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Electronic Poll Books:
Policy Analysis & County Survey Results

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Introduction to Electronic Poll Books and State Policies

The poll book is the primary resource for administering elections at the polling place. At its core, the poll book serves three primary functions: to check eligibility, record voter activity, and establish an audit trail. Electronic poll books, also known as e-pollbook solutions (EPBS), bring the traditional paper poll book into the digital era. An EPBS is typically hardware, software or a combination of the two that allows elections officials to review and/or process voter information during an election. This software or hardware is used in place of paper-based poll books, which are typically three-ring binders. Often, the functions of an EPBS include voter lookup, verification, identification, precinct assignment, ballot assignment, voter history update, and other functions such as name change, address change and redirecting voters to the correct voting location.

Where the system is deployed, it has both consolidated broad data (from entire city, county and/or state) into usable information at a polling place and has replaced a paper-based system or complemented the paper processes. This consolidation has replaced or supplemented many manual processes such as telephone calls, from a precinct back to the local or regional board of elections and other tasks previously carried out by staff. Normally, the information handled by an EPBS is publicly available information.

Problems associated with e-voting have been identified over the past few years and hundreds of elections have been impacted by malfunctions. For example, 125 incidents occurred in the 2004 general election, which have disenfranchised voters and called the results of electronic elections into question. In some cases, paper backup was available, and election officials were able to determine the voters' intent. In other cases, there was no paper backup, and localities have either certified the elections anyway or conducted a second election to replace the first.

Ten common problems regarding EPBS elections are: 1. Electronic voting machines lose ballots, 2. Electronic election equipment inexplicably adds ballots, 3. Tabulation software subtracts votes after the absentee tally hits a certain number of votes, 4. Votes jump to the opponent on the screen, 5. DREs (Direct Record Electronic) provide incorrect ballots, 6. Election-specific programming miscounts votes, 7. DREs break down during the election, 8. Electronic voting machines fail to start up, 9. Registration data transmission fails, and 10. Memory cards and smart card encoders fail.

In 2006, at least two vendors had problems with EPBS, including Diebold in Maryland in September 2006¹ and Sequoia Voting Systems in Denver, Colorado in November 2006². However, election equipment is more accurate and reliable nowadays because it has to pass a rigorous testing and certification process before it is used in an election. As technology continues to improve, EPBS have grown in popularity as an alternative to cumbersome paper-based poll books. For example, in January 2014, the City of Chicago reached an agreement with Election

¹ Forst, M. (2006, 9/13). *Maryland Election Glitches Prompt Investigation*. Retrieved from FOX NEWS: <http://www.foxnews.com/story/2006/09/13/maryland-election-glitches-prompt-investigation/>

² Human, K. (2006, 11/13). "Shocking" election omission, *VOTER-VERIFICATION CAPACITY NEVER TESTED*. Retrieved from THE DENVER POST: http://www.denverpost.com/news/ci_4668163

Systems & Software to provide more than 2,100 ExpressPoll voter check-in and verification devices to support the city's 1.6 million registered voters³. The EPBS system was first used in Chicago's 2014 primary elections.

E-Pollbook Activities and Trends in the Midwest

1. Iowa

Cerro Gordo County began investigating the use of EPBS in 2009 due to troubling observations from the November 2008 election (which will be further discussed later). Election officials noticed that poll workers had difficulty in navigating Iowa's increasingly complex election procedures. This challenge was further compounded by the fact that most poll workers only work two to four times per year, so opportunities to put training into practice were limited.

In 2009, Iowa started using EPBS as part of a pilot study in Cerro Gordo County. By the end of 2010, approximately 40 counties were using the first State-built EPBS. Iowa has built and utilizes two EPBS: one managed by a consortium of counties, the other by the Iowa Secretary of State's office. Currently, over half of the state's 99 counties are using one of the two systems. The State provided financial incentives to the counties to use EPBS. Initial costs were relatively modest and ongoing costs are minimal. The Iowa Secretary of State predicts 70 counties will be using one of the systems by the 2014 fall elections.

Iowa initially experienced some resistance to the idea of using EPBS from poll workers, primarily from those with limited experience with computers. To address this concern, Iowa used small group training classes focused on teaching poll workers basic computer proficiencies, such as how to navigate with a mouse or read the EPBS screen.

2. Michigan

The State of Michigan also decided to build their EPBS from scratch. It started the project in 2005-2006, but a full commitment to the project did not begin until 2008. The State purchased the initial equipment for jurisdictions that decided to use the EPBS using federal funds provided by the Help America Vote Act (HAVA), but ongoing maintenance and replacement costs are borne at the local level. Michigan had funding available primarily because it already had a statewide voter registration system in place when HAVA was enacted. Approximately 80% of jurisdictions are now using the EPBS, including almost all of the largest jurisdictions.

Michigan estimates that it pays about \$600 per laptop computer and costs for development of the EPBS system were less than \$100,000. State and local officials are very pleased with the system, particularly because it is tailored to their needs. It has generally improved efficiency at the

³ Kershner, V. (2014, 4/16). *After Primary Election Success with Electronic Poll Books, Chicago and ES&S Look Ahead to November*. Retrieved from SAN FRANCISCO CHRONICLE

polling place and saves local election officials significant time by allowing for upload of voter participation directly into the statewide voter registration system.

Michigan officials report that, while some poll workers were initially hesitant about the EPBS, they have become comfortable with the use of the new technology, and now would resist going back to paper poll books. Like Iowa's system, the Michigan EPBS include on-screen instructions that guide the poll workers through the process, based on state laws. Michigan officials also noted that they feel that current commercially-available EPBS products are too generic and require considerable work to link with their statewide voter registration system. They emphasized that, despite representations made by some vendors, EPBS are not just "plug and play" systems. Vendor delivered EPBS require significant effort to initially configure and deploy, as well as additional effort to update as election laws and procedures change.

3. Ohio

Ohio is considered a "bottom-up" state, meaning that each county operates its own voter registration system, which in turn integrates with the statewide registration system. This decentralization applies to many aspects of election administration in Ohio, including the use of EPBS. Individual counties can choose to purchase an EPBS, but must then integrate it with their voter registration system. Currently 12 out of 88 Ohio counties are using EPBS. The City of Dayton is the largest municipality using EPBS at all polling places. The City of Cleveland has conducted a pilot and plans to implement EPBS before the next election.

Counties can select from any vendor, but the most popular system in Ohio has been the ES&S ExpressPoll system because of its synergy with ES&S-supported voting equipment. Also, as Ohio requires voter photo identification, election officials also appreciated the ability to swipe the magnetic strip of the driver license through a card reader to quickly and easily identify the correct voter record.

Thus far, the State of Ohio has not been involved in the purchasing, development, or management of EPBS. However, a recent state law now requires the Ohio Secretary of State's office to certify EPBS and the State is beginning the process of developing these certification standards.

The counties using EPBS have generally been very satisfied with them. Election workers overall have also been supportive after they have familiarized themselves with the new system. Ohio also tries to use its high school and college student election workers whenever possible to set up the EPBS to ease the burden on election workers who are less comfortable with new technology.

Results of County Auditor Survey

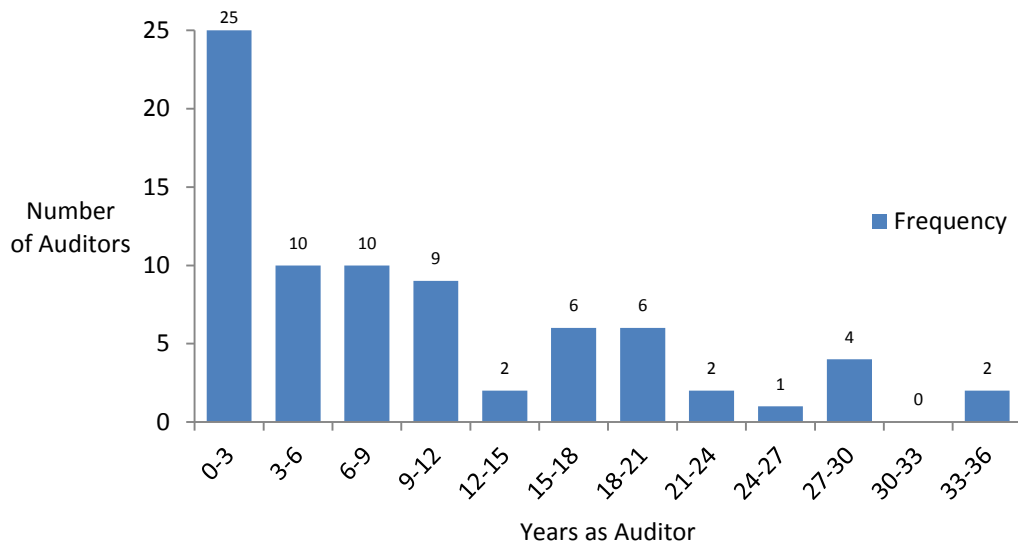
A survey on EPBS was sent to all County Auditors by the Office of the Secretary of State in April 2015. The survey was completed by 80 out of 87 counties for a response rate of 91.95%. Ramsey County responded twice bringing the total responses to 81; any duplicate or conflicting

data occurring within these responses will be noted in individual questions below. 2010 US Census population data has been included as an additional variable in three questions to further analyze responses based on county size. The seven counties, including population, not responding to the survey are: Becker (32,504), Clearwater (8,695), Itasca (45,058), Mower (39,163), Norman (6,852), Todd (24,695), and Wright (124,700).

Q1: How long have you been Auditor?

Of the 77 responses, the mean length of tenure is 10.0 years and the median length of tenure is 8.0 years. The difference of -2.0 years between the mean and median indicate the mean is amplified by those with very long tenures; there are 12 Auditors who have been in their positions for 20+ years, with two having been in position for 33+ years.

Chart 1. Distribution of Minnesota County Auditor Tenures



Q2: Did your county participate in the 2014 pilot?

Of the 80 counties responding, six participated in the 2014 pilot, a 7.5% participation rate. Of the counties not participating, the top reasons for doing so are: cost, staff, internet access, and time.

Table 1. Reasons Counties Did Not Participate in the 2014 Pilot

Reason Identified	#
Cost	20
Staff	10
Internet Access	9
Time	8
Not Interested	5
Unaware of Program	5

Small County	4
Uncertain of Products/Technology	4
Not in Office	4
Election Judges	3
Mostly Mail Precincts	3
Resources	3
New to Position	3
Training	2
Vendor Issues	2
Recent Upgrade	2
County Pulled Out (product)	1
County Pulled Out (vendor)	1
Lack of Need	1
Not Required	1

One interesting characteristic of the participating counties is that all are in the upper quintile of counties in terms of population, meaning only large counties participated. There is no data on why the counties chose to participate, but the fact remains: only the largest counties chose to participate in the optional pilot program.

