

TO: National Institute of Standards and Technology (NIST)
FROM: State Audit Working Group c/o Luther Weeks

RE: Comments on NIST's draft of "Promoting Access to Voting"

11/22/2021

We write as members of the "State Audit Working Group (SAWG), a group of election integrity experts particularly concerned about election audits. The SAWG has been meeting regularly via teleconferences since 2008, and has worked on recommendations from time to time such as the Principles and Best Practices for Post-Election Tabulation Audits and the EAC's Voluntary Voting System Guidelines.

NIST's draft report concerns a very important topic. We write to request some critical improvements to the current draft report, as follows:

Add and/or give greater emphasis to recommendations that could significantly improve the voting experience for a large number of voters with different types of disabilities.

1. Recommend taking BMDs into voters' residences and securely collecting their voted paper ballots for those voters who tell the election office that other methods don't work for them.
2. Recommend the improvement of OCR apps, used by people with disabilities, to read marked ballots to tell the voter which candidates are marked.
3. Change current text regarding return of voted ballots using the internet.
4. Make detailed recommendations for testing and research to provide privacy for mail ballots going from voters to the election office.
5. Recommend that BMDs be tested and certified as an interoperable component, not always as part of a bigger voting system.
6. Propose a standards and research program on identity verification, if NIST supports no-excuse vote-by-mail (p.34).
7. Be more specific about locations of envelope signatures.
8. Address identity verification for states where issuance of an electronic ballot blocks acceptance of in-person or previously mailed ballots.
9. Propose that the federal agency working group on voter registration (p.28) research the risks and benefits of North Dakota's no-registration system.
10. Recommend standards and/or research on privacy in polling places.
11. Research ways for voters to know if their ballots arrive for counting unchanged.

Attached are more detailed comments on these 11 suggestions.

Sincerely,

Note: All affiliations are for reference only and do not constitute an endorsement

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Attachment-Detailed Comments on NIST’s draft of “Promoting Access to Voting” by the State Audit Working Group

Draft report at <https://www.regulations.gov/document/NIST-2021-0005-0002>
with announcement at <https://www.regulations.gov/document/NIST-2021-0005-0001>

RECOMMENDATIONS to improve voting experiences for many voters with different types of disabilities

1. **NIST publication 1273 needs to recommend taking BMDs into voters’ residences** and securely collecting their voted paper ballots, for voters who tell the election office that other methods don’t work for them. This is the only way for some voters with disabilities to vote privately and independently. NIST says only to consider this, and gives no definitions: *“State and local election officials may consider different accessible options to provide. Options many states already use include... Ballot pick-up services and mobile voting vans”* (p.15).and *“Another option that should be considered is a mobile vote center van which brings voting to the voters’ locations”* (p.45). Requiring voters to enter a *“mobile voting van”* would be unsatisfactory.

NIST is much firmer on other options, *“Curbside voting is a great option that should be offered at all polling locations.”* (p.46)

NIST needs to be specific in calling for portable assistive voting methods which a pair of staff, of different parties, can take into the residence of voters who cannot use polling places, mail, RAVBM and other existing methods. Oregon has offered this service since before 2011.¹ NIST says 885,000 voters *“reported having difficulties with voting by mail”* (p.30). A 2014 Census study confirms this estimate. Among 16 million Americans with selected symptoms which interfered with their ability to manage everyday activities, the Census study found that 10% (1,600,000) had trouble eating or using the phone independently.² These same people may have trouble using RAVBM independently. If half are voting age and want to vote, that is 800,000 voters. Either estimate is about one in 200 voters, so an average jurisdiction with 20,000 voters would have about 100 who need a BMD and sealed ballot box or ballot bag brought to them. This number represents 10 voters per day for 10 days. Home voting can be done by appointment throughout the early voting periods of the different states. The program in any jurisdiction can begin with a fixed, reasonable, number of appointments, so offices can gauge demand.

