Special Committee on Election Technology

Committee Report
2016

Special Committee on Election Technology

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I.   Introduction

In this report, the Special Committee on Election Technology seeks to assess Nebraska's current election technology situation and draw conclusions about how to proceed. Part II details the national origins of the current crisis in the passage of HAVA. Part III gives a brief overview of how the introduction of modern technology into the election process has fundamentally changed nearly all aspects of election administration. Part IV assesses Nebraska's current election technology situation. Part V details the available options for updating Nebraska's election systems. Part VI assesses the financing option available for acquiring new technologies. Finally, Part VII draw conclusions from the foregoing information about how the Legislature should proceed in addressing the crisis. Nebraska should transition to an election system that allows counties to conduct elections in a consistent manner across the state, using the technology best suited for that county's unique circumstances. Depending on the county, this could mean updating the current equipment, allowing some precincts to operate on a mail-in basis, or a precinct model where the voter's ballot is printed, cast, and counted at her polling place. The state should acquire the necessary technology through a lease-purchase agreement. This acquisition should be made after the 2018 election cycle.

Before delving into the details of the issue, the committee feels that it is important to note that the nation is experiencing a shocking lack of faith in our election systems. In a recent survey by the Democracy Fund, only 59 percent of respondents indicated that they believed the

2016 "election was fairly decided."[1] Forty-six percent of Democrats and 47 percent of

Republicans were "very" or "somewhat" concerned that a nation-wide phenomenon of voter

fraud may have impacted the 2016 presidential election.[2] What these numbers demonstrate to

the committee is that voter confidence and security should be a central aspect of decisions

regarding Nebraska's election systems. As was stated by Wendy Underhill, the Program

Director for Elections and Redistricting for the National Conference of State Legislatures, at the

committee's recent hearing, "security is not a . . . 'yes we have it' or a 'no we don't' . . . It really

is the result of many choices." [3] The conclusions reached by the committee were drawn with

these concerns in mind.

II.   National Crisis in Election Technology

There is a bipartisan, national consensus that the United States is facing a crisis in

election technology.[4] This crisis is a result of the Help America Vote Act (HAVA), and its

surrounding circumstances.[5] HAVA addressed shortcomings in America's election

infrastructure by creating a new legal framework to ensure election reliability.[6] Congress also

provided states with the funding they needed to conform their election systems to the new

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[1] Democracy Fund, *Voter sentiments on the U.S. election system*, *available at*
http://www.democracyfund.org/blog/entry/election-security-and-the-2016-voter-experience (last accessed on Dec.
12, 2016).
[2] Democracy Fund, *Public Opinion Reinforces the Exemplary Work of Local Election Officials on November 8*
(Nov. 21, 2016), *available at* http://www.democracyfund.org/newsroom/entry/public-opinion-reinforces-the-
exemplary-work-of-local-election-officials-on.
[3] Wendy Underhill, NCSL's Program Director for Elections and Redistricting, *hearing of the Special Committee on
Election Technology* (Dec. 12, 2016).
[4] See, *e.g.,* Presidential Commission on Election Administration, *The American Voting Experience: Report and
Recommendations of the Presidential Commission on Election Administration* (2014); Justin Reimer, et. al.,
Republican National Lawyers Association, *RNLA Response to the Report and Recommendations of the Presidential
Commission on Election Administration* (2014).
[5] *See* Lawrence Norden & Christopher Famighetti, Brennan Center for Justice, *America's Voting Machines at Risk*
(2016); *see also*, Presidential Commission on Election Administration, *supra*, note 1; Reimer, *supra*, note 4.
[6] *See* 52 U.S.C. § 21081 (2015).

requirements.[7] The systems that were purchased with the HAVA funds are reaching the end of

their lifespan, and states need to acquire replacements.[8] Now, states do not have HAVA funds

left and will need to self-fund the purchase of new systems.[9]

In 2002, congress passed HAVA to address the shortcomings in America's election

infrastructure that became evident in the 2000 presidential election.[10] Prior to HAVA,

Americans were voting using election systems that had essentially remained unchanged since the

turn of the twentieth century.[11] The weaknesses of these systems became very clear in Florida.

There, the inconsistencies of the voting rolls, the difficulty that some voters had in casting their

ballots, and a close election resulted in a legal battle to determine the presidency.[12] This caused

some to question the legitimacy of the result.[13]

In response, congress passed HAVA in 2002.[14] HAVA's requirements, such as the

ability of a voter to privately and independently verify her vote before casting her ballot,[15]

rendered many states' election systems obsolete. While HAVA itself did not outlaw any

particular election system, it provided states with an incentive to do away with punch card and

lever systems in the form of federal funding.[16] If a state met the law's new requirements by

replacing these older technologies with modern voting technologies, or showing that the older

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[7] Norden & Famighetti, *supra*, note 5 at 17.
[8] *Id*. at 8-9.
[9] *Id*. at 17.
[10] *See id*; Presidential Commission on Election Administration, *supra*, note 4; Reimer, *supra*, note 4.
[11] Norden & Famighetti, *supra*, note 5.
[12] *See* Bush v. Gore, 531 U.S. 98 (2000).
[13] Commission on Federal Election Reform, *Building Confidence in U.S. Elections* (2005) at 1.
[14] Norden & Famighetti, *supra*, note 5.
[15] *Id*.
[16] *Id*.

systems could be adapted to meet the requirements, the federal government would pay for the replacement.[17] Every state took the federal money and purchased modern election systems.[18]

HAVA requirements and funding have fundamentally changed election systems planning. Every 10-15 years, states will need a large amount of funding to purchase new systems. These modern systems have an estimated lifespan of 10-15 years.[19] While congress provided the funding for the initial purchase, there is bipartisan agreement that they will not provide funding for such purchases in the future.[20] States will need to provide all future funding.[21] However, most states, including Nebraska,[22] have used all of their HAVA funds. This funding gap is what many are deeming an election technology crisis.

III.   Fundamental Changes in How the Nation Votes

The fundamental changes to American elections brought on by HAVA are not just fiscal. The introduction of modern technology into the polling place will have an impact on nearly every aspect of the election process. While changes in how votes are cast will make voting easier and more accessible for voters, they will also require fundamental changes in election administration. The recruitment and training of poll workers may need to be rethought. Modern technology may also fundamentally alter the traditional central tabulation structure of elections.

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[17] *Id.*
[18] *Id.*
[19] *Id.*
[20] Presidential Commission on Election Administration, *The American Voting Experience: Report and Recommendations of the Presidential Commission on Election Administration* (2014); Justin Reimer, et. al., Republican National Lawyers Association, *RNLA Response to the Report and Recommendations of the Presidential Commission on Election Administration* (2014).
[21] Norden & Famighetti, *supra*, note 5.
[22] Interview with Neal Erickson, Neb. Deputy. Sec. of State for Elections (Oct. 21. 2016).

Poll workers may prove to be an aspect of election administration that must be rethought at the most basic level. Most of the nation's poll workers are older.[23] For example, in Nebraska, 71.1% of poll workers in the 2014 general election were over the age of 61.[24] Older poll workers are often less familiar with modern technology.[25] This discrepancy could result in difficulty with poll worker recruitment or Election Day operations. Some have suggested moving to programs that make it easier and more attractive for younger individuals who are more familiar with modern technology to serve as poll workers.[26] Some of these proposals include shortening shift times, and allowing high school students to get credit for working at the polls.[27]

Another area of election administration that is affected by changes in election technology is the traditional model of polling location voting with central tabulation. Modern technology has made possible vote centers and precinct based systems. In both of these systems, storage, maintenance, and transportation requirements will need to be taken into account. Due to the introduction of electronics, chains of custody and software and hardware security will become ever more important.