Table 2. Counties that Participated in the 2014 Pilot

County	Population (2010 Census)
Blue Earth	64,013
Crow Wing	62,500
Dakota County	398,552
Hennepin County	1,152,425
Ramsey	508,640
St. Louis County	200,226

When asked to describe their individual experience with the pilot, the counties identified positive voter and election judge reactions, varied experiences and expectations regarding vendors and system implementation, and issues with data management and technology integration. To see the full responses provided by each county, see Appendix A.

- Blue Earth County stated that both election judges and voters liked the new system, but there were technology issues with uploads, including the Election Day upgrade, and Election Day registrations.
- Dakota County echoed the positive user experience by both election judges and voters, citing that most election judges adapted readily to the devices. Alternatively, the pilot had high costs, problematic software, and an underprepared vendor, despite ample lead time, that did not follow the OSS’ report on both input and outputs, ultimately providing

a software that was essentially ‘off the shelf’ and not well suited to Minnesota; software issues included functionality for provisional ballots, Election Day registration, the inclusion of firearm licenses as acceptable ID, and retrieving data after the election.

- St. Louis County experienced issues with printing at sites, stated the pilot was limited by the inability to accept electronic signatures, and had issues in planning and execution due to sporadic and unclear communications from the OSS.
- Crow Wing County cited very good voter reaction and that all voters and poll workers found the technology easy to use. There were technical issues with the software, which had been updated only days before the election and not well tested, an issue with new registrations, and that the process was hampered in one polling place due to poor internet reception. The upload process went smoothly, but still required trouble-shooting from the vendor.
- Ramsey County used the Poll Pad solution which uses an Apple iPad. This was cited as beneficial because no extra peripherals were required beyond the iPad and a Bluetooth connected printer. Ramsey County varied its implementation of Poll Pad at various sites, having dedicated devices at some and universal devices at others. Two criticisms of the software were repeat data entry for Election Day registration and data processing for Election Day registrants and aggregate vote management. The County provided a survey for voters, with responses including that voters liked the ease of check in, enjoyed the technology, worried about security, some preferred paper, and some did not trust the work being done.
- Hennepin County allowed individual jurisdictions to participate in the pilot, also allowing them to choose their vendor. The County facilitated the process and worked to ensure that ample preparation was completed prior to Election Day. The County echoes Ramsey County’s feedback on Poll Pad, citing the future use of electronic signatures as a step that would expedite the process. The County, and specifically the City of Minnetonka, had a positive experience with uploading and updating rosters, and recommended being able to print a receipt showing proper polling place for a voter who comes to the wrong location. Hennepin County also reviewed VOTEC-VoteSafe, citing increased peripherals and technology hardware and the complexity of setup. The County stated that uploading and updating data was a tedious process without using secure internet connection as SVRS reports needed to be uploaded into the VoteSafe Management System and subsequently transferred to individual devices by USB drive. Prior to full adoption, the County recommends that the OSS complete SVRS load and stress tests to ensure the system can handle uploads and connections from the 400+ precincts (in Hennepin County) at one time. According to the County’s voter survey results, voters overwhelmingly prefer EPBS over paper rosters, and agree that the speed of check-in was increased. Note: the County provided a full write up of their experience and the full case is included in Appendix A.

Q3: Whether or not you used e-poll books previously, do you foresee using them in the future?

Table 3: Do Counties Foresee Using e-Poll Books in the Future

	#	%
Foresee Using in Future:	48	60.0%
DO NOT Foresee Using in Future:	30	37.5%
No Response	2	2.5%
TOTAL:	80	100.0%

Note: 81 Total Responses, one duplicate Ramsey County 'yes' response removed

Regardless of whether or not they have used EPBS, 60.0% of counties foresee using them in the future. Further analyzing the data by population, there is a distinct pattern in how counties answered this question. County responses were divided into quartiles and quintiles to examine if county population had an impact on the response, and both analyses show a positive correlation between county size and a 'yes' response to the question. This analysis shows that as county size increases, its proclivity to use EPBS also increases. In reviewing the barriers to adoption, this trend helps show that the barriers other than cost may be more the concerns of smaller counties rather than large counties.

Table 4A: County Population and Future e-Poll Book Use (by quartile)

Frequency Row Pct	Yes	No	Total
1st Quartile	8 40.0%	12 60.0%	20
2nd Quartile	10 52.6%	9 47.4%	19
3rd Quartile	13 68.4%	6 31.6%	19
4th Quartile	17 85.0%	3 15.0%	20
Total	48 61.5%	30 38.5%	78 100.0%

Table 4B: County Population and Future e-Poll Book Use (by quintile)

Frequency Row Pct	Yes	No	Total
1st Quintile	5 31.3%	11 68.8%	16
2nd Quintile	10 66.7%	5 33.3%	15
3rd Quintile	8 50.0%	8 50.0%	16
4th Quintile	10 66.7%	5 33.3%	15
5th Quintile	15 93.8%	1 6.3%	16
Total	48 61.5%	30 38.5%	78 100%

Of the 37.5% who do not foresee using them in the future, 2/3 identified cost as a barrier to adoption. The second most cited barrier is internet access, which ranges from towers in the area to internet connectivity in specific buildings; 24.3% of this group identified internet as a barrier. In reviewing the barriers to adoption and the population impacts on county responses, the reasons cited may have more fiscal impact on smaller counties where resources, infrastructure, and population densities are not an asset relative to median and larger counties.

Table 5: Barriers to Adoption to Future Implementation

Barriers to Adoption	#
Cost	20
Internet	9
Geography	4
Justification	4
Election Judges	3
Technology	3
Uncertainty	2
Mail Ballot Precincts	1
Need more information	1
Population	1

Q4: Would you only use e-poll books if required by statute?

There were 79 total responses to this question, but Ramsey County’s responses were removed as they replied both ‘yes’ and ‘no’. Of the remaining 77 responses, 41 counties indicated they would only use EPBS if they are required by statute, which is 53.2%. Similar to question three, cross tabulations were created to analyze the impact of population on responses. Similar to question three, the quartile and quintile comparisons yielded similar results, though this time in the opposite direction: there appears to be a negative correlation between county size and the proclivity to answer ‘yes’ to using EPBS. In this case as population size increases the response

rate for ‘yes’ decreases, which means that smaller counties are more inclined to adopt EPBS only if required by law, whereas larger counties are more inclined to adopt the technology regardless of statute.

Table 6A: County Population and Adoption Only by Statute (by quartile)

Frequency Row Pct	Yes	No	Total
1st Quartile	15 75.0%	5 25.0%	20
2nd Quartile	13 68.4%	6 31.6%	19
3rd Quartile	8 42.1%	11 57.9%	19
4th Quartile	5 26.3%	14 73.7%	19
Total	41 53.2%	36 46.8%	77 100.0%

Table 6B: County Population and Adoption Only by Statute (by quintile)

Frequency Row Pct	Yes	No	Total
1st Quintile	13 81.3%	3 18.8%	16
2nd Quintile	8 53.3%	7 46.7%	15
3rd Quintile	11 68.8%	5 31.3%	16
4th Quintile	7 46.7%	8 53.3%	15
5th Quintile	2 13.3%	13 86.7%	15
Total	41 53.2%	36 46.8%	77 100.0%

Q5: Other states using e-poll books have generally used the following approaches to implementing e-poll books. Which of these would be acceptable to you (check all that apply)?

There are four options in choosing how to implement EPBS that were surveyed:

- The state selects a single technology for distribution
- The state approves a small list of vendors and counties pick from the list
- Counties are left to decide within certain constraints
- The state or counties develop their own technology for distribution (Iowa model)

When looking at the options deemed ‘acceptable’ by counties, there are two preferred options: *single technology* and *list of vendors*. As table 7 shows, these two were chosen about twice as frequent as the other two options. This table suggests that a single, statewide technology or a state-approved list are preferred to allowing counties to choose or the Iowa model.

Table 7: e-Poll Book Implementation: Individual Choice Comparison

	Single Technology	List of Vendors	County Chooses	Iowa Model
Total:	45 58.4%	50 64.9%	18 23.4%	18 23.4%

Notes: 78 total responses, one duplicate Ramsey County response removed. In analyzing the percentages, 58.4% should be read as “58.4% of counties indicated that a single technology was acceptable.”

More closely, the data in table 8 shows that the three largest responses are *single technology* (17), *list of vendors* (15), and a combination of either *single technology or list of vendors* (18). Together these three responses account for 64.9% of responses, which supports the findings in table 7. Further, 88.5% (69/78) of all counties responding included either *single technology* or *list of vendors* in their approved response(s).

Because counties were able to choose more than one answer, table 8 shows the distribution of counties choosing each option as a singular solution or including it as acceptable. This table also accounts for population variances by dividing the data into quintiles. Unlike the previous two questions, there is no apparent relationship between population and the implementation methods chosen.

Table 8: Distribution of Acceptable Answers (by quintile)

	1	2	3	4	12	13	14	23	24	34	123	124	234	1234
1st Quintile	6	1	2		3			2	1			1		
2nd Quintile	2	5		2	6									
3rd Quintile	6	3			2	1	1	1		1				1
4th Quintile	3	3		1	4		1	1			1	1		
5th Quintile		3	1		3				1	1			2	4
Total:	17	15	3	3	18	1	2	4	2	2	1	2	2	5
	38				39									

*Note: In reading this table, the numbers across the top represent the possible combinations of responses, where 1=single technology; 2=list of vendors; 3=county chooses; 4=Iowa model. The numbers at the bottom represent the total counties that chose a single method (38) and those that chose multiple methods (39).

Q6: Rank the choices in order of preference

Counties were asked to rank the four implementation options in order of preference, and there were 63 total responses. As table 9 shows, *single technology* and *list of vendors* are preferred as the first or second choice, with 49.2% (31/63) choosing *list of vendors* as their first choice, followed by 38.1% choosing *single technology* as their second choice. This data continues to support previous data indicating county preference for these two choices.

Table 9: Ranked Choice Implementation Frequency

	Single Technology	List of Vendors	Counties Choose	Iowa Model
First	19	31	7	6
Second	24	15	10	14
Third	10	16	22	15
Fourth	10	1	24	28

Note: Table shows the distribution of rank (1-4) that each choice received with top two for each in bold.

Q7: If you have research e-poll book solutions, please list the vendors you have evaluated:
 Counties were asked to list all vendors researched in preparation for the 2014 pilot, their responses have been listed in table 10.