Ballots should be locked in a ballot bag or small ballot box, and treated the same as if voted at a polling place. It would be unsatisfactory to put ballots in a vote-by-mail envelope and subject them to signature verification in the office, because of all the signature issues discussed by NIST and covered below.

Taking BMDs to voters involves the cost of two staff people, with an average of half an hour to reach each residence plus up to an hour per voter. There are economies of scale at senior living facilities. These costs may be less than hiring enough extra staff *“at all polling locations”* to take equipment curbside, while continuing to cover roles inside the polling place.

¹ <https://www.nytimes.com/2011/11/17/us/oregon-tries-out-voting-by-ipad-for-disabled.html>
<https://www.youtube.com/watch?v=NOuGDrlcdos&t=95s> California staff will bring a vote-by-mail ballot & envelope (not BMD or ballot bag) to all voters who are suddenly hospitalized or restricted to a nursing home
<https://elections.cdn.sos.ca.gov/pdfs/covid-19-resources/votesafe-medical.pdf> authorized by
https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=ELEC§ionNum=3021 Wisconsin staff will similarly bring a vote-by-mail ballot & envelope (not BMD or ballot bag) to any home with at least 5 registered voters by appointment in the weeks before an election

² <https://docs.legis.wisconsin.gov/statutes/statutes/6/IV/875/4>
² <https://www.census.gov/content/dam/Census/library/publications/2018/demo/p70-152.pdf>

An alternative of lending printers to people at home would take more time to deliver and set up the printer with the voter's computer, than bringing a BMD and ballot box or bag to the same voter. Furthermore, the BMD serves voters who don't have a computer, smart phone or assistive devices.

2. **NIST publication 1273 needs to recommend the improvement of OCR apps, used by people with disabilities, to read marked ballots to tell the voter which candidates are marked.** NIST notes that when assistive technology *"is unable to read the selections on paper, voters with disabilities are unable to verify their ballots"* (p.39). Many apps can read text to a person with limited sight, so they can read offices and candidates. NIST needs to push for at least some of these apps to have an extra feature to note which candidates have ovals or other mark-sense targets blackened next to the name. This task is separate from and higher priority than apps which interpret QR codes on ballots.
3. **NIST publication 1273 needs to change current text regarding return of voted ballots using the internet.** NIST is wise to say *"Privacy, independence, and equal access are of utmost importance to voters with disabilities"* (p.3). We believe accuracy of votes received and tallied is also important. Furthermore NIST's current draft report is far more detailed on access than on privacy. NIST needs to clarify that "privacy" in this document includes what is referred to as "ballot secrecy" in VVSG 2.0,³ or NIST needs to change *"Privacy, independence, and equal access"* to *"Privacy, ballot secrecy, independence and equal access"* in this passage and make similar changes throughout the document.

Page 34 Line 1110 change "Expand electronic options for requesting, marking, and returning ballots when facilitating voting by mail." to exactly match the current corresponding section heading on Page 35, Lines 1142 and 1143, namely "Expand electronic options for requesting and marking blank ballots when facilitating voting by mail."

Page 35 Line 1154 Omit entire line because the point is made elsewhere and is irrelevant to the recommendation.

NIST notes the use of fax, email, and other internet methods to return ballots (p.33).

These online methods do not currently let voters verify the ballot which is centrally printed and tallied, though we make suggestions about how that might be accomplished in item 11 below. The privacy of online ballot return is vulnerable to local and distant criminals, and accidental exposure to internet service providers, vendors and 3rd-party verifiers. Internet methods need research on identity verification, encryption and penetration testing, etc. Last May NIST warned about online return, *"this high-risk process, its use should be limited to voters who have no other means to return their ballot and have it counted"*⁴

These vulnerabilities and more need to be acknowledged and text changed in the research recommendations on pages 22 and 35. The draft report says, *"Future research should explore how to continue to securely integrate next generation technology into the voting process. For example, electronic ballot return would overcome many barriers faced by voters with disabilities. However, it is vital that research on security continue as electronic ballot return systems are being implemented."* (p.22),and *"Research is needed to explore how to expand options to support electronic ballot return."* (p.35). These statements would permit electronic ballot return to any voter;