In a vote center system, a voter can go to any vote center in her jurisdiction.[28] She checks in with a poll worker via an electronic poll book, which then identifies the correct ballot style for the voter.[29] If the jurisdiction uses optical scan technology, the poll book sends the information to a ballot on demand device that prints the ballot.[30] The ballot can then either be counted on site using a precinct based optical scan device, or transferred to a central location for counting. If the

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[23] *See* Election Assistance Commission, *2014 EAC Election Administration and Voting Survey Comprehensive Report* (2014) at 247-248.
[24] *Id*. at 247.
[25] Data from the committee's County Election Administrator Survey.
[26] *See* Hart Intercivic, *Engaging Student Workers in Elections* (2016).
[27] *Id*.
[28] Presidential Commission on Election Administration, *supra*, note 20 at 35-36.
[29] *Id*.
[30] Interview with Matt Nelson, Election Systems & Software Senior Vice President of Sales (Oct. 19, 2016)

jurisdiction uses direct recording electronic technology, the poll book produces a code or card that is put into the electronic device on which the voter casts her ballot.

In an election system that uses precinct based technology, the voter's experience would be very similar to what it is now. The voter would arrive at her assigned polling location and check in with a poll worker. The poll worker would use an electronic poll book, which would allow the poll worker to inform voters that are at the wrong polling location what their proper polling location is. The voter would be given a ballot, which could be traditionally printed, or printed using a ballot on demand device. The voter would then deposit the ballot into an optical scanner at the precinct, or cast their ballot on an electronic voting system. While precinct based technology does not have much of an impact on the voter's experience, it does allow results to be available sooner, as the ballots can be counted on location as they are cast. The precinct level information is then taken or sent to central location where it is uploaded and aggregated electronically.

Both vote centers and precinct based systems bring a new security advantage and disadvantage. The disadvantage is that, due to the reliance on modern technology, there are more cyber security concerns.[31] The advantage is that by eliminating the need to transfer the physical ballots from the polling location to a central location, they eliminate an entire opportunity for nefarious activity. While electronic storage devices containing the results would still need to be transferred to a central location and aggregated, these devices are tamper evident, and, therefore, would eliminate this security concern.[32]

Overall, what is important to keep in mind is that the eventual certainty of a change in election technology will likely require major changes in election administration. Nebraska's

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[31] See, e.g., Commission on Federal Election Reform, *Building Confidence in U.S. Elections* (2005) at 28.
[32] Interview with Matt Nelson, *supra*, note 29.

election administrators should recognize this, and the state should be proactive in assisting with problems that arise due to any such changes.

IV.   Nebraska's Situation

Nebraska, like almost all other states, is facing a looming crisis in election technology. Nebraska's current election systems are centralized optical scan systems, and were purchased with HAVA funds. They are now reaching the end of their useful life. Some counties are already experiencing many system age related failures. Neither the Secretary of State nor local election administrators have the funds necessary to acquire new technology.

All of Nebraska's counties use a centralized optical scan system.[33] In this system, voters cast their ballots either through the mail or in person at their polling place.[34] Polling locations must have a large number of different style ballots on hand to ensure they do not run out of any of Nebraska's notoriously large number of different ballot faces.[35] Voters with disabilities use a system called an Automark to privately mark their ballot.[36] The ballots are then transferred to a central location for tabulation.[37] This transfer process raises a security concern, as it provides a point in time when the individual transferring the ballots has unfettered access to them. While these ballots are transferred under tamper evident seal, it would be difficult to tell whether the person transferring the ballots had manipulated an individual ballot in any way. This could lead

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[33] Neb. Sec. of State John Gale, *County Vote Tabulation Equipment Map* (2016), *available at* http://www.sos.ne.gov/elec/pdf/Equipment%20Map.pdf.
[34] Interview with Neal Erickson, Neb. Deputy. Sec. of State for Elections (Oct. 21. 2016).
[35] See, e.g. Douglas Cty. Election Comm'r Brian Kruse, *hearing of the Special Committee on Election Technology* (Dec. 12, 2016).
[36] *Id*.
[37] *Id*.

to questions of whether a ballot should be counted or not. Once the ballots arrive at the central location, they are counted using an optical scanner.

All of the central scan units currently in use in Nebraska are manufactured by Election Systems & Software (ES&S),[38] which is the world's largest election technology provider, and has over 60% of the domestic market.[39] The type and number of scanners varies based on county size. Most small counties use an M100 scanner.[40] Most other counties use a DS 650 scanner.[41] Douglas, Gage, Hall, and Lancaster counties have at least one DS 850 scanner, which is the scanner with the highest ballot rate offered by ES&S.[42] Large counties, like Douglas, Lancaster, and Sarpy, use multiple central scanners to cope with the large number of ballots.[43]

With a handful of exceptions, all of these systems were acquired with HAVA funds given to the counties by the state.[44] No county is entirely self-sufficient in its system management. The Secretary of State maintains a maintenance contract with ES&S for all of the technology in Nebraska.[45]

The 2018 general election is the last election in which the committee can say with relative certainty that Nebraska's systems will operate properly without widespread failure.[46] While Deputy Secretary of State for Elections Neal Erickson estimates that this time period is more likely 4-6 years,[47] almost all of the county election administrators that responded to a

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[38] Interview with Matt Nelson, *supra*, note 29.
[39] *Id*.
[40] *See* Gale, *supra*, note 33.
[41] *Id*.
[42] *Id*.
[43] Data from the committee's County Election Administrator Survey.
[44] *Compare id*. *with* Interview with Neal Erickson, *supra*, note 34.
[45] Interview with Neal Erickson, *supra*, note 21; Nebraskans for Civic Reform, *LR 403 Report to the Election Technology Committee* (2016).
[46] *See* Data from the committee's County Election Administrator Survey.
[47] Interview with Neal Erickson, *supra*, note 34.

survey conducted by the committee[48] indicated that their current system has a maximum useful life of less than 5 years.[49] Two weeks before the 2016 general election, Clay County reported not having a functioning central scanner.[50] Douglas County Election Commissioner Brian Kruse reported that, while his system could operate through the next election, he did not feel that it would do so without some level of system failure.[51] In fact, in the most recent general election, Douglas County did not finish counting ballots until after 5 am due to the failure of two central scanners.[52] Further, almost all counties that responded to the survey indicated experiencing some sort of age related failure with their Automarks.[53]

The looming crisis is that neither counties nor the state have funds to pay for the acquisition of new election technology. The Secretary of State does not have funds for this purpose,[54] and the HAVA funds used to acquire and maintain the current systems are now gone.[55] Not a single county reported having the necessary funds to acquire new systems.[56] Further, there was not one county that indicated it would be able to afford the annual maintenance costs for their current systems once maintenance funding from the Secretary of State stops.[57] When the current systems are no longer workable, counties would be forced to raise funds to acquire new systems. In other words, counties would increase property taxes.[58]

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[48] The survey questions are provided as Appendix A.