Table 10: e-Poll Book Vendors Researched by Counties

- Vendors Researched**
- Ask ED
 - Decision Support
 - DemTech
 - Election Administrators
 - ES & S
 - Everyone Counts
 - Hart
 - KNOW-Ink
 - Robis
 - SOE
 - VOTEC
 - *All allowed by pilot

Q8: Please provide any additional comments or concerns regarding future use of e-poll books in Minnesota. (All responses have been included in their original form in Appendix B)

Counties reiterated that cost, personnel, training, and technology are the primary concerns related to e-poll book adoption, but also to ongoing usage. The reliability of software, devices, and internet connection may require additional staff, even if the hiring occurs only every other year. This cost burden and connectivity would need to be addressed before more rural areas could successfully adopt e-poll book technology. Part of the reliability issue around software development and usage is the ease of operation, especially for older election judges,* and the ability to troubleshoot in real time as necessary.

Some auditors stated they were excited to adopt the technology, that it is a logical progression in voting systems and practices, and that it is more efficient and cost effective than current practices. While this may be true for larger counties with the resources to manage the technology, other counties expressed concern about cost and value, indicating that some auditors do not see these efficiencies realized on the same scale as others, meaning the technology may have only a marginal benefit for some counties, or even a negative impact if adoption does not go well.

Vendor concerns and full functionality, like internet access and access to voter information from multiple precincts, are implementation concerns and some counties are worried that limits to technology usage and functionality will limit EPBS' true potential. Many counties will not switch without state statute, but if it became a requirement, increased leadership and coordination from the OSS and initial and ongoing funding and support will be needed; it will be important not to put counties in the position of not being able to afford it, especially as some counties are scheduled to update their current voting technology soon. The new technology will be high cost, even if it saves money in the long run, but there are hesitations for a one-size fits all technology because of the vast differences in polling places and precincts throughout the state.

*The age of election judges may or may not be an issue, but it was identified by multiple Auditors as a concern and barrier to adoption.

Product Differentiation

The task of evaluating EPBS can be daunting as the majority of products on the market ostensibly serve the same purpose. This is not to say all EPBS are on equal standing, rather, it is small seemingly innocuous differences which decide whether a product is the perfect fit or ill-suited to the needs of a specific jurisdiction. There are two primary distinctions which state and county employees should recognize: hardware and operating system.

- Hardware: contemporary EPBS technology generally falls into three buckets with respect to hardware - netbooks, tablets, and proprietary systems.
 - **Netbooks** - small, powerful laptops generally less than eleven inches in width. Because of their keyboards, rapid manual data entry is easy and almost every user is familiar with the traditional look and feel of a standard computer. Conversely,

because some do not come equipped with cameras or touch screens, this option usually requires additional products to facilitate license scans and signature capture. They are also typically more expensive than tablet or proprietary options.

- **Tablets** - the principal benefit of using a tablet is the simplicity. Touch-screens readily capture signatures and the cameras can quickly scan bar codes on most forms of photo identification. However, as anyone who has used a tablet extensively knows, manual data entry can sometimes be clunky, especially when it must be done quickly and with a high volume. Peripheral products are also limited. One issue, specific to the iPad, is the fact that internal storage cannot be increased. On laptops and Android-based tablets, an SD card can be swapped or removed.
- **Proprietary Systems** - the double edged sword of a proprietary product is that it is unique. As opposed to tablets and laptops, these systems are purpose built to be EPBS which makes them secure and reliable. On the other hand, if a part is defective or is broken, it can only be replaced by the supplier as opposed to an off the shelf product. Also, many people are familiar with Windows, Android, and Apple products. Usually it is only the vendor representatives who will have an intimate knowledge of the product.
- **Operating Systems:** can be broken down into four categories - Windows, Apple, Android, and Proprietary.
 - **Windows** - the Windows operating system boast two primary benefits. First, the software will receive security updates until 2023 giving the software a long shelf life. Second, because it is the most commonly used operating system on the planet, the amount of peripheral products available is large. Because of Windows' ubiquity, there is also more malware in circulation targeted to the Windows OS.
 - **Apple** - the biggest selling point for Apple is the security of iOS. iOS has consistently been ranked the most secure OS for phones, computers, and tablets. It is also very familiar to most users. And, for those who have not used an Apple product, they are intuitive and easy to use. However, the OS does require frequent updates and new OSs are not necessarily backwards compatible with old software.
 - **Android** - only for tablets, the Android OS is quickly becoming a staple of mobile computing. As its market share grows so do the amount of compatible products. It is open source, meaning developers can customize it to each device. Because of its high degree of customizability, it is viewed to be less secure than iOS.
 - **Proprietary** - as with hardware, a proprietary OS is a double edged sword. It is custom built to manage voter data, but has less of an established support community than do the other three options. Future OS or security updates will need to come directly from the vendor.

Survey of major vendors and products

- Manufacturer: Robis Elections Inc. - Wheaton, IL
Product: AskED ePollbook
Contact: Sam Strum - sstrum@robis.net - (630) 752-0220
-

Overview: The AskED ePollbook operates on a Windows 8 platform utilizing unique software which can be installed on several tablet-based hardware options. The software is customizable to reflect state election laws and can be configured by the customer. The device uses optical scans (as opposed to magnetic stripe technology) to import information from photo identification and requires no peripheral products. The touch screen allows for voter signatures and relies on a series of ‘yes’ or ‘no’ prompts to guide the operator through voter verification. Devices can communicate both via WAN connections (air cards, etc.) and peer-to-peer. The former allows devices to communicate real time to a central server and the peer-to-peer option facilitates communication between devices at a polling place to prevent voter fraud or human error. If polling sites allow connectivity, Robis products can report vote center wait times, voter turnout, and other metrics through its Command Center software. Currently, Bernalillo County (Albuquerque area) in New Mexico utilizes real time wait estimates for voters.

- Manufacturer: Hart InterCivic Inc. - Austin, TX
Product: Hart ePollBook
Contact: Justin Morris - j.morris@hartic.com
-

Overview: The Hart ePollBook is a series of products that operate as a system. This includes; a netbook, driver’s license card scanner (magnetic stripe), label printer (with two label rolls), form templates, and a carrying case. Because the netbooks are running on a Windows platform and do not use proprietary hardware, peripheral products (e.g. signature pads) can be purchased commercially (though testing and verification is advised). The netbooks currently ship with Windows 7 preprogrammed, though Hart InterCivic will soon be making the transition to Windows 8. All state and local regulations are designed into the interface and navigation is based on responses to ‘yes’ or ‘no’ prompts. Because of the openness of the products, a high degree of customization is possible which can accommodate many scenarios including same day registration. Hart InterCivic has experience in the midwest and is the approved solution for South Dakota.

- Manufacturer: Election Administrators LLC - St. Louis, MO
Products: EA Pollbook & EA Tablet
Contact: Martin White - martinw@eavote.com
-

Overview: Election Administrators’ two primary products are the EA Pollbook and the EA Tablet. While they both serve as EPBS, they differ in a few important ways.

EA Tablet	EA Pollbook
Tablet	Netbook
Android operating system	Windows operating system
Barcode optical scan	Magnetic stripe & barcode optical scan
Touch screen	Signature pad
Software constraints	Software upgradable
Standalone device	Multiple products

Both products are successful for Election Administrators, though the market is trending toward tablet systems as they are cheaper and serve as a standalone solution. Election Administrators LLC currently operates in 14 states and over 180 counties.

- Manufacturer: VR Systems, Inc. - Tallahassee, FL
Product: EViD Station
Contact: Dale Woodruff - dwoodruff@vrsystems.com
-

Overview: The EViD Station differs from other products mentioned here in that it is a completely proprietary system - it is not based on a tablet or netbook. Rather, it is a small device with a large touch-screen mounted on the front coupled with a built in magnetic stripe reader; there is no camera for optical scans. The EViD station is capable of handling early voting and can incorporate those records into Election Day data. The stations may also connect wirelessly on Election Day to ensure no voters attempt to vote twice. It will also alert those who are in the wrong polling place.

- Manufacturer: Election Systems & Software, LLC - Omaha, NE
Product: ExpressPoll-5000
Contact: Mark Radke - mgradke@essvote.com
-

Overview: The ExpressPoll-5000 is another example of a proprietary system not running a Windows, Android, or Apple OS. Similar to the EViD Station in that it is a small device with a large touch-screen mounted on the front. It differs in that it employs a

camera for optical scans of barcodes on licenses. It uses an attached signature capture pad for signature verification. ExpressPoll-5000 can also handle early/absentee voting which is incorporated to Election Day data. Currently 15,500 ExpressPoll-5000s are in use nationwide. ExpressPoll-5000 is used by Maryland and Georgia statewide and in several counties throughout Ohio.

- Manufacturer: KNOWiNC - St. Louis, MO
Product: Poll Pad
Contact: (855) 765-5723

Overview: KNOWiNC's Poll Pad is unique on this list as it runs on the Apple iPad. The capability of the iPad allows Poll Pad to produce sophisticated real time reporting metrics on voters, poll workers, and results. There is even a function which will wipe sensitive information and format results for media outlets reporting on elections. Moreover, because of the ubiquity of the iPad, there is less of a learning curve or "intimidation factor" that may attend other types of hardware. The Poll Pad boasts an extremely secure operating system in iOS which received the strongest rating from the federal government. The downside is that the iOS requires frequent updating and can run into issues of backwards-compatibility. The Poll Pad was used in Crow Wing County for the 2014 election.

Indiana Certification Model

Whether a state chooses to certify only one vendor, or several, an established certification process is fundamental. Though there are several state-based criteria for evaluation and certification, Indiana has established an Electronic Poll Book Certification Test Protocol that has received national recognition. The protocol was developed in partnership with the Voting System Technical Oversight Program (VSTOP) at Ball State University which advises the Indiana Secretary of State and the Indiana Election Commission. Since July 1, 2013, Indiana has required VSTOP certification of all EPBS to be used at vote centers. For the purposes of certification, Indiana defines an EPBS as "the combination of mechanical, electromechanical, and electronic equipment (including the software, firmware and documentation required to program, control and support the equipment) that is used to access and maintain the electronic poll list."

