have received such instructions, shall have been found qualified to perform his duties in connection with the machine, and shall have received a certificate to that effect from the county board or one of the custodians appointed by them: Provided, however, That this shall not prevent the appointment of a judge or inspector of election or machine inspector to fill a vacancy arising on the day of election or on the preceding day.

COMMENT

While many Advisory Committee members reported paying their poll workers more than the currently required amount and the recommended increase, the purpose of this recommended amendment is to provide a greater incentive to poll workers to attend training.

Members of the Advisory Committee reported having difficulty getting all of the poll workers in their jurisdictions to attend the necessary training. Because the Pennsylvania Election Code does not provide enforcement measures, election officials must rely on monetary incentives to encourage compliance.

Furthermore, poll workers are required to operate increasingly complicated and technologically advanced electronic voting machines. People with disabilities have reported long wait times as a result of poll workers not knowing how to operate the accessibility components of the voting machines or the policies that allow people with disabilities to vote with assistance from another person. In fact, some may choose not to vote instead of facing these struggles at their polling places.

Section 2. Section 1007 of the act of June 3, 1937 (P.L.1333, No.320), known as the Pennsylvania Election Code, is amended to read:

Section 1007. Number of Ballots to Be Printed; Specimen Ballots.--The county board of each county shall provide for each election district in which a **paper ballot is used in a primary or election** is to be held, [one book of fifty official ballots of each party for every forty-five registered and enrolled electors of such party and fraction thereof, appearing upon the district

register, and shall provide for each election district in which an election is to be held one book of fifty official ballots for every forty-five registered electors and fraction thereof appearing upon the district register.] **a supply of official ballots equivalent to, at a minimum, ten per cent (10%) more than the highest number of ballots cast in the previous three (3) comparable elections in said election district.** They shall also, in addition to the number of ballots required to be printed for general distribution, maintain a sufficient supply of such ballots at the office of the county board for the use of absentee electors and for the use of any district, the ballots for which may be lost, destroyed or stolen. They shall also cause to be printed on tinted paper, and without the facsimile endorsements, permanent binding or stubs, copies of the form of ballots provided for each polling place at each primary or election therein, which shall be called specimen ballots, and which shall be of the same size and form as the official ballots, and at each election they shall deliver to the election officers, in addition to the official ballots to be used at such election, a suitable supply of specimen ballots for the use of the electors. At each primary, a suitable supply of specimen ballots of each party shall be furnished.

COMMENT

Members of the Advisory Committee reported having significant waste as a result of the current ballot printing requirements. The purpose of this recommended amendment is to allow counties to conduct elections more efficiently by taking into account actual voter participation levels when determining how many ballots to print. The recommended amendment also allows for the implementation of advances in printing and voting technology, such as ballots that are printed on demand at the polling places. As counties contemplate new equipment in the future, printing waste is a consideration that could discourage the adoption of systems that include paper ballots.

Section 3. Section 1107-A of the act of June 3, 1937 (P.L.1333, No.320), known as the Pennsylvania Election Code, is amended to read:

Section 1107-A. Requirements of Electronic Voting Systems.--No electronic voting system shall, upon any examination or reexamination, be approved by the Secretary of the Commonwealth, or by any examiner appointed by him, unless it shall be established that such system, at the time of such examination or reexamination:

(18). Produces an individual permanent paper record for each vote cast, which shall be made available for inspection and verification by the voter before the vote is cast, and retained according to the provisions contained in this act for the retention of paper ballots. In the event of a discrepancy between the electronic record and the voter-verifiable and human-readable paper record, the voter-verifiable and human-readable paper record shall be the official record of the vote and shall be considered prima facie accurate. In the event of a recount or audit of the results of an election, the voter-verifiable and human-readable paper record shall be the official record of the vote and shall be considered prima facie accurate. This paragraph applies to voting systems that are leased or purchased after the effective date of this paragraph.

COMMENT

The purpose of this recommended amendment is to make clear the Advisory Committee's commitment to secure elections that inspire confidence in the voters. The national conversation surrounding elections, especially regarding the possibility of voting machine hacking, has made it clear to the Advisory Committee members that implementing technology that reduces the possibility of hacking, and that facilitates post-election audits and recounts, is the best means of maintaining voter confidence.

Section 4. Section 1107-A of the act of June 3, 1937 (P.L.1333, No.320), known as the Pennsylvania Election Code, is amended to read:

Section 1107-A. Requirements of Electronic Voting Systems.--No electronic voting system shall, upon any examination or reexamination, be approved by the Secretary of the Commonwealth, or by any examiner appointed by him, unless it shall be established that such system, at the time of such examination or reexamination:

(19). Takes reasonable measures consistent with established standards to prevent unauthorized physical or electronic access to such electronic voting system.

COMMENT

The Advisory Committee wanted to make clear its commitment to secure, auditable, and transparent elections. Like the recommended amendment in Section 3, this recommended amendment is in response to the current national conversation relating to election integrity. This recommended amendment was crafted to allow the Secretary of State to implement governmental agency standards or industry best practices, avoiding statutory language that is too specific or quickly becomes obsolete as technology changes. Some examples of established standards include those crafted by the National Institute of Standards and Technology (NIST), the International Organization for Standardization (ISO), and the Information Systems Audit and Control Association (ISACA).

Section 5. This act shall take effect immediately.

THE GENERAL ASSEMBLY OF PENNSYLVANIA

SENATE RESOLUTION

No. 394 Session of
2015

INTRODUCED BY VOGEL, TEPLITZ, FOLMER, VULAKOVICH, SCHWANK,
RAFFERTY, WHITE, WILLIAMS, BROOKS AND RESCHENTHALER,
JUNE 23, 2016

REFERRED TO STATE GOVERNMENT, JUNE 23, 2016

A RESOLUTION

1 Directing the Joint State Government Commission to study the
2 issue of voting system technology and to report to the Senate
3 its findings and recommendations.

4 WHEREAS, The Help America Vote Act of 2002 (Public Law 107-
5 252, 52 U.S.C. § 21081 et seq.) provided to the states funds to
6 update their voting technology; and

7 WHEREAS, Two thousand six counties across the country
8 replaced their voting machines utilizing the Federal money; and

9 WHEREAS, The voting machines have a life span of 10 to 15
10 years and there are 10 different electronic voting systems in
11 this Commonwealth; therefore be it

12 RESOLVED, That the Senate direct the Joint State Government
13 Commission to establish an advisory committee consisting of the
14 following members:

15 (1) The Secretary of State or a designee.

16 (2) The Commissioner for the Bureau of Commissions,
17 Elections and Legislation or a designee.

18 (3) Representatives from groups advocating for

1 individuals who are hearing impaired, physically disabled and
2 blind or visually impaired.

3 (4) County commissioners. The members chosen under this
4 paragraph must be from geographically and politically diverse
5 areas of this Commonwealth.

6 (5) County election officials. The members chosen under
7 this paragraph must be from geographically and politically
8 diverse areas of this Commonwealth.

9 (6) Other individuals selected by the Joint State
10 Government Commission;

11 and be it further

12 RESOLVED, That the study include the following components:

13 (1) Information gathered from other states, including,
14 but not limited to, the administration of elections and
15 technology.

16 (2) A survey of counties in this Commonwealth concerning
17 the administration of elections, current and future
18 technology and needed improvements.

19 (3) The cost to administer elections and to improve,
20 upgrade, modernize or replace election system technology;

21 and be it further

22 RESOLVED, That the Joint State Government Commission shall
23 have 18 months from the date of adoption of this resolution to
24 report to the Senate its findings and recommendations.