# DHC
DAVIDOFF HUTCHER & CITRON LLP

ATTORNEYS AT LAW

605 THIRD AVENUE

NEW YORK, NEW YORK 10158

TEL: (212) 557-7200
FAX: (212) 286-1884
WWW.DHCLEGAL.COM

FIRM OFFICES

WHITE PLAINS
ATTORNEYS AT LAW
120 BLOOMINGDALE ROAD
WHITE PLAINS, NY 10605
(914) 381-7400

WEST PALM BEACH
ATTORNEYS AT LAW
1107 NORTH OLIVE AVENUE
WEST PALM BEACH, FL 33401
(561) 567-8488

FIRM OFFICES

ALBANY
ATTORNEYS AT LAW
150 STATE STREET
ALBANY, NY 12207
(518) 465-8230

WASHINGTON, D.C.
ATTORNEYS AT LAW
201 MASSACHUSETTS AVENUE N.E.
WASHINGTON, D.C. 20002
(202) 347-1117

# MEMO IN OPPOSITION

## S.309B (Myrie)  /  A.1115C (Paulin)

On behalf of our client, Election Systems & Software (ES&S), we strongly oppose S309B and A1115C. The proposed legislation would intentionally ban the use of the company's ExpressVote XL, a proven state-of-the-art, accessible, universal voting machine designed for the unique voting requirements of The State of New York. This proposed legislation would—illogically and unfairly—permit the use of the same type of technology provided by Dominion Voting Systems, an ES&S competitor, through the bill's exemption clause that seeks to ban modern voting systems. The proposed legislation would dismiss, refute and erode the research, credibility and quality of one of the country's best, and our own, Rochester Institute of Technology.

S309B and A1115C is the product of extreme misinformation. False claims have been made through a campaign based on imagined, unrealistic scenarios and mistruths that do not account for established New York election law and procedures. Untrustworthy sources with hidden motives should not be the basis of New York law, and therefore, we are offering the following facts:

1. First, ExpressVote products have been used to great success in over 25 states for more than eight years. The ExpressVote XL is currently used in the entire state of Delaware, much of New Jersey, and in major cities such as Philadelphia. More than 100,000 ExpressVote products were deployed in the 2020 Presidential election. There were zero significant complaints or concerns raised nationally about the ExpressVote equipment performance or, more importantly, its security or accuracy in any jurisdiction across the U.S.

   This equipment has not only been tested extensively in real elections; it's also been independently examined under the lens of several rigorous potential threat scenarios. Again, in 2021, the Rochester Institute of Technology asked voting machine companies to provide their researchers with a voting system to test for security. ES&S was the only company that volunteered a system for testing, providing the ExpressVote XL. After having unfettered access to this equipment under multiple scenarios, the researchers concluded that zero voter selections could be changed without detection, ballots could not be compromised, and votes were secure.

Furthermore, after a 10-day independent penetration test of the ExpressVote XL, New York's own Rochester Institute of Technology researchers found zero attacks that could alter or manipulate a voter's choices under real-world conditions at an active polling site. The New York university's testers stated "there was nothing we could find...that someone can do to change a voter's choices in the real world," Furthermore, the same tester is quoted as saying, "we really liked the device's defense-in-depth approach and the number of safeguards in place." "All of the restricted input points were out of reach or secured with multiple tamper seals." We submit this content to you since these are some of New York's brightest testers, and they have attested to the ExpressVote's integrity and security.

2. For a voting machine to be certified in New York State, it must meet or exceed federal standards declared by the Election Assistance Commission in partnership with the National Institute of Standards and Technology. In addition, New York independently hires testing laboratories to conduct robust testing as part of the state certification process. A series of stringent, no-nonsense regulations must be hurdled, and then a bipartisan commission of two Democrats and two Republicans must vote to confirm the laboratories' findings. This is a strenuous, lengthy, and extensive testing and certification process that demands that voting systems be reliable and secure. The ExpressVote XL is fully federally certified, and we are confident it will meet and exceed New York certification requirements.