The certification process is prescribed by the VSTOP program but carried out by independent testing centers. Testing labs must be accredited by the federal Election Assistance Commission (EAC) or a testing lab approved by the VSTOP. Vendors seeking certification in Indiana bear all costs associated with testing and must successfully pass all components of the certification process before their products may be considered eligible for use in Indiana. The certification process involves three phases in which each phase is dependent on completion of the previous phase:

1. **Administrative Review** - The initial phase requires the vendor to submit an application to VSTOP for evaluation. If the application is deemed to be complete and correct, VSTOP will submit the E-pollbook Certification Checklist to the vendor which establishes basic vendor and product information⁴. Once the checklist has been approved, VSTOP will request the EPBS be submitted to a U.S. Election Assistance Commission (EAC) accredited testing lab or a testing lab chosen by the vendor and approved by VSTOP.
2. **Functional Configuration Audit (FCA)** - Upon delivery of the EPBS the testing center will inspect the delivery of the product for damage and catalogue all configuration items. The lab will then set up the EPBS and perform the test case identifier “TCI 13 Functional Configuration Audit⁵.” Successful completion of TCI will trigger phase three.
3. **Telecommunications/Compliance Testing** - To meet the telecommunications requirements, specific tests⁶ have been developed that focus on the ability of the EPBS to transmit and receive data electronically and communicate with the poll list serve. Passing this phase will be considered successful completion.
 - **Test Data** - Each of the three phases outlined above contain objective pass/fail criteria. Criteria are provided to the testing center by VSTOP and each phase is conducted independently in the order assigned.
 - **Acceptance Testing** - After certification each county which has contracted for the EPBS conducts an acceptance test at the time of delivery. This test is to ensure the ability of the EPBS to communicate with the county server to download and upload appropriate data. Certification may be revoked if the product fails the acceptance test.

While Indiana’s model works well for states interested in employing existing vendor technology, it is not the only option available to states. In Iowa, an EPBS was developed by the state, for the state. It has been a largely successful endeavor and is explored below.

Iowa’s EPBS Model⁷

Iowa’s Precinct Atlas *election management solution* was developed in Cerro Gordo County following the 2008 general election as a response to difficulties observed in polling places with new, and more complex, statutory requirements, including Election Day Registration.

⁴ Available at http://www.in.gov/sos/elections/files/VSTOP_October_31_test_protocol.pdf (page 18)

⁵ Ibid (page 25)

⁶ Ibid (page 29)

⁷ Special thanks to Cerro Gordo County Auditor Ken Kline for his contributions to this section.

On Election Day in 2008, Cerro Gordo County Auditor Ken Kline stopped at one of his precincts on his way home and observed new voter processing complexities causing serious problems, delays and frustrations for poll workers and voters. Iowa had patterned its new Election Day Registration (EDR) program on Minnesota's system, but was still bound by the Help America Vote Act (HAVA) law to grant provisional ballots in some cases for those not in the registration rolls. Depending on the scenario (e.g. registered in another location, same day registration), prospective voters fell under different sets of requirements for identification and paperwork.

These additional requirements were observed by Kline to be unworkable, and unsustainable, for many of his precincts. For example, when asking his peers in other counties how often they felt provisional ballot envelopes were completed exactly according to statutory requirements, the answer was frequently, "almost never." Kline believed some type of solution must be implemented before the next election in Cerro Gordo County.

His initial response was to investigate EPBS vendors and in the weeks following the 2008 election, he and his staff viewed demonstrations of multiple solutions. After leaving one demo, Kline commented to his coworker, "these [products] don't even get us to first base." He consulted with county IT staff and they commenced the specification and development of an election management system tailored specifically to meet the needs of Iowa's voters and election workers. This system became The Precinct Atlas©.

Precinct Atlas is designed to provide election workers easy to follow, yet comprehensive, steps that walk through the various scenarios Iowa voters present when attempting to cast ballots. It has yielded significant improvements in voter processing accuracy and efficiency.

The Precinct Atlas solution's primary goal was the correct processing of Iowa voters under a complex and varied set of laws and requirements. For the solution to achieve this goal, however, it had to be to be easy to use – even by those with little or no computer experience. Significant barriers to learning and using the application would negate any efficiencies gained by more accurate voter processing.

Before Precinct Atlas, the reality was, "Across the state, one of the results of the new EDR duties was that the precinct officials, despite their best efforts, filled out forms incorrectly or incompletely, filled out the wrong forms, or failed to obtain the required signatures. Another result was that, in an effort to avoid errors, they unnecessarily required many voters to cast provisional ballots or go through the extensive EDR procedures, when a simple change-of-address or proof of identity may have been all that was required for a particular voter."⁸

⁸ *The Precinct Atlas © Cerro Gordo County.* Iowa State Association of Counties 2010 Excellence in Action Awards <http://www.iowacounties.org/wp-content/uploads/2013/06/EIA-Award-Nomination-Precinct-Atlas.pdf>

In cases like those described above, an election worker using the Precinct Atlas application could quickly and easily determine the accurate registration status of the voter and direct their processing requirements accordingly. An original screen mock-up of the form used to confirm (or change) a voter’s address can be seen in **Figure 1**, and additional forms can be found in Appendix C.

Voter Name: LARRY A WARNER

Address

“What is your current address?”

936 S YORK CT
MASON CITY IA 50401

Voter's address is correct

Update the voter's address

Picked the wrong voter

Voter in wrong precinct; will leave to go to correct precinct

Figure 1 Address is confirmed and the voter is notified he is in the wrong precinct.

The immediate response of initial users was that Precinct Atlas was easy to use and comprehensive, even for those with limited technical experience, thereby allowing it to be adopted quickly, within Cerro Gordo County, and ultimately across the state.

Mr. Kline was not aware of actual data that quantifying processing speed improvements, but anecdotal observation and feedback showed that it definitely did not slow the process down (as some auditors initially feared), or the adoption would not have been as successful and accelerated. Rather, the true outcome was the ability to process voters in a far more accurate manner, with fewer mistakes and less rework.

The Precinct Atlas was adopted by over 40 Iowa counties within the first year of its public release. 57 counties currently use Precinct Atlas, despite Secretary of State Matt Schultz (2011 – 2015) withdrawing state support and developing an alternative application.

Cerro Gordo County demonstrated their program in late 2008 to Secretary of State Michael Mauro. That outreach ultimately led to a collaboration in which Cerro Gordo County continued to maintain and enhance the Precinct Atlas software, while the Secretary's office provided a number of other support activities, including⁹:

- Purchasing a license to distribute the software and providing it for free to interested counties
- Streamlined data exports from I-VOTERS (statewide voter registration database)
- Sponsored training and installation events
- Updated required election forms to better accommodate Precinct Atlas printed label output
- Created an import process to pull Precinct Atlas data for post-election purposes
- Coordinated equipment purchases for Precinct Atlas deployment
- Provide additional maintenance and support to users of the software

This state/county collaboration allowed for the rapid adoption and enhancement of Precinct Atlas during its inaugural years.

In 2010, Matt Schultz was elected as Iowa's Secretary of State. Much of his tenure was marked by major investigations into alleged voter fraud in Iowa. In addition, Schultz was a strong champion of photo identification requirements at the polls, though no such legislation has been passed in Iowa.

In addition, Secretary Schultz essentially withdrew state support of the Precinct Atlas election management system. At various times he advocated for state control of the application, spoke of the possibility of legal action against current users, before ultimately settling on withdrawing financial support. Schultz consequently used state resources to create a new Iowa Express Voter system, which is provided to counties free of charge. One of the selling points of the new system was the option to scan certain forms of Iowa identification documents, including driver's license and state ID. Currently, between 10 and 12 Iowa counties use the state system.

Mr. Kline believes the number of Iowa counties using election management systems would currently be even higher, had the Secretary's office continued the level of support offered under the previous regime. Schultz chose not to run for reelection and, during the 2014 campaign, both

⁹ *ibid.*

major party Secretary of State candidates questioned the necessity of competing electronic poll book solutions.¹⁰

When discussing reasons for non-adoption among Iowa counties, Kline mentioned that the smallest, most sparsely populated jurisdictions simply do not experience the same complexity, due to a more stable electorate with less movement etc., and therefore they tend not to justify the investment.

Precinct Atlas is now managed by a consortium of user counties. Usage fees are required, currently \$1500 per county annually, plus \$0.02 per registered voter. Cerro Gordo County continues to maintain the software per agreement with the consortium.

Once state supported was essentially withdrawn, Cerro Gordo County was faced with the prospect of charging users for the software in order to offset expenses incurred developing and maintaining Precinct Atlas. In order to best allow the ongoing support of current and future users, the Iowa Precinct Atlas Consortium was established with members benefitting from the ongoing development and support of the existing software. Cerro Gordo County agreed to continued support and enhancement of Precinct Atlas for an initial period of 4 years. For the years 2014 – 2015, membership fees to the consortium were set at \$1500 per county annually, plus \$0.02 per registered voter. The agreement 28E, outlining participation in the IOWA PRECINCT ATLAS CONSORTIUM, can be found in Appendix D.

Hardware costs for Precinct Atlas have always been borne by the users. The primary configuration is typically comprised of two or more laptop computers with corresponding label printers. The optional capability for barcode scanning of IDs would also require scanner hardware. Estimates of these costs for most Iowa precincts have been made at approximately \$1300. Clinton County, for example, spent \$45,000 buying computers to run Precinct Atlas software at 26 of its 30 polling sites.¹¹

Precinct Atlas continues to evolve. New features added in recent years include the ability to scan IDs to search/retrieve records quickly, the support of *vote center* elections and absentee in person processing. Additional enhancements continue to be explored.

Due the increased focus on voter ID in Iowa political discourse, or perhaps simply for reasons of convenience (or both), precinct officials and auditors frequently observed voters presenting their

¹⁰ *Iowa secretary of state candidates play down voter ID*, June 29, 2014, Des Moines Register. <http://www.desmoinesregister.com/story/news/politics/2014/06/30/iowa-secretary-state-candidates-play-voter-identification-issue/11734215/>

¹¹ *Clinton County auditor hopes to keep election software alive*. Dewitt Observer, February 19, 2011. <http://www.dewittobserver.com/main.asp?SubSectionID=1&ArticleID=6388&SectionID=1>

drivers licenses, or other forms of ID, to poll workers when queuing up to receive ballots. In 2011, the functionality to scan the barcodes on these IDs was added to the Precinct Atlas system.

Secretary Schultz's push for a photo voter ID law in Iowa was rebuffed by the legislature and the public, but the ability to scan IDs has provided some efficiency, and security, benefits and has been adopted by many counties using the system, according to Mr. Kline. When ID scanning functionality was deployed, precincts were careful to note on signage displayed at polling places that the functionality was optional, and that there was no photo ID requirement. Kline acknowledged that some precincts actually direct voters presenting ID to a separate line, or station, for processing – in effect, creating “fast lane” type of functionality, but noted that some other counties have chosen not to offer the scanning functionality at all, presumably to avoid the appearance of any type of preferential, or separate, treatment of voters.