³ VVSG 2.0 defines Ballot secrecy as "A goal of voting systems to ensure that no contest selections can be associated with a voter." P.267

https://www.eac.gov/sites/default/files/TestingCertification/Voluntary_Voting_System_Guidelines_Version_2_0.pdf

⁴ NIST et al. "Risk Management For Electronic Ballot Delivery, Marking, And Return" 2021-05-08, https://s.wsj.net/public/resources/documents/Final_%20Risk_Management_for_Electronic-Ballot_05082020.pdf

they are too vague to protect voter privacy and identity verification as well as ballot secrecy; and they ignore threats to voter privacy and ballot secrecy during the ballot's electronic trip back to the election office.

4. **NIST publication 1273 needs to recommend testing and research to provide privacy for mail ballots after they leave the voter by physical methods.** NIST notes the use of drop-boxes (pp.9,16,32,36) and postal mail. The privacy of physical return is vulnerable to local criminals, and needs research on tamper-evident envelopes, drop-box design, locks, monitoring, etc.
5. **NIST publication 1273 needs to recommend that BMDs be tested and certified as an interoperable component, not always as part of a bigger voting system.** Testing this component separately will lead to more innovation and better technology, particularly for addressing needs of voters with disabilities. NIST correctly notes problems with BMDs (p.39). Election scanners and/or NIST need to specify standard ballot formats (as the Common Data Format [CDF] Research Group is currently working on for NIST), which independent BMDs will then produce, and be able to compete on quality, usability and price.
6. **If NIST publication 1273 supports no-excuse vote-by-mail (p.34) it needs to propose a standards and research program on identity verification.** NIST addresses signatures, and needs to develop more reliable approaches. *"Identifying alternative signature methods for voters who need them. Voters unable to sign consistently or at all would have increased independence if alternative methods existed to sign both paper forms and online documents securely"* (p.22). NIST endorses *"Create best practices and standards for the signature verification process... such as having a tiered system to check signatures."* (p.37). We are not aware of any research on the accuracy of these tiers. NIST should cite the research or propose it.

18 states avoid the discriminatory effects of signatures by not doing signature verification.⁵ They use tracking numbers and threats of legal penalties to limit forgeries. For these and other places which depend more on tracking numbers than on signatures, NIST needs standards and research on the best ways to encrypt and secure those tracking numbers as well as possible, including controls at election offices and at any mailing contractors which print tracking numbers on envelopes or handle imprinted envelopes. Standards and research could also be helpful on tamper-evident envelopes, mentioned above, and security printing, with ways to detect forgeries.

Signature verification carries the risk of disenfranchising voters whose signature is rejected and not cured. As NIST noted, signatures are especially problematic for some voters with disabilities. Researchers have also found that higher rates of rejection apply to mailed ballots which purported to come from women, young people, and minorities.⁶ Unless these groups were especially targeted by forgers, the groups suffered disenfranchisement when their signatures were rejected.

⁵ Two of These Mail Ballot Signatures Are by the Same Person. Which Ones? By Larry Buchanan and Alicia Parlapiano, *New York Times* Oct. 7, 2020 <https://www.nytimes.com/interactive/2020/10/07/upshot/mail-voting-ballots-signature-matching.html> (Gray states on map outside paywall at: https://static01.nyt.com/newsgraphics/2020/09/17/signatures/c23d224ff6716db96e1cb9e314527c3ba254b/curemap-Artboard_1.png)

⁶ California inequalities in rejection rates: ["Signature Verification and Mail Ballots: Guaranteeing Access While Preserving Integrity"](#) (PDF). Stanford University. April 15, 2020.
Florida: Smith, Daniel (September 18, 2018). ["Vote-By-Mail Ballots Cast in Florida"](#) (PDF). ACLU-Florida
Georgia: <https://whowhatwhy.org/2018/10/12/exclusive-high-rate-of-absentee-ballot-rejection-reeks-of-voter-suppression/>
State variations pp.23-25 of ["THE ELECTION ADMINISTRATION AND VOTING SURVEY \(EAVS\) 2016 Comprehensive Report"](#) (PDF). Election Assistance Commission. June 28, 2017

Before NIST endorses tiered signature verification, it needs research on whether it is more effective than other approaches, at deterring or detecting forgeries while preventing disenfranchisement, for voters with and without disabilities.