[49] Data from the committee's County Election Administrator Survey.

[50] Data from Clay County's submission to the committee's County Election Administrator Survey.

[51] Data from Douglas County's submission to the committee's County Election Administrator Survey.

[52] Christopher Burback, Omaha World-Herald, *Problems with 2 machines, heavy turnout at the polls contribute to slow vote counting in Douglas County* (Nov. 10, 2016), *available at* http://www.omaha.com/news/metro/problems-with-machines-heavy-turnout-at-the-polls-contribute-to/article_6eaf45c3-905e-5572-9a72-714cbd6f6b26.html.

[53] Data from the committee's County Election Administrator Survey.

[54] Interview with Neal Erickson, *supra*, note 34.

[55] *Id*.

[56] Data from the committee's County Election Administrator Survey.

[57] *Id*.

[58] *Id*.

V.   Available Options

There are many different election system options available on the market. States vary in the systems they employ. There are also emerging technologies that are not yet widely used. However, many in the field have expressed disappointment with the options available in the market. This want for products that are not currently available for purchase has led some election administrators to seek to develop technology specific to their needs. Regardless of which system an election administrator chooses to use, there are some technologies that multiple commissions from both major political parties have said should be used in all jurisdictions.

A.   Systems Available on the Private Market[59]

There are a number of election systems available on the private market. Different states and localities use different systems based on their needs. Optical scan technologies are the most widely used systems in the United States,[60] and the primary form of election system in Nebraska.[61] Direct recording electronic (DRE) systems are used in most states in some form, especially to increase voting accessibility.[62] Ballot on demand technologies are not widely used, but are becoming more so as states replace their initial HAVA purchases.[63] Ballot marking devices (BMDs) are used to assist voters with disabilities in privately marking their ballots. [64]

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[59] The two major systems on the private market are optical scan systems and DREs. A side by side comparison of these systems provided by NCSL is included in a table form as Appendix B.

[60] *See* Election Assistance Commission, *2012 EAC Election Administration and Voting Survey* (2012) at 82-83.

[61] *See* Neb. Sec. of State John Gale, *County Vote Tabulation Equipment Map* (2016), *available at* http://www.sos.ne.gov/elec/pdf/Equipment%20Map.pdf.

[62] *See* Election Assistance Commission, *supra*, note 60.

[63] See, e.g., Nat'l Conference of State Legislatures, The NCSL-MacArthur Election Connections Project: Colorado (2014) at 1, *available at* http://www.ncsl.org/documents/legismgt/elect/ColoradoElectionsTechnologyReport.pdf.

[64] Ballot on Demand (BOD) and Ballot Marking Devices (BMD) are two other technologies that are widely available. There are not covered in depth here because they are very straight forward. BODs can be a cost effective option that allows ballots to be printed for a voter when she arrives at the polling place. This cuts down on ballot printing costs, but increases storage and maintenance costs due to multiple devices. These might be cost effective in

BMDs are largely being replaced by DREs.[65] Electronic poll books are another widely used

technology that is currently available, and is discussed in the "Consensus Technologies" section.

i.   Optical Scan Technologies

Optical scan technologies are the most widely used systems in the country,[66] and the

primary system used in Nebraska.[67] In an optical scan system, a voter marks a paper ballot with

a pencil or a blue or black ballpoint pen. The ballot is then fed into an optical scan counter,

which records the vote.[68] With this system, the differences in technology and voting experience

result from the type of scanner that is used.

In a system that uses central scanners, like Nebraska, a voter marks her ballot, and then

deposits it into a ballot box.[69] This box is then transferred to the central location, where the

ballots are removed and scanned. Because optical scan ballots have no alert of an under or over

vote until they are fed through a scanner, central scanners are unable to notify a voter that they

either over voted an office, or may have forgotten to vote for an office.[70] Such a notification is

required by HAVA,[71] but central scan states like Nebraska currently meet HAVA's requirements

through voter education programs.[72] There are different kinds of central scanners with different

capabilities. While large jurisdictions would need a scanner that can operate at a higher rate,

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large jurisdictions that would otherwise waste many ballots. BMDs are simply voter accessibility technology that assists disabled voters in privately marking an optical scan ballot.
[65] Interview with Matt Nelson, Election Systems & Software Senior Vice President of Sales (Oct. 19, 2016)
[66] *See* Election Assistance Commission, *supra*, note 60.
[67] *See* Gale, *supra*, note 61.
[68] Interview with Matt Nelson, *supra*, note 65.
[69] This assumes that a voter votes at their polling location or election commission. If a voter votes absentee, they would mail their ballot to the election commission. If a voter is one of the 80-120 Nebraska voters that vote via a UOCAVA method each election, their process would be entirely different. Interview with Neal Erickson, Neb. Deputy. Sec. of State for Elections (Oct. 21. 2016).
[70] *Id*.
[71] *Id*.
[72] *Id*.

smaller jurisdictions can operate using a smaller, precinct scanner (discussed below) as a central scanner. The high rate scanners cost an estimated $70,000 to $125,000 to purchase per unit, and require an estimated $2,000 to $3,000 per unit in annual maintenance and fees.[73]

In a system that uses precinct scanners, a voter marks her ballot and then deposits the ballot into an optical scanner that is at the polling location.[74] The results are then transferred to a central location for aggregation. This on site counting allows the scanner to immediately inform the voter of any over or under votes.[75] These scanners cost an estimated $2,500 to $5,000 per unit, and an estimated $200 to $500 in annual maintenance per unit.[76] If precinct level scanners are used, transportation and storage costs also need to be considered.[77] These costs would vary depending on the geographical and population differences in local election jurisdictions.

Regardless of the scanner used, optical scan systems are generally seen as the most secure because they produce a paper trail created by the voter in the ballots themselves.[78] This allows routine audits to be performed and electronically tabulated results to be confirmed. While there has been some concern over the security of these units, as there will be with any system that incorporates electronics, the consensus is that there is no real hacking threat with optical scan systems.[79]

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[73] Email from Amanda Buchanan, NCSL Elections Policy Specialist (Nov. 14, 2016).
[74] Interview with Matt Nelson, *supra*, note 65.
[75] *Id*.
[76] Email from Amanda Buchanan, supra, note 73.
[77] *Id*.
[78] *See* Lawrence Norden & Christopher Famighetti, Brennan Center for Justice, *America's Voting Machines at Risk* (2016); Presidential Commission on Election Administration, *The American Voting Experience: Report and Recommendations of the Presidential Commission on Election Administration* (2014); Justin Reimer, et. al., Republican National Lawyers Association, *RNLA Response to the Report and Recommendations of the Presidential Commission on Election Administration* (2014).
[79] Email from Amanda Buchanan, NCSL Election Policy Specialist (Nov. 14, 2016); Interview with Matt Nelson, *supra*, note 65.