Other Precinct Atlas enhancements include the ability to program the system to handle vote center elections. Voting centers allow people to vote in the location of their choice within their jurisdiction, with the intent of added convenience – they are not required to vote at a single precinct location. Voting center elections are currently limited to local and school board elections in Iowa. Functionality to process in person absentee applications at central county locations has been incorporated recently as well. Current plans for enhancements are focused on expanding the capacity for online or computer-based training modules. The ease of training poll workers and volunteers to use the application has been one of its strengths and this would allow a self-training option.

APPENDICES

Appendix A: Experiences of the Six Counties Participating in the 2014 Pilot

- Blue Earth County
 - We had upload challenges, Election Day upgrade to the software, the Election Day registrations were not working. Voters liked the system, I think most people expect this technology. Election judges really liked them.
- Crow Wing County
 - Voter reaction was very good; process worked very quickly at the polls, voters and poll workers found the technology easy to use and the process was well-received. There were technical and logistical issues with the units themselves in that changes to the software were still being made up until the day or two before the election. We had an issue with new registrations not collecting correctly in the poll books on election day due to an enhancement that was made a day or two before and not well tested. Logistically, because we had limited internet capability (poor reception because of the building interference) in one of the polling places, the upload for the fix on this issue took quite a bit of time. After election day, the upload process went smoothly, but again there were vendor issues that had to be trouble-shot as we worked through the process.
- Dakota County
 - Despite the long lead time, prospective vendors were not ready. They offered off-the-shelf software not well suited to Minnesota Law, (for example, the software contained functionality for provisional ballots, did not contain functionality for election day registration, images of acceptable identification clearly showed firearms licenses, etc.). The pilot vendor decided not to follow the OSS' report specs (on both input and output), citing that they were not what was done in industry. This made providing them with data for upload and then retrieving data after the election much more difficult than it needed to be. The city that participated in the pilot reported high costs and problematic software. They were otherwise satisfied. Election judges and voters sent mostly positive feedback. Most (not all) election judges adapted readily to the devices. We are not aware of complaints from voters.
- Hennepin County
 - Background: Hennepin County met and spoke with multiple poll book vendors during May and June 2014. During this time, vendors demonstrated current product models and functionality much of which was currently in use in other states and jurisdictions. Our initial meetings and demonstrations had a focus on working with vendors to develop a product suitable for Minnesota elections. One particular challenge for vendors is same day registration on Election Day. Minnesota is one of only ten states in the country that allow for same day registration in the polling place. Our goal was to allow interested jurisdictions in Hennepin County the opportunity to see what ePollbooks are capable of and how they can improve processes in the polling place on Election Day. Hennepin County facilitated the ePollbook demonstrations, but ultimately allowed

individual jurisdictions to determine which vendor they preferred to pilot and in how many locations they wanted ePollbooks during the State General Election in November. The City of Minnetonka reached out to a few vendors on their own, utilizing prior relationships with vendors the city has worked with in previous elections. In Hennepin County, vendors that demonstrated ePollbook solutions or reached out to us included: KNOWiNK; VOTEC; SOE; Everyone Counts; ES&S; Everyone Counts; Robis; Hart; and Decision Support. In order to help vendors and help cities evaluate vendors and ePollbook options a 90 day checklist was created. The checklist outlined necessary functionality required by legislation in greater detail in order to make the product development phase of the ePollbook pilot more efficient. During the development phase, functionality that would be beneficial, although not required by statute was also discussed. Vendors made significant efforts to incorporate additional desired functionality into the pilot in 2014. On August 6, 2014, jurisdictions interested in using ePollbooks submitted a Notice of Intent to Use ePollbooks to the Secretary of State's Office. At that time in Hennepin County there were six jurisdictions and twenty precincts interested in piloting ePollbooks during the State General Election in November. Although not required, at that time Hennepin County also asked jurisdictions to indicate which vendor and which ePollbook they wanted to move forward with for 2014. Three vendors were selected: KNOWiNK; VOTEC; and SOE. Throughout August and into September, Hennepin County worked with vendors to continue to develop ePollbook solutions for Minnesota and began to test minimal functionality. Vendors signed confidentiality agreements while Hennepin County set up secure file transfer protocol sites for each vendor as a means to share data used to test ePollbook functionality. In early September the release of SVRS version 5.3 was complete. This release included functionality allowing counties to load data files from an ePollbook into SVRS as a means to post voting history following Election Day for pre-registered voters. This functionality was not available during the 2013 ePollbook pilot. Hennepin County used the SVRS Practice module to test loading files from ePollbooks for pre-registered voters and for voters registering on Election Day. Thirty days prior to Election Day, jurisdictions interested in using ePollbooks submitted Certifications to the Secretary of State's Office stating which ePollbook vendor(s) the jurisdiction would be using during the November election and that the ePollbook solution meets all of requirements in Minnesota Statutes 201.225. At this time, two jurisdictions submitted certification forms: Minneapolis for VOTEC; and Minnetonka for KNOWiNK and VOTEC. Prior to Election Day, vendors worked with jurisdictions to deliver hardware as well as complete train the trainer demonstrations and materials. In late October, jurisdictions conducted training with election judges on ePollbooks in selected precincts. Also, Hennepin County completed pre-Election Day data entry activities and generated files of Election Day voter data. This data was provided via FTP site to vendors and loaded on to ePollbooks as part of the ePollbook preparation process prior to deployment on Election Day.

- (Poll Pad) During the State General Election in November 2014, ultimately one vendor and one type of ePollbook was deployed in two precincts in the City of

Minnetonka; KNOWiNK Poll Pad. The Poll Pad ePollbook solution uses the Apple iPad tablet as its operating system. Poll Pad uses onboard camera technology to scan barcodes on a driver's license or identification card to quickly search for and locate voters within the precinct. Voter signature certificates and Election Day Registration applications are printed from a wireless printer. Bluetooth technology connects the printer to the Poll Pad. This wireless connection and minimal peripherals results in simple and fast setup for election judges in the polling place. Not requiring cords to connect devices allows the Poll Pads to be used at different tables or stations as needed throughout the day and requires minimal table space in the polling place. This compact solution also makes very simple transport to and from the polling place. Poll Pad is capable of processing both pre-registered voters and voters registering on Election Day. From the home screen, election judges have the option to scan a barcode from a driver's license or identification card to search voter records, or manually enter information to search voter records within the precinct. If a registration change or update is needed, or if a new voter record is to be added, election judges access the Election Day registration functionality through the menu button. This set up results in election judges re-typing multiple fields of voter information for voter's completing Election Day registration applications. In future versions, Poll Pad functionality should stem from one point. Specifically, election judges should search for voter records; if found, continue with the pre-registered voter check-in process; if not found or updates are needed, be pushed to the Election Day registration process. This change would increase accuracy and increase the speed of check-ins at the polling place. Once located, a pre-registered voter is checked in within a few seconds. The Poll Pad printer provides a voter signature certificate that is signed by the voter and exchanged for a voter's receipt. In the future, allowing voters to electronically sign the Poll Pad and having the printed electronic signature on the voter signature certificate would increase the speed of the check in process even further. Another alternative for future iterations would be to eliminate the printed signature certificate and instead maintain all pre-registered voter check-in information electronically. Since the process for checking in a new voter or updating an existing voter record requires more data fields to be entered on Poll Pad, the Election Day registration check-in process took longer than the pre-registered voter check-in process. The amount of time the Election Day registration check-in process takes is dependent on if the election judge is updating prior information or if the voter is registering for the first time. Screen by screen, Poll Pad takes election judges through the Election Day Voter Registration application, capturing all fields of the paper application in an electronic format. Election judges electronically initialed the registration application on the Poll Pad. The electronic election judge initials appeared on the printed application. Poll Pad also prints a voter signature certificate exactly as it does for pre-registered voters. Being able to distinguish a voter signature certificate for a pre-registered voter versus a non-registered voter would be a useful enhancement in future iterations. This improvement would create an additional option for election judges to balance statistics after the close of polls. Once data is entered into Poll Pad, printing of voter registration application is

simple and quick, in the future, allowing voters to sign a registration application electronically and also allowing election judges to maintain a record of the voter registration application electronically would reduce the amount of printing done in the polling place, as well as reduce the chance of misplacing a printed voter registration application with other materials. The process of updating polling place rosters with accepted absentee ballot information on Election Day is vastly improved with Poll Pad. KNOWiNK's Central Command allows supplemental reports from SVRS to be loaded and pushed to devices at each polling location within a few seconds. This functionality is invaluable to efficient Election Day management and will continue to be a major factor as absentee voting numbers continue to increase. The City of Minnetonka reported they were able to update absentee ballot information on Poll Pad within seconds and with 100% accuracy. Poll Pad is loaded with a county-wide precinct finder and polling place list. Election judges may use Poll Pad to locate the correct polling location for voters in the wrong precinct by entering a voter's residential address into Poll Pad; however Poll Pad is not able to print this information from Poll Pad. In the future, a receipt with correct polling location information should be available for a voter to take with them.

- VOTEC – VoteSafe: The VoteSafe ePollbook solution is hardware agnostic. In Hennepin County, VoteSafe was tested and trained on both laptop and tablet hardware. VoteSafe requires multiple peripherals in order to check-in and process voters in the polling place on Election Day. Hardware required includes a laptop or tablet, mouse, card swipe reader, Brother QL-700 printer and additional Ethernet cords and hub to allow devices to sync to one another. These items all required connection to a power source. Hardware and peripheral setup is complex and cumbersome resulting in a significant increase in setup time required in the polling place prior to the opening of polls. Also, the setup configuration does not allow for devices to be moved or used at different tables or stations within the polling place throughout the day as needed. Future VoteSafe systems should include a reduced need for peripherals and increase utilization of Bluetooth or wireless technology. The numbers of cords, in addition to setup time, take up valuable table space and cause difficulty interacting with voters. The cords may also be a safety hazard to voters and election judges as people are forced to walk over cords throughout the day. VoteSafe is capable of processing both pre-registered voters and voters registering on Election Day. From the Voter Lookup screen, the first step is to search the voter's information within the precinct. VoteSafe allows for multiple combinations of search criteria to be entered or allows for a driver's license or identification card to be swiped to populate search fields. Once a pre-registered voter is located, the voter verifies their information is correct and the election judge "checks-in" the voter and a check-in label is printed. The election judge then provides the voter with a voter's receipt which the voter exchanges for a ballot. In the future, allowing voters to electronically sign VoteSafe and having the printed electronic signature on the check-in label or voter signature certificate would increase the speed of the check in process even further. Another alternative for future iterations would be to eliminate the printed label or signature certificate and instead maintain all pre-registered voter check-in