NIST devotes substantial attention to signatures, without acknowledging that signatures may be ineffective as well as discriminatory. Expert signature reviewers reject 10-14% of true signatures.⁷ That would be unworkable for elections. Non-experts who reject fewer, are not an effective barrier to forgeries.

The focus on matching signatures assumes that forgers cannot accurately forge large numbers of signatures. Private files of signatures exist at hotels, hospitals, department stores, etc., all of which have been hacked, so criminals have access to accurate signatures for many voters who have not voted for some time, and could generate them on ballot applications and envelopes with little chance of detection.

“Colorado’s TXT2Cure process”¹⁰⁵ When a signature is rejected, the voter is notified and can electronically sign and upload identification using their phones” (p.37). Before NIST endorses curing by text, it needs reliability testing. Systems without IDs are needed for states which don’t require IDs.

NIST also says, *“Verify voters’ identities with voter registration records. Voters with disabilities would benefit from election officials verifying requests for vote by mail ballots using information already in voter registration records. Currently, 17 states verify voters’ requests for vote by mail ballots with information in the voter registration record ” (p.34-35).* Since NIST rightly notes issues with signatures of voters with disabilities, NIST needs to be clear what methods it has in mind, their accuracy, which disabilities they accommodate, and research or standards needed.

7. **NIST publication 1273 needs to be more specific about locations of envelope signatures**, as long as some places use signatures. NIST says, *“Improve the ability for voters to sign the voter signature form on vote-by-mail envelopes. Current strategies include punched holes to guide blind voters to find the space to sign and accepting a signature anywhere on the envelope” (p.35).* This wording implies, without saying so, that holes and signing anywhere are good options. Signing anywhere, especially for voters who make large signatures with a black marker, can overwrite the tracking codes, and cause the ballot to be rejected without even knowing where to send a cure notice. It would be more plausible to ask for a signature between two holes at least 4 inches apart. NIST can call for experiments to measure the most successful approaches.
8. **In states where issuance of an electronic ballot blocks acceptance of in-person or previously mailed ballots, NIST publication 1273 needs to address identity verification.** NIST says, *“Allow voters to electronically request the blank vote by mail ballot” (p.35).* This is helpful. However, issuing a new ballot generally means any previously mailed ballot will be rejected, and voting in person will be by provisional ballot, which may be rejected. NIST needs standards and research on how to strongly verify the identity of someone requesting a ballot (or changing registration between non-vote-by-mail and vote-by-mail). This entails the same identity verification issues discussed above for mailed ballots. Letting someone who knows a voter’s birth date start RAVBM, which suppresses the originally mailed ballot, is not secure. Yet voters do need accessible ways to get replacement ballots.
9. **NIST publication 1273’s proposed working group on voter registration (p.28) should research the risks and benefits of North Dakota’s no-registration system.** In some states this might be the best way to improve access. North Dakota uses a wide range of IDs for in-person voting.⁸ If ND voters arrive without any ID, they can

⁷ Scanned (“offline”) signatures “WI, writer-independent”. Hafemann, Luiz G., Robert Sabourin and Luiz S. Oliveira (October 16, 2017). *Offline Handwritten Signature Verification – Literature Review*. IEEE. pp. 1–8.