One of the many travesties of S309B and A1115C is that it would nullify the voting system certification process that was carefully established to enact laws according to the Help America Vote Act (HAVA)—an act established to ensure that voting systems are modern, safe, and secure. Instead, S309B and A1115C would selectively ban proven, secure technologies. Ironically, simultaneously, S309B and A1115C would protect the use of similar technologies provided by a competing vendor.

3. Further, S309B and A1115C supports the assertion that the security and testing procedures established by the New York State Board of Elections and followed by local Boards of Election are insufficient and ignored. For example, regarding voting systems software, the fact is that such software is only provided by NYSBOE and is never provided directly by any vendor. Before each election, every county must perform a "hash check" to ensure that the software is still a state-approved version of the software. S309B and A1115C implies that the state is releasing compromised or unsafe software which is a false premise. Much of the argument against the Expressvote XL is that the security can be compromised "without detection". In addition to making a false statement that there is no system security, the assertion implies that the bipartisan machine testing and machine auditing rules, as promulgated by the state are insufficient for any voting system, hybrid or otherwise.

4. Additionally, S309B and A1115C leans on fundamental misunderstandings about bar codes in voting machines. All currently available voting machines on the market today use both machine-readable and human-readable ballot data points. This includes digital scan voting machines. Ballots with ovals that voters mark with a pencil and ballots that voters mark with a machine are

counted by the same tabulator and in the same way. The human-readable text of the candidate's name or choices appears on both ballots for voter verification and auditing purposes. Of course, barcodes are used in various industries to improve safety, accuracy, speed, and efficiency.

5. Another problematic part of S309B and A1115C is the exemption clause would allow county boards to use voting machines that they have already purchased which violates the prohibitions of the proposed legislation. The bill language includes provisions that would prevent the use of the ExpressVote in any configuration (tabulating and non-tabulating). Yet, the bill would protect and allow for the use, repair, and replacement of the Dominion Voting systems that are already sold and installed in New York.

6. Finally, elected officials must understand that S309B and A1115C is fueled by false claims and ulterior motives that benefit a specific voting machine provider. For example, proponents of S309B and A1115C have claimed that the ExpressVote XL security can be compromised "without detection," which is untrue, and independent tests confirm their assertion is false. In fact, the assertion implies that the bipartisan machine testing and machine auditing rules, as dictated by the state, are insufficient for any voting system.

ES&S has never shied away from critics and actively, candidly, and honestly shares facts at every opportunity. For example, ES&S has provided technical information on how the ExpressVote XL is disabled if a foreign USB with malware were introduced, how the hardware is physically incapable of printing over a ballot that has been printed, and how thermal ballot stock and barcodes are safely used by the ExpressVote system. ES&S remains open to meeting with anyone in the state of New York to discuss the ExpressVote XL, provide full product demonstrations and answer any questions posed. ES&S has repeatedly made this system available to legislators for review and remains steadfastly willing to continue to do so.

If S309B and A1115C were to become law, New York would be taking unprecedented action based on misinformation and mal information that ultimately harms the voters of New York. S309B and A1115C would drive a selection process for voting equipment that is artificial, unfair, and lacking in qualifications that New Yorkers deserve, such as the highest standards of security and accessibility. Black and Brown voters, in particular, still face significant hurdles in accessing the right to vote since the passage of the 15th Amendment. A study conducted by ProPublica and WRAL found Black voters' ballots were rejected at twice the rate of white voters. S309B and A1115C would impair technology that may contribute to lower ballot spoilage rates and reduce the disparity between the rate that Black and white voters' ballots are rejected. The ExpressVote XL's design and intuitive interface prompts voters in real-time to address common mistakes. This ensures that every vote is counted as voters intended.

The ExpressVote is overwhelmingly positively supported by jurisdictions across the nation. There is no rational, truth-driven basis for New York to consider banning this system. Instead, let the New York State Board of Elections continue to perform and use its best-in-the-nation regulations and certification process to determine whether it should or should not be certified.