information electronically. VoteSafe allows election judges to update a voter's name or address or enter a new Election Day registration. Election judges complete an Election Day Registration application by manually entering data or are able to minimize data entry by swiping a voter's driver's license or identification card. The Election Day registration entry mirrors the fields on the paper Election Day registration application. As different fields are entered the screen updates from a red-tinted incomplete status to a green-tinted complete status. This feature allows election judge to easily identify which fields or data has been entered or what fields or data are still required. VoteSafe includes functionality to verify the voter is in the correct polling location before completing the registration process. If the voter is not in the correct location, VoteSafe identifies the location the voter is to be directed and also prints a correct polling location label for the voter to take. To complete the registration process, the election judge selects check-in voter in VoteSafe and prints two labels. The first label is the standard check-in label (the same label that is printed for pre-registered voters). The second label is the voter registration application label. Using labels for the voter registration application limits the data that can be printed. In the future other label sizes or options should be considered or the option of allowing voters to sign a registration application electronically and also allowing election judges to maintain a record of the voter registration application electronically would reduce the amount of printing done in the polling place, as well as reduce the chance of misplacing a printed voter registration application with other materials. Prior to Election Day, VOTEC continued to have errors between the software and the printed label, in particular related to capturing the type of proof provided by the voter. This part of the Election Day registration process was clumsy and should be re-visited in future iterations of VoteSafe. VoteSafe includes an option for updating devices on Election Day with accepted absentee ballot information. Although, an internet connection for purposes of updating ePollbooks with absentee information is allowed, to minimize additional efforts to establish secure internet connectivity as required by MN OSS and MN IT, no internet connection with VoteSafe devices was established. In order to update ePollbooks with absentee information, supplemental reports are generated from SVRS, loaded into the VoteSafe Management System, and then loaded on thumb drives and manually uploaded to each ePollbook. This is a time consuming and tedious alternative. If an internet connection had been used, once the supplemental reports are generated from SVRS and loaded into the VoteSafe Management System, an update could be pushed from the Management System to each VoteSafe device. A two-way communication would need to be established in order for updates to reach the ePollbooks and for the ePollbooks to indicate if a voter had already voted in-person in the polling place prior to their absentee ballot being accepted.

- Election Day Data: Once rosters are generated in SVRS, data for ePollbook precincts is easily accessible. Pre-registered voter files are generated for each precinct using ePollbooks in a .txt format and provided to vendors or jurisdictions via a secure FTP site. The Real Time File Export continues to update with absentee information after the paper rosters are generated resulting in the option

to generate these files closer to Election Day. For a small election, generating the Real Time File Export by precinct was manageable, however for future jurisdiction-wide or county-wide elections using ePollbooks, one Real Time File Export should be generated and provided to vendors or jurisdictions. If only precinct specific data is allowed in each individual polling location, a setting on the ePollbook or within the software should manage this functionality requirement. Following the close of polls, data from each KNOWiNK Poll Pad is exported and provided to the County via secure FTP site. From the FTP site, the files for pre-registered voters and files with Election Day registration information are loaded into SVRS.

- Pre-registered voter data file export: Voter history files for both Minnetonka ePollbook precincts were successfully uploaded to SVRS and processed. New SVRS functionality allowing users to post absentee voter history for voters with an accepted absentee ballot within a matter of seconds in combination with the ePollbook voter history file for pre-registered voters allowed voting history to be posted for over 2,000 voters within a few seconds. If the voter history data entry process is done manually by scanning individual bar codes from a paper roster, this task would more than one hour. If voter history exports were available for all precincts within Hennepin County, voter history could be completed for pre-registered voters within a few hours. Our current process requires a few weeks to complete this data entry. In the future, vendors have requested the voter history export file only contain information for voters that voted on Election Day as opposed to information for all voters within a particular precinct regardless of if they voted on Election Day. This would decrease the complication of the file and the file size. Another item that should be considered is the ability of SVRS to handle the upload of all voter history files from over 400 precincts across Hennepin County at one time. Significant load and stress testing would be necessary from the Secretary of State's Office.
- Election Day Registration voter data file export: Election Day Registration file exports for both Minnetonka ePollbook precincts were partially successful. Of the electronic records that could be uploaded into SVRS, the electronic record matched the printed paper application and was successfully processed within SVRS. Processing time for entering the uploaded electronic records versus entering paper election day registration applications was documented. Electronic Election Day registration records could be processed in half of the time taken to process paper Election Day registration applications. SVRS is able to search for voter records, update or add data fields. If electronic Election Day registration exports were available for all precincts within Hennepin County, data entry would be completed twice as fast as it is done now with manual paper entry.
- Voter Survey: A survey was available for voters in both Minnetonka ePollbook precincts. The survey captured which roster format voters preferred, if voter's thought the check-in processing speed had increased, it captured basic age range information and any other comments voters chose to provide. Although the data set is small, the results of the survey overwhelmingly show voter's prefer the ePollbook over the paper roster and agree that the speed of the check-in process in the polling place had increased.

- Ramsey County
 - The Poll Pad e-pollbook solution uses an Apple iPad tablet as its operating system. Poll Pad uses onboard camera technology to scan barcodes on a driver's license or identification card to quickly search and locate voters within the precinct. The printer is a wireless Bluetooth solution that prints Election Day Registration applications and the voter oath. No extra peripherals are required to operate the device. The Poll Pad has the functionality to process both registered and non-registered voters on the same device. On Election Day we had one precinct process registered or non-registered voter on any device. In the other precinct specific devices were assigned for registered and non-registered voters. Election judges have the option to scan a barcode from a driver's license or identification card to search voter records, or manually enter information to search voter records within the precinct. If a registration change or update is needed, or if a new voter record is to be added, election judges access the Election Day registration functionality through the menu button. This set up results in election judges re-typing multiple fields of voter information for voter's completing Election Day registration applications. Ramsey County provided a survey for the voter's to give feedback on the check in process. Voter's enjoyed the ease of check in, some voter's preferred the paper process, some voter's worried about the security, some enjoyed the technology and some do not trust the work being done.
 - Good - processing preregistered voters. Still needs work - processing election day registrants and reporting statistics on the total voting

- St. Louis County
 - The inability to utilize electronic signatures limited the scope of the demonstration. Liquid signatures created a more lengthy and duplicative process for both voters and election judges. The vendor had difficulty with printers at the sites. These issues would be reduced or eliminated if electronic signatures were allowed. Instructions from the Secretary of State's Office to the demonstration sites regarding security requirements, and process were sporadic and sometimes unclear which made planning and execution difficult.

Appendix B: Additional Comments Concerning the Future Use of e-Poll Books

- Concerned that the election process using e-poll books and technically supported locally by the county IT department would require the addition of staff - if not year around - every other year. Reliability of units would have to be proven before I would voluntarily move to poll books. Rural connectivity would also be a concern that would have to be address before I would suggest we change.
- cost and use by aging election judges.
- Cost and value is a major issue. Current devices and functionality do not create efficiencies- these devices still require too many workarounds, too much testing and manual intervention. These vendors will probably do as little as possible to conform to Minnesota Election Law, rather than providing us with a first class solution. We would much prefer that the OSS develop this software and that the use of epollbooks remains optional.
- Dodge County has not tried e-poll books mainly because of the cost of them and the technology with them. It would cost a lot to get internet when Wi-fi to my outlaying precincts. I only have 2 of the 12 townships which have a phone line right now. I communicate on election day with my judges and their cell phones. We would have to get a hot spot out to each location for this to work. My 6 cities would have no problem with the poll books.
- Easier access in areas with limited internet connections.
- E-Poll books are a wonderful concept. Can't wait to use them.
- E-poll books seem like a logical progression in our voting practices. Based on my limited knowledge of e-poll books, I foresee them saving significant staff time in updating the SVRS data after the election as well as ensuring more updated information for election judges at the polls. The greatest obstacle will likely be the cost and ensuring the required technology works with more remote township polling places.
- Funding will be a concern. State funding grants would be helpful for implementation.
- Have no desire to utilize poll books in the future. No interest what so ever.
- I believe e-poll books are the future for elections. They have been proven to be extremely efficient, saving counties time and money. With that said, personally I don't think a majority of counties will switch to e-poll books until the legislature forces us. In greater Minnesota, non-metro counties, it is very difficult to get approvals for something like this since what we have still works. My County Board would rather keep the levy down than purchase e-poll books, even though in the long run we might actually save money.

- I believe that this technology could provide many access and efficiency-related benefits, but low voters per precinct make costs difficult to justify. I would be hesitant to support any "one-size-fits-all" solution. My greatest concern is that the policymakers fail to understand the huge differences between the polling places around the state and even within individual counties. My second concern is that policymakers mandate a solution without providing initial and long-term funding to accompany the mandate.
- I have very little information on e-poll books
- I would appreciate having the first election cycle dedicated to using within the Auditor's office to accommodate early voters. This would give us an opportunity to determine the issues that could arise and allow us to better serve local taxing districts with the use. I also think it would be beneficial to have the small jurisdictions all participating in the mail ballot process so that the costs would be minimized for these small precincts.
- I would like to see the results of this survey and comments in regards to the use of e-poll books in Minnesota.
- If that is the prevailing technology we would adopt it in the future, but we wouldn't be an early adopter.
- I'm not certain what the cost is for e-poll books, but we have many townships that have aging election judges that don't understand the new technology and don't wanted any additional technology expenses to run their elections. Difficult to justify the expense with such a low number of registered voters and even lower voter turnout.
- Is it a practical application for smaller precincts (say less than 100 voters or say less than 500 voters)?
- It is preferable to have the State take care of the technology for e-poll books, however, we need to ensure that if there is only one vendor they do not take advantage of us with programming. This is currently an issue with ES&S. There is also a huge concern if polling places are required to have internet access. Funding is also an issue.
- Many of our election judges are over the age of 70 and many of our polling locations do not have any type of Internet access. This may deter the implementation at some sites.
- Our budgets are very tight, and the voting equipment is aging out. At this point in time, if county or local money is used for purchasing voting equipment, and there is no funding for poll books we will not be able to purchase.
- Personally I think it would be a good thing, they are smaller than the paper versions we are using currently. The morning of voting I would not have to send out the Sheriff's department to give the polling locations the newest paper version of registered voters, we could just update the e-poll books. The recording of who voted and didn't wouldn't take

the time it does now with the very manual process, the e-poll book would upload that information. It's the efficient, green way to go in the future.