<https://arxiv.org/abs/1507.07909v2>

⁸ https://ballotpedia.org/Voter_ID_in_North_Dakota#Forms_of_accepted_ID

vote provisionally and show an ID to an election office a few days later. Applications to vote by mail in ND must show an ID number. To limit multiple votes at different vote centers by the same person, poll workers could record the ID number, as some states already do, for later prosecution. Studies say that voter registration caused major voter suppression when it was introduced in the 1800s. A 2002 paper quotes a 2001 Ford-Carter task force *"that turnout declined in the South from 64.2% in 1888 to 29.0% in 1904."*⁹ Dayna Cunningham of the NAACP Legal Defense Fund said much the same in 1991.¹⁰

10. **Privacy in polling places needs standards and/or research.** NIST publication 1273 says, *"Ensure the location and equipment is adequate and available... Additional items to consider when setting up accessible voting machines are: ... proper spacing of privacy screens"* (p.45). Screens need standards, not just *"consider,"* to protect the privacy of all voters, including those with disabilities.

Voters with mobility and sight limitations have a particularly hard time monitoring the area behind them to know if they have privacy. They deserve to know the privacy screens have effective standards on line of sight.

Effective screens would also protect other voters' privacy if a voter with a disability video-records their own ballot. The potential for BMD errors is a major danger for voters with disabilities who depend on BMDs. Voters using audio on the BMD could record and prove what caused any error, if they can connect an audio-recorder to the audio output, so the BMD may need a Y plug. Voters interacting with the BMD visually can video-record, depending on state law, to prove what caused any error. They risk the privacy of other voters unless the privacy screens are good enough to isolate the pictures. This is another reason for good standards for screens.

11. **NIST publication 1273 needs to research ways for voters to know if their ballots arrive for counting unchanged.** NIST says, *"If poll workers remake the ballot to be counted (to transfer it to a format the ballot scanners can read), voters with disabilities are unable to verify the vote that was ultimately cast"* (p.40).

An option is for the RAVBM software to encrypt the voter's choices into an alphanumeric code, given to the voter when the voter finishes voting. Voters concerned about accuracy of remaking could opt for the election office to take the RAVBM out of the envelope, put the envelope in a privacy sleeve and keep it with the ballot, remake the ballot, encrypt the new ballot with the same formula used before, make that code available to the voter (by mail, email or web), hold aside the new ballot, old ballot and envelope. If the voter sees a difference in the codes, they can contact the election office which can check its remaking, or the voter can vote again.

A similar option, if there is internet return of ballots (which we strongly oppose), is for the internet voting software to encrypt the voter's choices into an alphanumeric code, given to the voter when the voter finishes voting. Voters concerned about accuracy of transmission, could opt for the election office to re-encrypt their choices as received from the internet, print the choices at the top of a page, ready to scan, face down. The bottom of the page would have the voter's contact info, and newly encrypted value on a tear-off panel. The batch of these pages, for all internet votes that day would be printed together, then an identical copy of the batch would also be printed, both of them face down. Staff would randomly pick one pile, seal and set it aside. From the other pile, they would cut

⁹ Ford-Carter task force

https://web.archive.org/web/20040118204751/http://reformelections.org/data/task_t2/t2_reports/b_electionsystem.pdf

quoted by R. Michael Alvarez, Stephen Ansolabehere and Catherine H. Wilson in

https://www.vote.caltech.edu/documents/139/vtp_wp5.pdf

¹⁰ Dayna Cunningham NAACP Legal Defense and Educational Fund "Who Are to Be the Electors?"

A Reflection on the History of Voter Registration in the United States"

<http://digitalcommons.law.yale.edu/cgi/viewcontent.cgi?article=1210&context=yldr>

or tear off the bottom panels, shred the top panels, and make the encrypted codes available to voters to check, as above.

Voters who choose these verification options would accept some risk that staff will see the voter's choices and contact info together, a risk present more briefly for everyone who votes by mail when ballots are pulled from envelopes. All such ballots could be processed together every day or so, under strict supervision, and all paperwork sealed in a batch and perhaps in a safe, until the deadline for review, when all accepted ballots would go for normal scanning (after removing tear-off panels).

Hierarchical Outline of Approaches to Accessible Voting

Voting with Disabilities - The outline below is an attempt to summarize the strengths and weaknesses of different options for casting votes - particularly for voters with different types of disabilities. It does not try to cover registration, websites, getting results, etc. Something like it would be a helpful addition to the final NIST report.