Page 4

For all the reasons above, our client is strongly opposed to S309B and A1115C.

Attachments:

- Letter from Chris Wlaschin, Senior Vice President of Security and Chief Information Security Officer (CISO) - Election Systems & Software
- ExpressVote XL FAQ
- Rochester Institute of Technology 2021 Expressvote XL Press Release
- 2021 Amsterdam News Opinion – Hazel Dukes, President of the NAACP New York State Conference

April 25, 2022

New York Legislature
State Capitol
Washington Avenue and State Street
Albany, NY 12224

Dear Assembly Members and State Senators,

Election Systems & Software (ES&S) is a proud provider of voting system technology here in New York and across the U.S. We have provided voting systems, software and services to election jurisdictions for more than 40 years, and our commitment to security and quality is paramount.

We understand groups like Smart Elections are actively spreading misinformation about elections and ES&S voting systems. That is why I am including an FAQ which addresses many of the false claims which continue to be spread. If you have additional questions, I welcome the opportunity to actively, candidly and honestly share facts about our company and our equipment, including a demonstration of our products and answer any questions asked.

Our commitment to security, as I stated, is unparalleled. It's why I'm so proud of recent action ES&S took right here in New York, partnering with the Rochester Institute of Technology (RIT). We granted a team of cybersecurity students who are part of the nationally recognized RIT security program the opportunity to conduct an independent security test of the ExpressVote XL voting machine. After weeks of research, the team conducted a 10-day penetration test and found zero attacks that could alter or manipulate a voter's choices under real-world conditions at an active polling site. The university's testers said, "there was nothing we could find ... that someone can do to change a voter's choices in the real world," Furthermore, the same tester is quoted as saying, "we really liked the device's defense-in-depth approach and the number of safeguards in place." "All of the restricted input points were out of reach or secured with multiple tamper seals." We submit this content to you since these are some of New York's brightest testers, and they have attested to the integrity and security of the ExpressVote XL.

But this testing done at RIT isn't the only time ES&S systems have been put to the test by independent researchers. After the 2018 election, to complement our testing, we submitted our current hardware to third-party security research firms to independently verify the security of our devices. In addition, ES&S submitted our complete end-to-end voting configuration of software and hardware for testing by a Cybersecurity Infrastructure Security Agency (CISA) Critical Product Evaluation Program – one of the nation's leading centers for research and development in energy, national security, science and environment, to perform third-party independent testing of both our hardware and software to ensure the resilience and security of our voting systems.

For our systems to be certified and used here in New York, ES&S ensures that they meet or exceed the same rigorous testing standards declared by the Federal Voting Election Assistance Commission (EAC) in partnership with the National Institute of Standards and Technology (NIST). In addition, New York independently hires testing laboratories to conduct robust testing as part of the state certification process. The ExpressVote XL is fully federally certified, and I am confident it will meet and exceed New York certification requirements.

ES&S's commitment to security goes beyond rigorous systems testing. ES&S has joined two Information Sharing and Analysis Centers (ISAC): The Elections Infrastructure ISAC (EI-ISAC) and the Information Technology ISAC (IT-ISAC). Through membership in the EI-ISAC, ES&S gains access to election-specific threat alerts, cybersecurity awareness and training products, and tools for implementing security best practices. Additionally, as members of the IT-ISAC, ES&S is afforded opportunities to proactively analyze and share IT-focused threats to protect the nation's voting systems and make them even more resilient to cyber-attacks. Under the leadership of the IT-ISAC, ES&S is a founding member of the Elections Industry Special Interest Group (EI-SIG). The EI-SIG was formed to allow election vendors to expand information sharing concerning threats to election IT systems and engage in dialogue across sectors. ES&S receives weekly threat alerts that we assess and, where appropriate, apply mitigating controls to our systems, including the blocking of malicious IP addresses, malware-infested websites and phishing and related email threats.