Most states use an election system that has an optical scan component. For example, Rhode Island, Maine, and Maryland have all recently updated their election systems in a way that includes new optical scan technology.[80] Maryland has gone to a precinct based model, with an ES&S DS200 unit at each polling location.[81] If Nebraska were to go to a precinct/poll location based system similar to Maryland's, the new optical scan equipment, if acquired in a statewide purchase, would be estimated to cost just under $6.3 million with annual license, maintenance and support fees for those devices estimated at under $240,000 per year.[82] All of Nebraska's surrounding states use optical scan technology as their primary voting system.[83]

ii.   Direct Recording Electronic (DRE) Technologies

DRE machines allow the voter to vote on the machine itself. In a jurisdiction that uses DREs, a voter walks up to a polling booth and casts her vote using a touch screen device that is inside the voting booth.[84] The device records the vote internally, and prints a paper confirmation so that the voter can double check her selections. This paper confirmation also creates a paper trail so that audits can be conducted on the electronic results to ensure their accuracy.[85]

This paper trail is key when considering DRE systems, as significant concerns about their security have been raised in academia.[86] The paper trail allays these concerns by providing an

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[80] Email from Amanda Buchanan, *supra*, note 73.
[81] *Id*.
[82] Information provided to the committee by a major election technology supplier.
[83] Email from Amanda Buchanan, *supra*, note 73.
[84] Lawrence Norden & Christopher Famighetti, Brennan Center for Justice, *America's Voting Machines at Risk* (2016); Presidential Commission on Election Administration, *The American Voting Experience: Report and Recommendations of the Presidential Commission on Election Administration* (2014); Justin Reimer, et. al., Republican National Lawyers Association, *RNLA Response to the Report and Recommendations of the Presidential Commission on Election Administration* (2014).
[85] *Id*.
[86] *See, e.g.*, Tigran Antonyan et. al, *State-wide Elections, Optical Scan Voting Systems, and the Pursuit of Integrity*, Voting Technology Research Center and Computer Science and Engineering Department University of Connecticut (2008) at 1.

auditable record. Merle King, Executive Director of the Center for Election Systems at Kennesaw State University in Georgia, thinks that these security concerns are overblown as they assume uninhibited physical access to the systems by would be hackers. He believes that a chain of custody record for DREs can prevent any realistic threats.[87]

DREs are widely used to make voting accessible to voters with disabilities while still ensuring their privacy. One drawback in terms of accessibility is that only one voter can vote on a DRE at a time. In larger jurisdictions, this could cause longer lines during peak voting times. However, the systems can also handle a large number of ballot styles in multiple languages, eliminating the need to print ballots. This would largely reduce ballot costs. The DREs themselves cost $2,500 to $3,000 per unit, with annual maintenance costs of $100 to $200 dollars, with maintenance increasing beyond that over the life of the device.[88]

Georgia is an example of a state that primarily uses DREs. Georgia has a state-based system where every voter in the state that goes to the polls casts her vote on an AccuVote DRE system.[89] These systems are over two decades old, and do not produce a paper trail.[90] If Nebraska were to acquire modern DREs for each polling location to meet HAVA accessibility requirements, the new equipment would be estimated to cost just under $3.65 million with annual fees and maintenance estimated to be just under $190,000 per year.[91]

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[87] Email from Amanda Buchanan, *supra*, note 73.
[88] *Id*. It should be noted that jurisdictions that rely on DREs for their primary method of voting usually have optical scan ballots as a failsafe option. Therefore, DREs do not eliminate the costs associated with optical scan based systems, they simply reduce them.
[89] *Id*.
[90] *Id*.
[91] Information provided to the committee by a major election technology supplier.

iii.　　Consensus Technologies: Electronic Poll Books

Electronic Poll Books (EPBs) enjoy a broad consensus of support. Both the Presidential Commission on Election Administration, created by President Obama, and the Republican National Lawyers' Association have called for EPBs to be implemented in all jurisdictions.[92] EPBs are a touch screen tablet, similar to an iPad. The voter database is uploaded onto the EPB prior to Election Day. One major voting accessibility benefit of EPBs is that if a voter goes to the wrong precinct but is registered to vote, the data stored on the EPB would alert the poll worker of the voter's proper polling location.[93] This would eliminate what would currently be the likely scenario of a voter casting a provisional ballot that would ultimately be rejected.[94]

The two major logistical benefits of EPBs are speed and accuracy.[95] Poll workers would not have flip through a paper poll book to check a voter in. Rather, the poll worker would type in the individual's name or scan her driver's license.[96] This would speed up the check-in process and help alleviate lines as a voter could be checked in with either a simple scan or a few clicks, depending on the individual.

This would also increase the accuracy of voter data by eliminating two opportunities for error. First, unlike a paper poll book, EPB data would not need to be manually reentered into the central voter registration database. It could merely be uploaded.[97] Second, EPBs make it very

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[92] Presidential Commission on Election Administration, *The American Voting Experience: Report and Recommendations of the Presidential Commission on Election Administration* (2014); Justin Reimer, et. al., Republican National Lawyers Association, *RNLA Response to the Report and Recommendations of the Presidential Commission on Election Administration* (2014).

[93] Interview with Matt Nelson, Election Systems & Software Senior Vice President of Sales (Oct. 19, 2016)

[94] Interview with Neal Erickson, Neb. Deputy Sec. of State for Elections (Oct. 21, 2016).

[95] Presidential Commission on Election Administration, *supra*, note 92; *see also*, Reimer, *supra*, note 92.

[96] Interview with Matt Nelson, *supra*, note 93. The driver's license capability is not a form of voter ID and EPBs do not make a driver's license necessary to vote. A poll worker could not deny a voter the opportunity to vote due to a lack of a driver's license. The scanning option is simply an already existing capability due to the fact that the voter registration database is integrated with DMV to make it easier for people to register to vote. *Id*.

[97] *See* Presidential Commission on Election Administration, *supra*, note 92; *see also*, Reimer, *supra*, note 92.

unlikely that a voter will be checked in under the wrong name of a similarly named voter. In the

instance that the voter's driver's license is scanned, the accuracy of the check in process would

be identical to that of the DMV database. In the instance of a manually entered similar name, for

example, a voter with the same name but different middle initial, both options would be

displayed on the EPB and the difference would be easily recognizable.[98]

Like any technology, security and costs are concerns. There has been some research that

indicates the number of EPBs necessary at a single location in order to ensure security would

make them cost prohibitive.[99] However, the majority of academic material reviewed by the

committee and all of the stakeholders outside of academia indicated that EPBs could be

implemented on a cost effective basis without any realistic cause for a security concern.[100] If

Nebraska implemented EPBs statewide, it would cost $1.65 million with fees and maintenance

of just under $130,000 annually.[101]

B. Disappointment with Available Options, Emerging Technologies, and Development of Locality Specific Solutions

While optical scan systems and DREs are the two major systems currently on the private

market, many have expressed disappointment with these options.[102] Due to the unusual nature of

the election technology market, innovation and product development is stifled relative to other

markets. However, there are some companies in the process of developing new software based

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[98] Interview with Matt Nelson, *supra*, note 93.
[99] Matthew Desmarais, et. al., *Electronic Poll Book Systems as Distributed Systems: Requirements and Challenges*, Center for Voting Technology Research Department of Computer Science and Engineering University of Connecticut (2015).
[100] Presidential Commission on Election Administration, *supra*, note 92; *see also*, Reimer, *supra*, note 92.
[101] Information provided to the committee by a major election technology supplier.
[102] Lawrence Norden & Christopher Famighetti, Brennan Center for Justice, *America's Voting Machines at Risk* (2016) at 21-22.

systems that work with commercial-off-the-shelf (COTS) products like iPads and desktop printers. The lack of options on the open market has led some jurisdictions to work with election technology companies to create a system specifically for the needs of the jurisdiction. However, this has risks due to state and federal regulations over election technology.