First, we distinguish three basic types of voters who may have different kinds of disabilities...

1. Voters who can travel to a polling place can generally use **BMD inside or at curbside** if ADA rules are enforced.
2. Voters *with* use of their hands and printer and access to mail can often use **RAVBM** at home, even if they can't get to a polling place to use a BMD
3. Voters *without* use of their hands as well as voters who cannot get to a polling place and lack a printer, could use a **BMD brought to their residence** by election staff. These voters are few enough (1 in 200 as discussed in Recommendation 1 above) that even in rural areas taking a BMD to them is affordable and serves more needs than internet voting. It serves
 - a. People without internet
 - b. People without assistive technology
 - c. People who mistrust the internet
 - d. People who mistrust staff re-copying their home-printed ballots onto actual ballots
 - e. People who want to exercise their right to verify (e.g. with OCR app) the actual ballot which will be tallied.
 - f. People who cannot independently print and mail a home-printed ballot.

(A) Ballot Marking Device (BMD): General issues apply to all options in this category:

Assistive devices are not as optimized as some voters have at home. Needs paper-to-voice app which tells voter which names have votes marked

Needs effective shields so others can't see screen, keyboard or printer

Accuracy: Software can omit names or err in printing. Some voters using audio need to audio-record their choices to document software errors

Recommendations: Test & improve security & usability of BMD as a separate component, so innovation can occur with mix & match to other parts of the voting system. Add effective shields so others can't see screen, keyboard or printer. (Congress, EAC, state & local election officials, vendors)

A1 Take BMD to home-bound voters

Accuracy: Some sighted voters need to video record their choices to document software errors

Recommendations: Need laws & rules to authorize taking BMD to homes, & let voters video record themselves using BMD to prove any errors (State legislatures & chief election officials)

A2 Take BMD & ballot box to voter in car outside polling place

Needs travel to polling place

Accuracy: Some sighted voters need to video record their choices to document software errors

Recommendations: Need laws & rules to let voters video record themselves using BMD, to prove any errors (State legislatures & chief election officials)

A3 Polling place BMD creates ballot which looks hand-marked (including write-ins)

Needs travel to polling place. Usually needs hands to handle paper ballot.

Accuracy: Video recording risks chilling others, unless screens limit field of view

Recommendations: Require poll workers to set up BMD & print test ballot before polls open (State & local election officials)

Add recognition of vote marks to existing paper-to-voice apps (Software companies with paper-to-voice apps)

A4 Polling place BMD creates distinctive ballot

Needs travel to polling place. Usually needs hands to handle paper ballot

Needs enough use to hide identity of individuals

Accuracy: Video recording risks chilling others, unless privacy screens limit field of view

Recommendations: Require poll workers to set up BMD & print test ballot before polls open. It would be best for poll workers to keep asking voters without disabilities to use BMD, until at least 10 do so, but only experiments can determine if there is any method of training and supervision which will really accomplish this on a widespread basis. (State & local election officials)

A5 BMD displays completed ballot to voter or voter's paper-to-text app, then roller¹¹ or robotic arm puts it into ballot box without touching by voter

Serves voters without use of their hands. May need travel to polling place, if too heavy to bring to voter's home or car.

(B) Specialized Ballots in Polls or Mail Braille or other tactile marks¹²

Many sight-impaired voters don't know Braille. Needs tactile way to mark choices and tactile mark and/or instructions for where to sign return envelope if required

Similar to any ballot re-created in office

(C) Remote Access Vote by Mail (RAVBM or Remote Accessible Ballot Marking): General issues apply to all options in this category:

Needs access to assistive devices. Needs paper-to-voice app which tells voter which names have votes marked

Vendors, hackers & household members may be able find voters' selections on computer

Accuracy: Software can omit names or err in printing. Some voters need to record their choices (audio or video) to document software errors.