ES&S also partners with multiple U.S. Department of Homeland Security (DHS) Critical Infrastructure Program offices, including CISA and the National Cybersecurity Assessment and Technical Services (NCATS), to conduct cyber hygiene scans of ES&S public-facing internet presence, monitor and share cyber threat information, detect and report indicators of compromise, develop and distribute election security best practices, and raise the election security awareness of election officials and the voting public. DHS NCATS' weekly scans of our public-facing internet presence ensure that we are alerted to and can react to any malicious activity directed toward our websites. DHS also conducted an on-site Risk and Vulnerability Assessment of the ES&S corporate IT infrastructure, policies and procedures.

Developers and engineers at ES&S are credentialed and highly skilled in their areas of expertise. They employ secure-coding practices, which are incorporated into all system development life cycle stages during the ES&S product development process. ES&S software and firmware products are designed and implemented using secure-coding practices, focusing on potential security risks based upon language-specific, industry-standard coding conventions as required by the EAC Voluntary Voting System Guidelines (VVSG).

All ES&S source code is subject to internal peer review to confirm conformance to the industry-standard coding conventions and is also externally reviewed during each EAC certification campaign by an EAC-accredited Voting System Test Lab chosen for each certification campaign. ES&S employs multiple testing methods, including third-party penetration testing, to ensure secure and reliable software and firmware. During the software development stage, automated unit tests validate the successful execution of code segments during each product-build cycle. All ES&S source code is maintained within repositories resident on secure ES&S internal servers, and authenticated credentials are required to gain access to those repositories. There is no use of cloud services during any part of the ES&S product-development process.

ES&S systems allow election officials to easily adhere to their states' laws mandating strict physical security and tight chain-of-custody of the voting machines. Even minor upgrades to products require extensive federal and state recertifications, which can take anywhere from months to years to complete and can cost millions of dollars depending on the changes to the product. ES&S factories are monitored by the EAC, and its manufacturers are ISO-certified.

ES&S has strict policies not to accept more data than necessary from customers, such as voter files. If ES&S receives more data than needed, they will reject it and ask for resubmission without the extraneous data. ES&S also does not retain data longer than necessary for servicing the customer.

ES&S works closely with state and federal officials, primarily DHS, to share information, learn about potential risks and cooperate on cybersecurity strategy and practices. ES&S is a leader in the DHS critical infrastructure group discussions on this, helping to drive better information-sharing and higher standards for security.

ES&S holds and has held leadership positions in the Elections Infrastructure Sector Coordinating Council (EI-SCC), an organization in partnership with the Government Coordinating Council (GCC) designed to guide voting system manufacturers and other interested parties in election security and best practices.

Finally, ES&S relies upon an extensive network of thousands of customers across 40 U.S. states, five U.S. territories and many Canadian jurisdictions, to share any system performance, reliability and potential cybersecurity risks they experience locally so that we, the system manufacturer, can assess any risk, and where necessary, apply mitigations to reduce the impact of the issues reported.

ES&S places significant importance on the security and use of election equipment, software and customer data. The measures we take to protect elections in New York and across our nation are numerous and comprehensive. ES&S has put significant resources, actions and preventative steps in place to ensure the integrity of every aspect of election accuracy. We don't shy away from sharing facts, and we are happy to answer in writing or verbally any questions that the New York assembly may have of our company. We appreciate the business we have in New York and the great responsibility we have to help secure the cornerstone of democracy in this great state.

Sincerely,

Chris Wlaschin
Senior Vice President of Security and Chief Information Security Officer (CISO)
Election Systems & Software

# Getting the facts straight about the ExpressVote XL

1. **Can the ExpressVote XL voting machine be hacked?**

   While the threats are very real, there's no evidence that any vote in a U.S. election has ever been compromised by a cybersecurity breach. The ExpressVote XL employs multiple layers of encrypted security, including unique encryption keys for every election. This ensures that all our voting machines will only accept specific, industrial-grade, U.S.-manufactured USB flash drives programmed for that election, which prevents tampering by unauthorized agents. Additionally, in an actual election scenario, layers of physical and cyber security are always in place. These measures include pre-election testing, locks, restricted access, tamper-resistant seals, chain-of-custody protocols, and work stations which are locked down to ensure limited access and providing for an environment that would be difficult to compromise.