There are many that have expressed disappointment with the election technology options available on the private market.[103] The limited options are a result of the differences between the election technology market and a normal market. In the election technology market, 47 of 50 states, including Nebraska, require election systems used in the state to be certified by the Election Assistance Commission's certification process in some way.[104] This can be a lengthy process. Smartmatic, an election technology company, recently had their new technology certified by the EAC. The process took three years, yet it was the fastest the EAC had ever completed a certification.[105] With technology rapidly evolving, a system that is state of the art when it goes before the EAC for certification is at least somewhat dated by the time it is actually certified for use.[106] This discourages companies from bringing new technologies through the lengthy and expensive certification process, and has led to a lack of innovation in the election technology market.

Despite these road blocks, some in the industry are pushing ahead with the development of new technologies.[107] The trend in emerging technologies is towards COTS. The idea is that elections could be run using products that are commercially available to the average consumer. If this were the case, election administrators could update their election equipment the same way

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[103] *Id.*
[104] *Id.* at 33.
[105] Telephone Interview with Hugh Gallagher, Smartmatic Business Development Adviser (Oct. 18, 2016).
[106] Norden & Famighetti, *supra*, note 102 at 33-34.
[107] *Id.* at 21

they update any other electronic device in the office.[108] The only thing they would need to rely on election technology companies for would be specialized, secure software.[109] However, there are limited options available in COTS technologies, and legitimate security concerns.[110] As can be seen with high profile hacks of federal government systems, no system that is completely electronically based is immune from hacking concerns.[111]

However, some jurisdictions, viewing these systems as having a great amount of potential, are working with election technology companies to develop customized systems that incorporate traditional election technology options as well as COTS.[112] Two examples of this are the City of Los Angeles[113] and Travis County, Texas.[114] Neither system is currently in operation, and Travis County has been said to be having issues with both the state and federal certification processes.[115] Moreover, both systems still anticipated some reliance on optical scan technology,[116] so those costs are not entirely eliminated. While there is widespread dissatisfaction with the currently available technology, it does not appear that a revolution in election technology is on the horizon in the immediate future.

VI.   Financing Options

The acquisition of new election technology can be financed either by the state or local election jurisdictions. There are advantages and disadvantages to both. There are also a number

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[108] *Id.*
[109] *See id.*
[110] *See id.* at 21-27; *see also*, Interview with Neal Erickson, Neb. Deputy Sec. of State for Elections (Oct. 21, 2016).
[111] *See, e.g.*, Lee Mathews, *22 Million Government Workers Being Targeted By Reansomware Attack*, Forbes (Nov. 10, 2016), http://www.forbes.com/sites/leemathews/2016/11/10/22-million-government-workers-being-targeted-by-ransomware-attack/#67e953f7756a.
[112] Norden & Famighetti, *supra*, note 102 at 21-27.
[113] *Id.*
[114] *Id.*
[115] *Id*; Interview with Neal Erickson, Neb. Deputy Sec. of State for Elections (Oct. 21, 2016).
[116] Norden & Famighetti, *supra*, note 106 at 21-27.

of options in terms of the financing instruments used to acquire the technology. New technology can be purchased, leased, or acquired through a lease-purchase agreement, and all options can be structured in a number of ways depending on the purchasing entity's needs.

A. State v. Local Acquisition

The state could acquire all of the necessary technology updates for local election jurisdictions. One major advantage to the state acquiring the technology is the purchasing power that comes with acquiring a large volume of products.[117] This can lower the aggregate expenditure by millions of dollars.[118] A state based option also provides consistency across various jurisdictions. The company used for the maintenance of the technology will likely be more responsive to the needs of a client with a large account rather than a client with a small account. Running the process through the state maximizes the size of the client account in the state and would provide equal power across counties in terms of responsiveness from the election technology provider.[119]

Another option is to have local election jurisdictions update their technology. The advantage of this is that local election administrators know exactly what their needs are and have a better understanding of how the introduction of new technology would impact their election process.[120] A major disadvantage is the reverse of the buying power advantage of the state method. The result would be that poorer jurisdictions would be unable to bear the financial burden of high priced machines, and would have to continue operating outdated equipment with

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[117] Interview with Neal Erickson, *supra*, note 115.
[118] *Id.*
[119] *Id.*
[120] Interview with Matt Nelson, Election Systems & Software Senior Vice President of Sales (Oct. 19, 2016)

a high risk of failure.[121] Because of the expense of new election technology, even wealthier

jurisdictions would find it difficult to cope with the added expense.[122] The result would be that

counties would need to increase their revenue in order to fund the purchase. In other words,

property taxes would rise, possibly significantly.[123]

B.   Financing Instrument

New technology can be acquired through a number of different financing instruments.

The most common options are a purchase, a lease, or a lease-purchase agreement. Election

technology providers have indicated that these options could be structured as necessary to meet

Nebraska's needs.[124] Each option has its advantages and disadvantages.

The most common option for acquiring new election technology is a traditional purchase.

The purchase option would allow the state to maximize its buying potential, thereby increasing

the likelihood of obtaining the best overall cost.[125] Another advantage of the purchase option is

that any trade in value remaining in the technology at the end of its useful life can be applied to

the purchase of a replacement system.[126] A disadvantage to the purchase option is that it requires

a large appropriation in a single year.[127]

Election technology can also be leased. A lease would greatly decrease the initial size of

the appropriation needed to acquire new technology.[128] It would also ensure that the state or

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[121] Norden & Famighetti, *supra*, note 106.
[122] Data from the committee's County Election Administrator Survey.
[123] *Id*.
[124] Interview with Matt Nelson, *supra*, note 120; Telephone Interview with Hugh Gallagher, Smartmatic Business Development Adviser (Oct. 18, 2016); Telephone Interview with Justin Morris, Hart InterCivic Northern Region Director of Sales (Oct. 26, 2016).
[125] *Id*.
[126] *Id*.
[127] *See id*.
[128] *Id*.

locality was not left holding onto out of date technology, as the lease term would simply not extend beyond the useful life of the equipment.[129] A disadvantage is that funds would need to be appropriated every year to hold onto the technology. Further, no equity would be built that could apply towards a future election technology purchase.[130]

A third option is a lease purchase agreement. This is the option Lancaster County used when it recently acquired a new central optical scan unit.[131] In this scenario, the state or locality would own the technology at the end of the lease term.[132] Therefore, the loss of equity that results in a pure lease would be avoided. Further, if the technology still had a useful life at the end of the lease period, the state would be able to keep that technology until its useful life was over, or some new technology worth acquiring entered the market. This would also have the advantage of decreasing the initial appropriation necessary to acquire the new technology, relative to a pure purchase. A disadvantage is that it would decrease the initial purchase power, which would likely result in an increase in the total cost of the agreement.