Recommendations: Test as separate components & don't certify until it's as secure as election machines & signature review (State legislatures & chief election officials)

C1 Fill ballot electronically, print at home & mail or carry it back to be hand copied onto standard paper in election office

Needs printer, putting in envelope, & mail or drop box. Instructions can say to sign or put mark in any corner

Similar to any ballot re-created in office

Accuracy: Similar to any mailed ballot: Tracking numbers can be hacked. Signature checking is error-prone; 18 states don't check them. Home printer paper not compatible with election scanners, so staff re-create ballots. If ballot contains QR code and blank ovals for unvoted contests, voter may fill out additional ovals after ballot contest selections are encoded in the

¹¹ Los Angeles uses rollers to move ballot, after voter review: https://vsap.lavote.net/wp-content/uploads/2019/09/VSAP_BMD-paper-path.pdf

¹² Braille ballots are used in AZ <https://www.cnn.com/2021/06/14/politics/arizona-election-audit/index.html> and RI <https://vote.sos.ri.gov/Content/Pdfs/Braille-Tactile.pdf>

QR code and the ballot is printed, which will not be counted unless staff use ovals to recreate the ballot.

Recommendations: Research tamper-evident return envelope for all mailed ballots including RAVBM. Tell voters to sign between 2 holes which must be at least 4 inches apart. (Envelope vendors. State & local election officials)

Experiment with giving voter-encrypted summary of selections when printing at home, and sending voter-encrypted version of selections on re-created ballot to allow voter to veto before casting.

C2 RAVBM puts QR code on phone which generates printed ballot at polls or office, which voter can check before it goes into ballot box

Needs travel to polling place

Accuracy: QR code may not match voter's selections

Recommendations: Have RAVBM on phone store QR code containing vote choices, Have QR code reader at poll & add to counts of ballots expected in box (RAVBM vendors & election officials)

(D) Internet Return of Ballot by email, fax, web portal or proprietary software:

Needs access to assistive devices, internet

Vendors, hackers & household members may be able to find transmission or other trace of votes on either end

Accuracy: Software can omit candidate names or err in transmission. Audio or video recording can document voter choices, but no anonymous way to compare to what's received. Office computer which receives votes is much easier to hack than offline election systems

Recommendations: Test & don't certify until it's as secure as election machines & signature review (Congress, EAC, state & local election officials)

Experiment with printing 2 copies of voter choices, face down, mail encrypted version of random one to voter to allow voter to veto before casting the other copy (State legislatures & chief election officials)

(E) Accessible Polling Places (Note BMDs are discussed above)

Needs access to public transit, parking, curb cuts, ramps or level entrances, signs, enough space to wheel or use walkers inside, correct heights & chairs.

Needs enforcement, not just rules.

Arrangement of voting stations & privacy screens so no one can see another's votes.

Methods to hide completed ballots until put in ballot box

Jurisdiction needs to have written, large-print instructions for everything poll workers may need to tell voters, such as flash cards, especially when voters first arrive in line or check in, so staff learn who is deaf.

Millions are both deaf and vision-impaired, such as many seniors. Need methods to communicate with deaf voters who do not read or write well, including transparent masks for lip reading, and appointment times or a tablet to communicate through a sign language interpreter, if the voter knows ASL. Staff should always check if a voter can hear and understand what they say.

Accuracy: Best to have 2 staff, not of same party, accompany ballots at all times, publicly observable. If ballots are scanned at polling places, removable media need to be bright and big enough not to be palmed and replaced with substitutes while transferring to central count. Transferring results from voting system to internet computer should never use the same media twice.

Recommendations: Enforcement of ADA, by inspectors with power to order improvements, before and during election day. Comparative research to report why some jurisdictions comply and others do not. Jurisdiction needs to have written, large-print instructions for everything poll workers may need to tell voters, such as flash cards, to show to deaf voters, including instructions called out to voters in line. Provide transparent face masks to poll workers, and appointments or tablets with access to ASL interpreter. Entire path of ballots from polling place along roads and into central counting room needs to be observable by the public, while keeping enough distance to avoid interference. (State & local election officials)