- Please don't make it required!
- Poll books have a great benefit and can help increase efficiencies and reduce administrative effort. The advantage of the poll book needs to include complete connectivity and image capture of signatures in order to see the full benefit (ie, using the poll book in conjunction with a ballot-on-demand system). Furthermore, because of the cost of the technology, funding mechanisms need to be addressed and implemented to help assist counties with purchase of poll books and other election technology to avoid having situations where some counties can afford to do so and others do not causing different voter experiences and opportunities.
- Ramsey County is entering into another pilot for 2015, the intention of this pilot is to evaluate additional vendors, to continue working vendors that have been part of the pilot since 2013 and to create the best possible epollbook solution for Minnesota. The epollbooks would decrease costs, errors, provide more accurate statics and allow for more efficiency in the polling place and in office. To have epollbooks function at the full potential a further evaluation of internet connectivity throughout the day, the ability to track election judges who show up, ballots quantities, voter wait times and other potential election day issues that could make us front page news. These functionalities exist on the epollbook and would allow for Ramsey County to provide the best possible voting experience.
- The State should send money. Similar to the HAVA grants.
- This is a great option for the future of Minnesota. If the state moves forward Wadena county will, too! It's 2015 and we need to keep pace with technology as it is vital to serve our taxpayers in the best way we can. Voting is such a fundamental American right. Continuing to explore new options for voter registration and voting is important. thank you very much for the opportunity to participate. Judy Taves, Wadena County Auditor/Treasurer
- This survey has been on behalf of Laurie Davies, Carver County Auditor-Treasurer, by Kendra Olson, Carver County Elections & Customer Service Supervisor
- Utilization of ePollbooks in Minnesota opens the door for improved processes, increased accuracy of data, increased efficiency by election administrators and election judges and an improved voter experience on Election Day. Continued product development and changes to current legislation and SVRS functionality would further increase the benefits provided by ePollbooks. One benefit of ePollbooks is the standardization of processes and procedures in the polling place. By removing the interpretation or performance of tasks by individual election judges, ePollbooks create quality control from election judge to election judge and polling place to polling place. ePollbooks allow voters to be checked-in at any available device in the polling place, eliminating alpha-specific lines

and eliminating different stations for pre-registered voters versus non-registered voters. Privacy of voter data is increased by only allowing voters to view their own information on the ePollbook screen versus viewing voter data for all voters on one page of a paper roster. Additionally, voters are less likely to sign the wrong line of the Election Day roster or make unnecessary notations on the roster line. Utilizing ePollbooks to update absentee ballot information on Election Day will be increasingly more beneficial as no-excuse absentee voting results in significantly higher numbers of voters using absentee voting to cast their ballot. The current paper process of updating absentee information is extremely time-consuming, inefficient and far less accurate than the alternative provided by ePollbooks. As a result of increased efficiency with ePollbooks, over a period of time, jurisdictions currently utilizing this technology have reported a decrease in the number of election judges necessary in the polling place resulting in a cost savings to local jurisdictions. Other financial considerations relate to the staff and time necessary to complete post-Election Day data entry. If ePollbooks were used county-wide in Hennepin County, post-Election data entry for vote history could be completed within a matter of hours and data entry of Election Day registration information would be reduced by half the time this task requires with the paper process. Although not utilized during the pilot in 2014, both KNOWiNK and VOTEC ePollbook solutions included reporting features that would be extremely beneficial for election administrators. Reporting features include the ability to monitor ePollbooks that have been turned on, how much battery life individual devices currently have, how many voters have been checked in, how much time each transaction takes and other administrative reports. A live internet connection would have been necessary in order to utilize this information in real time. The benefits of some of this information could be invaluable. For example, knowing how many voters might be expected to vote during specific hours of the day would allow administrators to assign election judges more effectively throughout Election Day. There are a number of ways ePollbooks can be further developed for Minnesota that would add to the benefits of such technology. Changes to current legislation would also improve functionality and the overall benefits of ePollbooks in Minnesota. There are three specific changes to legislation that continue to be brought up by vendors and election administrators. Electronic signatures - Current Minnesota statute requires voters to supply a "wet" signature on Election Day documentation. This requirement should be re-visited not only in relation to ePollbooks, but also to other areas of election documentation and forms. Most ePollbook vendors currently utilize the capture of electronic signatures to increase the speed and efficiency of the voter check-in process and the accuracy of collected Election Day documents and documentation. Internet connection - Current Minnesota statute only allows an ePollbook internet connection for purposes of updating voter records with absentee ballot information. A live internet connection would improve the process of updating absentee voting information on Election Day, as well as vastly improve communication between election judges and election administrators and also provide real time reporting features. Loading data city-wide or county wide data - Currently ePollbooks may only contain precinct specific voter data. Prior to Election Day, allowing Hennepin County to produce and provide one registered voter data file to be loaded onto ePollbook devices would reduce the complexity of preparing devices for Election Day. During Election Day, jurisdiction wide data available to election judges allows poll workers to more efficiently to direct

voters in the wrong polling place and to verify a voter's registration status. The 2014 ePollbook pilot in Hennepin County was successful. Significant improvements to product development were made, along with very important education of vendors on Minnesota processes and procedures. Future changes to ePollbook legislation and the continued evolution of SVRS in relation to ePollbooks will result in greater functionality and greater participation from jurisdictions using ePollbooks.

- WE HAVE ELDERLY ELECTION JUDGES THAT ARE NOT COMPUTER LITERATE SO THERE IS A CONCERN THAT THIS MAY LEAD TO MORE ISSUES AT ELECTION TIME FOR US.
- We received very positive responses from Election Judges in the demonstration precincts. Judges responded that the poll books were faster and more efficient than the traditional paper roster. Judges reported that voters had positive reactions to utilizing the poll book. No substantive complaints were reported. Because of the speed and efficiency lines were reduced for check-in but it then created a backup of voters waiting for privacy screens to fill out their ballots. The poll books allowed the Election Judges to keep an accurate count of voters throughout the day and issued voter reports at the end of the night detailing the number of voters and reported each voter who was issued a ballot through the poll book. Full use of all features of the poll book, particularly electronic signatures would allow for a more robust demonstration of the product and further increase speed and efficiency.
- Will consider if real time savings are proved. Haven't seen that yet, but have not done a lot of research.
- Would like to see Secretary of State's Office take a little more leadership in coordinating equipment solutions including state contract options. Partisan politics continue to be a barrier in moving forward with modern solutions to the point where Minnesota is now lagging behind in a few critical election areas. There are some states that have been using e-pollbooks for several years now, and we're struggling to get off the ground with it due to legislative impediments. Which in turn hampers the Secretary of State's office in even hoping to lead the effort.

Appendix C: Additional Precinct Atlas© screen mock-ups.

Last Name **First Name** **Voter Search**

DOB DL # Voter ID #

This program does not allow apostrophes in searches.

Voter Name	Address	Date of Birth
Regular voter – Tracie Siemers		

Search
Clear
View Register
Select
Register new voter
Ballot count
Exit

Last Name **First Name** **Voter Search**

DOB DL # Voter ID #

This program does not allow apostrophes in searches.

Voter Name	Address	Date of Birth
No voters found		
Voter registers at the polls on Election Day, using an Iowa driver's license to prove both identity and residency		

Search
Clear
View Register
Select
Register new voter
Ballot count
Exit

Appendix D: Agreement 28E for membership in Iowa Precinct Atlas Consortium.

28E AGREEMENT FOR

IOWA PRECINCT ATLAS CONSORTIUM

This Agreement is made and entered into by, between and among the undersigned counties, each having adopted this Agreement by resolution of its board of supervisors, and hereby join together to form a public body corporate and politic and separate legal entity under Iowa Code Chapter 28E, and amendments thereto, known as the Iowa Precinct Atlas Consortium (“IPAC”).

SECTION 1: IDENTITY OF THE PARTIES

- 1.1 The undersigned counties are political subdivisions and constitute “public agencies” as defined in Iowa Code section 28E.2.
- 1.2 The Auditors of the undersigned counties shall be hereinafter collectively referred to as “Members.”

SECTION 2: PURPOSE

The parties enter into this 28E Agreement to provide an organizational structure to purchase a copyright license for distribution and use within Iowa in order to facilitate the Members’ use of the computer software programs known as Precinct Atlas and Absentee Atlas, also known as Absentee Precinct Atlas or Satellite Atlas, as well as related software and hardware components (hereinafter collectively referred to as “Precinct Atlas”). Each Member county shall be obligated under such copyright license entered into by IPAC. In addition, IPAC shall engage in any other related activity in which an Iowa 28E organization may lawfully be engaged. IPAC shall comply with all provisions of Iowa Code Chapter 28E, including subjecting itself to open meeting and public record requirements, with the notice and publication requirements set forth in Iowa Code Section 28E.6 (2013).

SECTION 3: TERM AND TERMINATION

3.1 Effective Date. This Agreement shall be effective when the undersigned initial Members' counties, as listed in Exhibit "A," execute this Agreement and this Agreement is filed with the Iowa Secretary of State as required by Iowa Code Section 28E.8.

3.2 Term. The term of this Agreement shall be perpetual, unless terminated by the following process:

- a) Approval by a majority the Board of Directors; and
- b) Submission of the matter to the Board of Supervisors of the county of each Member. An explanation of the reasons for the termination shall be sent to the Board of Supervisors of the county of each Member. Each such county desiring to vote upon termination shall do so by resolution of the Board of Supervisors and return of the same to the President of the IPAC Board of Directors within thirty (30) days of the date the copy of the proposed termination is mailed. Any county not voting upon the proposed termination within this time shall be considered to have approved the termination. In order for termination to occur, it must be approved by seventy-five percent (75%) of the Member counties.
- c) Alternatively, termination will be deemed to be approved in the event any laws are enacted that prohibit the use of Precinct Atlas by the Member counties.

3.3 Effective Date of Termination. If termination is approved pursuant to Section 3.2 on or before January 31 in any fiscal year, then the termination shall be effective the following July 1. If termination is approved after January 31 in any fiscal year, then the termination shall not be effective until one year after the following July 1.

3.4 Distribution of Assets. In the event IPAC is terminated pursuant to this Agreement, cash and cash equivalents (after payment of all just debts, obligations and liabilities of IPAC) shall be apportioned among the current Member counties based upon a pro rata percentage of each Members' fees under this Agreement for the fiscal year of termination. All property of IPAC other than cash and cash equivalents (after payment of all just debts, obligations and liabilities of IPAC), shall be delivered, assigned and conveyed to the entity that is providing support services of Precinct Atlas to IPAC.

SECTION 4: MEMBERS

4.1 Initial Members. Initial Members shall be the Auditors of the counties which have executed, approved and adopted this Agreement through a resolution by the county's Boards of Supervisors by July 31, 2013.

4.2 Member Fees. For the fiscal years ending June 30, 2014 and June 30, 2015, each Member county shall pay a fee equal to \$1,500 plus two (2) cents per registered voter as of May 1 of the applicable year. Fees for subsequent fiscal years shall be set by the IPAC Board by the end of each calendar year for the upcoming fiscal year. Member fees are due and payable July 31 of each year.