VII.   Conclusions

Nebraska's election technology crisis was foreseeable and preventable. If Nebraska is not prudent, it will face a similar crisis every 10-15 years for the foreseeable future. The path forward must recognize the reality of the incorporation of modern technology into the election process, and take full advantages of the strengths of these technologies while seeking to mitigate their weaknesses. The committee envisions an elections process tailored to the needs of the

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[129] *See id.*
[130] *See also, id.*
[131] Data from Lancaster County's submission to the committee's County Election Administrator Survey.
[132] Interview with Matt Nelson, *supra*, note 120; Telephone Interview with Hugh Gallagher, *supra*, note 124; Telephone Interview with Justin Morris, *supra*, note 124.

individual county. This could mean a county's current technology is simply updated, some

counties or precincts are allowed to operate on a mail-in basis, or a model where the voter arrives

at the polling location, and her ballot is then printed, cast, and counted on site. In order to

achieve this vision, new technology will need to be acquired, and election administration

rethought. This modernization, coupled with a realistic financing plan, will ensure Nebraska's

election system security for years to come.

A. Avoiding Crisis in the Future

When new technology was purchased using HAVA funds, it was clear that those funds

would be a onetime appropriation.[133] It was also clear that the technology had a useful life of 10-

15 years.[134] Having a general idea of the cost of replacement technology due to the recent

purchase, and a knowledge of the life of the systems, Nebraska should have known it would need

another large appropriation in 10-15 years. With no federal money in the pipeline, the crisis

could have been prevented by setting aside funds to go towards an eventual election technology

purchase.

In fact, in response to the passage of HAVA, the Legislature created the Election

Administration Fund in 2003 just for that purpose.[135] This fund was used to hold the HAVA

dollars that purchased Nebraska's current election technology.[136] However, the fund is now

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[133] *See* Lawrence Norden & Christopher Famighetti, Brennan Center for Justice, *America's Voting Machines at Risk* (2016); Presidential Commission on Election Administration, *The American Voting Experience: Report and Recommendations of the Presidential Commission on Election Administration* (2014); Justin Reimer, et. al., Republican National Lawyers Association, *RNLA Response to the Report and Recommendations of the Presidential Commission on Election Administration* (2014).
[134] Norden & Famighetti, *supra*, note 133.
[135] Neb. Rev. Stat. § 32-204
[136] Neal Erickson, Neb. Deputy Sec. of State for Elections, Testimony at Government, Military, and Veterans Affairs Committee Hearing on LB 461 (Feb. 20, 2003).

empty[137] due to the failure to appropriate funds for replacement technology on an annual basis. In order to prevent a future crisis, the Legislature should make annual appropriations to the Election Administration Fund to save up for the next election technology purchase in 10-15 years. As a conservative estimate would put the cost of new election technology at roughly $25 to $30 million,[138] a prudent course would be to appropriate $2.5 million annually to the fund beginning this year. These preventative funds would be in addition to the funds described below to deal with the current crisis. The committee agrees with a recommendation contained in the recent report by Nebraskans for Civic Reform that the Election Administration Fund be altered to clarify that it is to be used to safeguard and modernize Nebraska's election technology.[139]

B. Dealing with the Current Crisis

Essentially, Nebraska has three options moving forward in order to safeguard our elections. The committee believes the best option is for the state to enter into a lease-purchase of election technology at the beginning of the 2019-2020 fiscal year. New technology will mean how Nebraskans vote will change. Depending on the county, a voter may cast her ballot in the same manner as past elections, through the mail, or by arriving at her precinct's polling location where her ballot is printed, cast, and counted on site. New technology will need to be acquired to implement this vision. Such an acquisition can be accomplished in a fiscally responsible way while avoiding an unfunded mandate to counties that would result in a rise in property taxes.

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[137] Interview with Neal Erickson, Neb. Deputy Sec. of State for Elections (Oct. 21, 2016).
[138] Interview with Matt Nelson, *supra*, note 120; Telephone Interview with Hugh Gallagher, *supra*, note 124; Telephone Interview with Justin Morris, *supra*, note 124; Interview with Neal Erickson, Neb. Deputy Sec. of State for Elections (Oct. 21, 2016).
[139] *See* Nebraskans for Civic Reform, *LR 403 Report to the Election Technology Committee* (2016) at 10.

i. Three Paths Forward and their Consequences

As it currently stands, the Legislature essentially has three options. First, it could make an appropriation to the Secretary of State's office in this next session for $25 to $30 million dollars to purchase new election equipment. This would allow the Secretary to purchase equipment for the entire state. It would immediately resolve the current issue and result in the best price for the technology due to the greater relative buying power the state has compared to an individual county. It would also avoid the property tax increase that is certain to occur if such a large, but necessary purchase is left to the counties.

Second, the Legislature could put off an appropriation until after the next federal election in 2018. This would allow the body more time to determine how it will pay for such an appropriation. Nebraska's current systems would probably last through the 2018 election without major system failures.[140] Moreover, the Secretary of State could work with county election administrators to ensure they are aware of problems that can arise with aging equipment. Such precautions allow election administrators to act quickly in the event of a failure.[141] After the 2018 election, the Legislature should appropriate funds for the acquisition of new election technology statewide. This could be one large appropriation for a pure purchase, or it could be a more manageable appropriation for a lease purchase agreement. The committee recommends the later, as discussed below. This second option gives the Legislature two years to plan for the appropriation and still avoids leaving the bill to the counties, causing a property tax increase.

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[140] *Id*; *see* Data from the committee's County Election Administrator Survey.
[141] Lawrence Norden & Christopher Famighetti, *America's Aging Voting Machine Managed to Survive Another Election*, Brennan Center for Justice (Nov. 10, 2016), http://www.brennancenter.org/blog/americas-aging-voting-machines-managed-survive-another-election.

The third option is to do nothing and leaving the crisis to the counties to resolve. This is unacceptable to the committee. In this scenario, the Legislature would not make an appropriation for new election equipment. This would require counties to purchase and maintain their own equipment once their current systems become obsolete, which is already beginning to occur. Not only would this increase the overall amount paid for the same technology due to the relatively weak buying power of an individual county, there was a near unanimous sentiment amount county election administrators that responded to the committee's survey that such a scenario would require the counties to raise property taxes. Small, rural counties would be the hardest hit.

ii.   What Nebraska's Elections Should Look Like in the Future

Before determining what equipment should be acquired to replace existing systems, it is first necessary to determine what the Nebraska voting experience should look like in the future. Due to the range of county populations in Nebraska, a one size fits all method is not advisable. The solution needs to be based on the county's needs. In some cases, a precinct based system would best meet those needs. In others, updating current technology or allowing more precincts to operate on a mail in basis may be the answer.

An update to existing technology or an expansion of mail-in voting in counties where it would be advisable requires the acquisition of electronic poll books and central scanners. A precinct based system incorporates electronic poll books, ballot on demand devices, and precinct based optical scanners.[142] These systems ensure greater voting access for all Nebraskans, have

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[142] DREs that produce a paper slip that is then read by the precinct scanner would also need to be acquired to meet the needs of voters with disabilities. An update to central scanners would also be necessary for absentee ballots. Other changes to Nebraska's election laws would be necessary to allow for new technology.

the potential to reduce the costs of local election administration, and increase election security and accuracy.

First, these systems ensures greater voting access for all Nebraskans through the use of electronic poll books. EPBs allow for greater voting access by speeding up the check-in process, ensuring the right voter is checked in, and ensuring the voter is at her correct polling location. EPBs speed up the check-in process by reducing the time it takes to check a voter in. Most voters can check in simply by scanning their driver's license on the EPB.[143] If a voter does not have a driver's license, the poll worker simply has to type in the voter's name, rather than flipping through a paper poll book. By decreasing check-in time, EPBs would reduce the likelihood that a voter would forego voting due to the size of the line.

EPBs also ensure that the correct voter is checked in. If a voter has a similar name to another voter in the same precinct, a poll worker can mistakenly check in the wrong voter when using a paper poll book. EPBs eliminate this situation as scanning a driver's license would automatically pull up the correct voter profile, and typing in a name would alert the poll worker to the existence of two voters of that name. EPBs would also ensure that a voter is at her proper polling place. Being at the wrong polling place is the most common reason for the rejection of a provisional ballot cast by a registered voter in Nebraska.[144] If a voter checks in via an EPB and they are not at the correct polling place, the poll worker is alerted to this problem and can provide the voter with the proper polling place.

Second, a precinct based system has the potential to reduce costs in some counties. As reported by county election administrators, the largest single cost of local election administration

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[144] Interview with Neal Erickson, Neb. Deputy Sec. of State for Elections (Oct. 21, 2016).

is printing ballots.[145] Sometimes, localities can spend as much as $5 per ballot.[146] To ensure

enough ballots for all voters on Election Day, election administrators will print ballots in

numbers greatly in excess of what they anticipate will actually be used. Ballot on demand

devices eliminate this problem entirely. With BoDs, a voter's ballot is only printed once she

checks in at her proper polling place.

Finally, these systems increase security and accuracy. As mentioned in the introduction

to this report, voter confidence and security are vitally important.[147] All three new technologies

incorporated into the system help in this regard. EPBs ensure the correct voter is checked in.

This ensures the accuracy of Nebraska's voting records. The introduction of EPBs could also

prove an advantageous time to update Nebraska's voter registration software, as some election

commissioners have expressed concerns about the system's usability.[148] BoDs increase security

by eliminating the transportation of the ballots to the polling place. Since BoDs print ballots on

site, they eliminate an entire opportunity for nefarious activity. BoDs would also be beneficial

due to Nebraska's high frequency of ballot splits. Printing the ballot on site would eliminate the

risk of a voter being given the wrong ballot.

Precinct based optical scanners increase security in two ways. First, precinct scanners

eliminate the transportation of completed ballots from the polling location to the central

tabulation location. In all of its research, the committee did not identify another state with

election jurisdictions as large as those in Nebraska that relies on the physical transportation of

ballots from a precinct to a central tabulation location. By eliminating such a situation, precinct

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[145] Data from the committee's County Election Administrator Survey.
[146] *Id*.
[147] At a time when voter confidence in our election systems is very low, the committee is opposed to a transition to statewide mail-in elections due to their controversy and security concerns.
[148] *See, e.g.* Lancaster Cty. Election Comm'r Dave Shively, *hearing of the Special Committee on Election Technology* (Dec. 12, 2016).

scanners eliminate an entire opportunity for nefarious activity. Second, precinct based scanners produce tamper-evident data that is transported to a central location for aggregation. These data would immediately be identifiable as having been tampered with.[149] This eliminates the security risks that arise in transportation.

Updates to Nebraska's election technology must be based on the needs of the counties. Such systems may incorporate electronic poll books, ballot on demand devices, direct recording electronic devices, precinct based optical scanners, as well as updates to existing technology. These systems ensure greater voting access for all Nebraskans, have the potential to reduce election administration costs, and increase election security and accuracy.

iii.   Necessary Equipment

In order to implement these systems, five technologies will need to be acquired. Such an acquisition could cost between $25 million and $30 million depending on the financing mechanism. In order to increase buying power to reduce the overall cost of the acquisition, the committee recommends the state make the purchase after the 2018 general election, and provide the technology to local election jurisdictions. While an upfront purchase would be ideal in order to increase buying power, if this is unfeasible due to Nebraska's current budget situation[150] the committee recommends a lease-purchase agreement.

Five modern election technologies will need to be acquired to implement this system. First, electronic poll books are necessary to ensure fast and accurate check-in. These will cost $1.65 million with fees and maintenance of just under $130,000 annually.[151] Second, ballot on demand devices could be advisable in some jurisdictions to ensure ballot security and reduce

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[149] Interview with Matt Nelson, Election Systems & Software Senior Vice President of Sales (Oct. 19, 2016).

[150] *See Projected General Fund Financial Status*, Nebraska Legislative Fiscal Analyst (Oct. 31, 2016).

[151] Information provided to the committee by a major election technology supplier.

printing costs. The BoDs will cost roughly $20,000 to $40,000 per unit with an unknown cost

for annual fees.[152] Third, direct recording electronic devices would need to be acquired to

replace Nebraska's aging Automark devices. This replacement will cost just under $3.7 million

with annual fees of roughly $190,000.[153]

Fourth, precinct based optical scanners are required to further increase security and speed

up the reporting of results. The new optical scan equipment would be estimated to cost roughly

$5,500 per unit with annual license, maintenance and support fees for those devices estimated at

roughly $250 per year.[154] Finally, central scanners used to cope for absentee and mail-in ballots

will need to be replaced in some jurisdictions. These will cost an estimated $70,000 to $125,000

to purchase per unit, and require an estimated $2,000 to $3,000 per unit in annual maintenance

and fees.[155] Overall, these acquisitions will cost between $25 million and $30 million. Nebraska

could use the trade-in value of its current systems to help mitigate this cost. While election

equipment is currently owned by the counties, the state could make the trade in of current

equipment a requirement for providing the new technology.

In order to get the best price possible, it is imperative that buying power be maximized.[156]

Therefore, the state should make the purchase rather than leaving the cost to the counties. On

top of maximizing buying power, this would also ensure that there is no variation in the quality

of election technology a Nebraskan uses to vote based on the wealth of her county. As

Nebraska's current systems could last through the 2018 general election without widespread

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[152] *See* RTI International, *Maryland Voting Systems Study* (Dec. 2, 2010) at 3-10.
[153] Information provided to the committee by a major election technology supplier.
[154] *Id.*
[155] Email from Amanda Buchanan, NCSL Elections Policy Specialist (Nov. 14, 2016).
[156] Interview with Neal Erickson, Neb. Deputy Sec. of State for Elections (Oct. 21, 2016).

failure, the committee recommends foregoing the acquisitions until that time. This would allow the state to get all of the remaining value out of its current systems.

To further maximize buying power, it would be ideal if the acquisition was made in a single purchase. However, this is likely not feasible due to Nebraska's current budget restrictions. Therefore, a lease-purchase agreement may be a viable alternative. While this would decrease the overall buying power, it would allow the state to own the equity in the systems and soften the annual budgetary impact. The committee is opposed to a staggered, or phased in acquisition of new technology. It takes poll workers three elections to become familiar with any new election system.[157] Therefore, a staggering or phasing in of technology would put Nebraska's poll workers in a perpetual state of unfamiliarity with the election system.

Nebraska is facing an election technology crisis. To avoid such a crisis in the future, the Legislature must be prudent and make the necessary annual appropriations for the Election Administration Fund. In dealing with the current crisis, the committee has reached the conclusion that voting technology will need to be based on the needs of the counties. In order to accomplish this, the state should acquire the necessary technology through a lease-purchase agreement after the 2018 election. As Nebraska transitions to new election technology, election administrators must be prepared to adapt to the administrative changes and challenges that these election systems will bring, especially as they relate to poll workers. Elections are the fundamental function of our American society. It is vital that we ensure their longevity and security in Nebraska for years to come, prevent a property tax increase, and ensure that our citizens have faith in the system.