4.3 Rollover of Unspent Memorandum of Understanding Fees. Any Initial Members which were participants in the memorandum of understanding of the previously unincorporated Iowa Precinct Atlas Association of County Auditors hereby agree to have all funds associated with its fees paid to Cerro Gordo County remaining with the unincorporated association on July 1, 2013 transferred to IPAC.

4.4 Additional Members. After July 31, 2013, new Members may be admitted only if all of the following occur:

- a) The President of the IPAC Board approves admitting the new Member, including the effective date of membership;
- b) The new Member's county executes, approves and adopts, through a resolution by the county's Board of Supervisors, this Agreement, subsequent amendments thereto and the bylaws in effect at that time; and
- c) The new Member's county pays the member fees for the current fiscal year.

4.5 Member Voting. Every Member in attendance at either an annual or special meeting of IPAC Members shall be entitled to one vote on any question or resolution presented to the Members during the meeting. Proxy voting shall not be allowed, except that a Member's staff person shall be allowed to vote in the place of an absent County Auditor. A Member shall be considered in attendance for purposes of voting only by being present in person at a meeting – participation via phone or other electronic means shall not be considered being present for purposes of voting.

4.6 Quorum. A majority of the Members shall constitute a quorum. A quorum must be present in order for the Members to conduct business.

4.7 Action. In order for an action to be approved, it must be approved by a majority of the Members present at a meeting, unless a higher threshold is required by a specific provision in this Agreement or the bylaws.

4.8 Member Meetings. The IPAC annual meeting shall be held in conjunction with the summer conference of the Iowa State Association of County Auditors. Other conferences, schools, and special meetings of the Members shall be called by the President or by a majority vote of the Board. The President shall promptly give notice of meetings and copies of agendas to all the Members.

4.9 Member Withdrawal. A Member county may voluntarily withdraw from IPAC by providing the Board of Directors with written notice. A Member county that withdraws will not receive any refund of fees, regardless of when in the fiscal year the Member county withdraws. If the IPAC Board of Directors receives notice of withdrawal prior to January 31 of any fiscal year, then the Member county will be under no obligation to pay fees associated with the next fiscal year. If the IPAC Board of Directors receives notice of withdrawal after January 31 of any fiscal year, then the Member county will still be obligated to pay the fees associated with the next fiscal year. Upon receipt of notice to withdraw, any Member or other representative of the Member's county that is serving in an elected or appointed IPAC position shall be deemed to have resigned from the position. Any Member which withdraws under this Section 4.9 must discontinue use of Precinct Atlas on the first day in which the Member county's fees expire and will remove Precinct Atlas from all systems (as required under IPAC's license for use of Precinct Atlas with

Cerro Gordo County) of the withdrawing Member county by the same date. If the withdrawing Member later wants to be re-admitted to IPAC, it must go through the process set forth in Section 4.4.

4.10 Member Removal. Upon approval by a majority of the Board of Directors, a Member may be removed for any of the following reasons:

a) a Member's county breaches the licensing agreement between IPAC and Cerro Gordo County;

b) a Member's county is 60 days delinquent in paying its fees under this Agreement;

c) otherwise "for cause," which shall only be for serious delinquencies.

If a Member is removed under Section 4.10(c), such removal shall only be effective after approval by both the Board of Directors and the Members. Members removed under this Section 4.10 shall be required to pay fees in the same manner as a Member withdrawing under Section 4.9. Upon removal, any Member or other representative of the Member's county that is serving in an elected or appointed IPAC position shall be deemed to have resigned from the

position and the removed Member must discontinue use of Precinct Atlas and remove Precinct Atlas from all systems (as required under IPAC's license for use of Precinct Atlas with Cerro Gordo County) of the removed Member county by the same date.

SECTION 5: GOVERNANCE AND ELECTIONS

5.1 Board Duties. IPAC shall be under the direction and control of the Board of Directors. The IPAC Board of Directors shall have each and all of the following powers:

- a) To contract with any public or private entity to provide all necessary services, specifically including a limited exclusive license agreement with Cerro Gordo County;
- b) To rent, lease or purchase any tangible personal property, real estate or services reasonably necessary to fulfill the purposes of this Agreement;
- c) To establish a system of accounting and budgeting, and a system for receiving payments;
- d) To retain legal counsel, accountants and other professional individuals needed in order to fulfill the purposes of this Agreement;
- e) To sue and be sued;
- f) To appoint a fiscal agent;
- g) To do and perform any acts authorized by Chapter 28E of the Code of Iowa, under, through or by means of its officers, agents and employees, or by contracts with any person or entity;
- h) To consult with representatives of Federal, State and local agencies and departments, and their officers and employees, and to contract with such agencies and departments;
- i) To receive funds from each Member as set forth in this Agreement;
- j) To accept grants, contributions or loans from Federal, State or local agencies;
- k) To establish the times and places for business meetings and educational conferences, and set agendas for those meetings and conferences; and
- l) To exercise any other power or do any other legal act necessary to discharge its obligations and fulfill the purposes of this Agreement.

5.2 Initial Board of Directors. The initial IPAC Board of Directors shall be those individuals serving on the executive board of the previously unincorporated Iowa Precinct Atlas Association of County Auditors as of the Effective Date of this Agreement. The Cerro Gordo County Auditor shall also serve as a voting initial Director. The initial Board of Directors shall serve until successor Directors take office, as described below.

5.3 Subsequent Board of Directors. The first election for Directors under this Agreement shall be held at IPAC's 2015 Annual Meeting, which shall occur in conjunction with the summer

conference of the Iowa State Association of County Auditors. Terms of subsequent Directors shall begin immediately following the election and shall continue for staggered terms as set forth in the bylaws. The subsequent Board of Directors shall include a minimum of five (5) members. The board shall include the following positions:

- a) President;
- b) Vice President;
- c) Secretary; and
- d) At least two (2) general Directors.

The bylaws shall determine if additional Directors or positions for general Directors are necessary.

5.4 Duties of Director Positions.

- a) The President shall preside at the IPAC business meetings and Director meetings, preserve order, enforce this Agreement and IPAC's bylaws, and appoint committee members, unless otherwise provided. The President shall appoint any additional committee for a special purpose different from the purposes of the Standing Committees.
- b) The Vice President shall assist the President. During the temporary absence or disability of the President, the Vice President shall discharge the duties of the President. Should the President be permanently absent or disabled, the Vice President shall succeed to the office of the President.
- c) The Secretary shall keep minutes of all IPAC business and Director Board meetings and other IPAC business records. The Secretary's records and all accounts shall be open at all times for inspection by any IPAC Member.

5.5 Director Elections. Director nominations for each position shall be made pursuant to the bylaws. Any Member in good standing may be nominated. Directors shall be elected by a plurality vote of the Members present, so that the nominee for each Director position receiving the greatest number of votes relative to all other nominees for such Director position will be elected. Voting shall be by secret written ballot for any position in which more persons have been nominated than there are positions to be filled.

5.6 Quorum. A majority of the Directors shall constitute a quorum. A quorum must be present in order for the Board to conduct business.

5.7 Director Action. Each Director shall have one vote and action shall be taken through approval by a majority of the Directors present, unless a specific provision requires a higher threshold in this Agreement or the bylaws.

5.8 Director Meetings. Director meetings shall be held as needed and called by the President. Director meetings may be held via telephone or other forms of electronic communication. Directors participating in a Director meeting via telephone or other forms of electronic communication shall be deemed present for purposes of voting.

5.9 Standing Committee Duties. Each Standing Committee shall consist of Members in good standing as appointed by the Board of Directors. At the discretion of the Board of Directors, a Standing Committee may be expanded for a definite or indefinite period of time, for a special purpose, in order to more effectively complete work of the committee and additional committees may be created by the Board of Directors. The chair of any Standing Committee must give prior notice of all meetings and agendas to the committee members and the President and shall report regularly to the Board of Directors concerning the committee's activities.

5.10 Vacancies. In the event of vacancies by any person serving as a Director or committee member by death, resignation (which must be provided in writing to the Board of Directors), inability to serve, or withdrawal or removal of the county in which the Member represents, then the President shall appoint a Member to the position for the remainder of the term.

5.11 Conflict of Interest. If a Director engages in employment or an activity that contracts with or otherwise engages in activities with IPAC, then such Director shall disclose the existence of a conflict to the Board of Directors and refrain from taking any official action that would detrimentally affect or create a benefit for the employment or activity. Official action specifically includes participating in any vote or taking affirmative action to influence any vote on the matter.

SECTION 6: SCOPE, AMENDMENTS AND BYLAWS

6.1 Substantive Amendments to this Agreement. Substantive amendments to this Agreement shall be made by resolution of the Board of Directors of IPAC adopting such amendment and then submitting it to the Members for approval. A separate explanation of the reasons for the amendment shall be included. If the amendment is approved by the Members, then such amendment and explanation shall be submitted to the Boards of Supervisors for each Member's county. Each county desiring to vote upon the amendment shall do so by resolution of its Board of Supervisors and return the same to the President of the Board within thirty (30) days of the date the copy of the proposed amendment is mailed. Any county not voting upon the amendment within this time shall be considered to have approved the amendment. If the amendment is approved by a majority of the Member counties under this process, it shall become effective on the day as stated in the amendment. Amendments shall be filed and recorded as required by Iowa Code Section 28E.8.

6.2 Bylaws. Bylaws shall be approved by the Members and substantive amendments to the bylaws shall be approved by the Members.

6.3 Non-substantive amendments to bylaws or this Agreement. The Board of Directors is authorized to make non-substantive amendments to this Agreement or IPAC's Bylaws. Non-substantive amendments shall only mean amendments made to reflect the current membership of IPAC, so long as such Members have been accepted pursuant to the procedures set forth in this Agreement.

6.4 Notice. All notices required to be provided to the IPAC Board under this Agreement shall be in writing and shall be addressed to the Secretary of IPAC at the offices of the Iowa State Association of Counties.

6.5 Entire Agreement. This Agreement and attachments hereto, and any bylaws later enacted as provided by this Agreement, constitute the entire Agreement between the parties, and supersedes or replaces any prior agreements between the parties relating to this subject matter.

6.6 Invalidity. If any term, provision or condition of this Agreement shall be determined invalid by a court of law, such invalidity shall in no way effect the validity of any other term, provision or condition of this Agreement, and the remainder of the Agreement shall survive in full force and effect, unless to do so would substantially impair the rights and obligations of the parties to this Agreement.

6.7 No Waiver. The waiver by any party of a breach or violation of any provisions of this Agreement shall not operate as or be construed to be a waiver of any subsequent breach.