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[157] Comments by EAC Commissioner Matthew Masterson at NCSL's 2016 Capitol Forum (Dec. 6, 2016).

COUNTY ELECTION ADMINISTRATOR SURVEY

1. Election System
    a. What is the current condition of your election system?
    b. Please estimate the remaining life of your election system.
    c. Are replacement parts available for purchase?
    d. Do you have difficulty acquiring replacement parts? If so, is this an availability or cost issue?
    e. What, if any, has been the change in cost of replacement parts for your election system since the current system was purchased?
    f. Are any previously mentioned replacement difficulties or cost increases sustainable for effective election administration?
    g. Do you foresee any long term maintenance or cost difficulties with regard to your election system? If so, at what point would they become unsustainable?
    h. What, if any, infrastructure do you utilize to operate your election system?
        i. What, if anything, does this cost?
        ii. Do you foresee any cost, maintenance, or availability difficulties with regard to necessary election infrastructure arising in the life of your current election system?
    i. What, if any, county funds are available to you for purchasing new election technology?
        i. What is the extent of any such funds?
        ii. What, if any, processes must you undertake to obtain any such funds?
    j. What systems and processes do you have in place to accommodate voters with disabilities?

2. Poll Workers
    a. Please describe the usual age range of your poll workers.
    b. Please describe the familiarity of your poll workers with modern technology.
    c. Please detail any and all poll worker recruitment that your office undertakes.
        i. What, if any, assistance do you have available to you in this regard from the Secretary of State's office?
        ii. To what extent, if any, do you utilize this assistance?
    d. Please describe any and all poll worker training that your office undertakes.
        i. What, if any, assistance do you have available to you in this regard from the Secretary of State's office?
        ii. To what extent, if any, do you utilize this assistance?
    e. How, in your opinion, would the introduction of modern voting technology (e.g. electronic poll books, poll location optical scanners, etc.) impact your poll worker
        i. Competence?
        ii. Training efforts?
        iii. Recruitment?

3. Ballots
    a. How much does it generally cost you to print one ballot in a
        i. Presidential year
            1. Primary election?
            2. General election?
        ii. Midterm year
            1. Primary election?
            2. General election?
    b. How many ballots do you print in a
        i. Presidential year
            1. Primary election?
            2. General election?
        ii. Midterm year
            3. Primary election?
            4. General election?
    c. How many ballots are actually used in a
        iii. Presidential year
            1. Primary election?
            2. General election?
        iv. Midterm year
            3. Primary election?
            4. General election?

Appendix B

Paper Ballots & Scanner	DRE
Usability	
Ease of use for the voter including the extent to which a given system mitigates unintentional undervotes (when a vote is not recorded in a race) or overvotes (when it appears that the voter has selected more candidates in a race than is allowed, which nullifies all votes for that office). These are considered "errors" and are often used to measure the efficacy of a voting system.	
• Precinct optical scanners, where paper ballots are scanned in the polling place, can inform the voter of an error, in which case the voter can fix the error, or vote correctly on a new ballot (the original ballot is not counted). • Central count optical scanners, where ballots are collected to be scanned and counted in a central location, do not provide voters with the option of fixing an error.	• DREs either prevent error or inform the voter of the error before the ballot is cast. Some also contain a Voter Verified Paper Audit Trail (VVPAT) so that the voter can view a paper record of his vote and verify that it is correct.
Accessibility	
Ease of use for the voter needing accessibility accommodations	
• Paper ballots typically do not provide the same ability for voters with disabilities to vote privately and independently, either because of manual dexterity, reduced vision or other disabilities that make paper hard to use. These voters may need assistance from another person to mark the ballot. However, there are machines that allow a voter to use a touchscreen interface (often on a tablet such as an iPad) to mark a paper ballot; these are typically referred to as "ballot marking devices."	• DREs meet federal requirements for allowing voters with disabilities to cast their votes privately and independently.
Auditability	
The auditability of a system relates to two post-election procedures: post-election audits and recounts.[i]	

• Original paper ballots are used for post-election audits and recounts. No additional paper trail is necessary. • Paper ballots also allow election officials to examine ballots for voter intent. Depending on the laws of the state, a stray mark or circle may be considered when determining a voter's intent, especially in the case of a recount. This is not possible with a DRE, even those with VVPATs. • Newer optical scan machines can also generate a digital cast ballot image that can be used for auditing, with the original paper ballot used as backup.	• DREs can come with a VVPAT that allows the voter to verify that his vote was recorded correctly. VVPATs also provide a paper record for post-election audits and recounts. • Many older DREs do not come with a VVPAT. However, some election technology vendors can retrofit equipment with VVPAT printers.

Costs

The original purchase price of an election system is only one element of the overall cost. Additional costs for transportation, printing and equipment maintenance must be considered in the total cost of an election system. Costs vary widely depending on the number of units needed, vendor selection, and whether or not maintenance is included in the package, so costs listed here are only estimates.

Number needed and cost per unit

• Precinct optical scanners: at least one per polling site. Estimated costs range from $2,500-$5,000. • Central count optical scanner: at least one per central counting location. Estimated costs range from $70,000-$100,000. These can prove most cost-effective in large jurisdictions.	• Sufficient machines must be provided to keep voter traffic flowing. Costs range from $2,500-$3,000 per unit, and peripherals such as VVPATS and accessibility features may be extra.

Transportation

• Transportation costs must be considered for DREs and precinct optical scanners since they must be deployed to polling sites from central warehouses.

• Transportation is not necessary for a central count scanner.

Printing

• Paper ballots must be printed. If there are several different ballot styles and/or language requirements, printing costs can add up. Costs for printing ballots are estimated at 35 cents to 65 cents per ballot. • Some jurisdictions use ballot-on-demand printers that allow jurisdictions to print paper ballots with the correct ballot style as needed and avoid overprinting.	• Most DREs can provide as many different ballot styles and languages as necessary; no printing is required.

Maintenance

• Precinct optical scanners: annual maintenance estimated at $100-$200/unit. • Central count scanners: annual maintenance estimated at $2,000-$3,000/unit.	• DREs: annual maintenance estimated at $100-$200/unit. As equipment ages, maintenance costs rise.

Election Night Reporting

The extent to which election results are reported with expediency and accuracy on election night.

• Precinct optical scanners (and DREs) keep a running total of results throughout the voting period, although the tally is not made public until after polls close. At that point, election officials can obtain and report results quickly. • Central count optical scanners can delay election night reporting since paper ballots first have to be returned to the central count location and then run through the scanners.**[ii]**	• DREs (and precinct optical scanners) keep a running total of results throughout the voting period, although the tally is not made public until after polls close. At that point, election officials can obtain and report results quickly.

i *Post-election audits verify that voting systems (either DREs or optical scan) are accurately recording and counting votes. Not all states conduct post-election audits and the process varies in those that do, but typically a hand count of paper records from randomly selected precincts is compared to the totals reported by the DRE or optical scan system. If a recount is necessary, many states also conduct a hand recount of the paper records.*

ii *Central count optical scanners typically count 200 to 500 ballots per minute.*