2. **What kind of testing is done to ensure the accuracy of the ExpressVote XL voting machine?**

   All ES&S voting systems undergo hundreds of thousands of hours of testing using millions of test ballots. *Please see the included one-sheet for more information about our extensive testing process.* The ExpressVote XL has been certified by the Federal Election Assistance Commission, and stringently tested and approved not once – but twice during the 2020 election year in Pennsylvania. The ExpressVote XL has also been certified by the State of Delaware and the State of New Jersey.

3. **Does ES&S use independent testing of its voting equipment?**

   Yes, in multiple ways. Under the EAC, ES&S submits all its systems – including the ExpressVote XL – to Voting System Test Laboratories accredited by the National Institute of Standards and Technology (NIST). These labs perform tests in accordance with the federal voting system standards. Layered upon the reviews conducted under the Federal Test Program, several states also engage independent firms to audit the security of voting machines as part of the certification examination process in their states. In addition, ES&S engages with cybersecurity firms to conduct independent third-party reviews, including penetration testing and source code reviews. In 2018, ES&S submitted its end-to-end voting configuration for testing in the CISA Critical Product Evaluation Program.

   Additionally, ES&S submitted the ExpressVote XL to New York's Rochester Institute of Technology for a 10-day independent penetration test of the ExpressVote XL. In that time, researchers found zero attacks that could alter or manipulate a voter's choices under real-world conditions at an active polling site. The New York university's testers stated, "there was nothing we could find...that someone can do to change a voter's choices in the real world," Furthermore, the same tester is quoted as saying, "we really liked the device's defense-in-depth approach and the number of safeguards in place." "All of the restricted input points were out of reach or secured with multiple tamper seals." *See the attached article written by the Rochester Institute of Technology for more information about this testing.*

4. **Can the ExpressVote XL accommodate ranked-choice voting?**

   Yes, the ExpressVote XL can accommodate ranked-choice voting. No software upgrades are required. ES&S demonstrated ranked-choice voting using the ExpressVote XL at the legislative office building in Albany, NY, in January 2019.

5. I understand the ExpressVote XL uses barcodes. Can barcodes really be trusted?

Barcodes are a trusted, tested, universal technology used in a variety of ways across many different industries to improve safety, accuracy, speed and efficiency. Vote tabulators read barcodes in the same way they read oval positions on a paper ballot – so a voter-marked ballot with barcodes contains the same data as an oval ballot a voter marks by hand. Because barcodes offer a reliable way to accurately read information, the technology all but eliminates the possibility of human error (e.g. poorly marked ballots, misinterpretation of voter intent). Along with the machine-readable barcode, ballots produced by the ExpressVote XL also print the voter's selections in human-readable text, so a voter can verify their selection before casting their ballot. All ExpressVote XL ballots are fully auditable.

To read more about how barcodes are read, visit https://www.essvote.com/blog/our-technology/how-are-ballots-read/, or watch our video about how ballots are read at https://www.essvote.com/blog/video/video-how-are-ballots-counted/.

6. What was the outcome of a lawsuit filed by Jill Stein in Pennsylvania against the certification of the ExpressVote XL?

Earlier this year, U.S. District Court Judge Paul S. Diamond upheld the use of the ExpressVote XL throughout the Commonwealth of Pennsylvania and called legal challenges against the machine "baseless and irrational." This baseless legal challenge included testimony by a single "expert" witness, Professor Alex Halderman of the University of Michigan. The U.S. District Court's ruling on the ExpressVote XL universal voting machine confirmed it met all state department guidelines for use in Pennsylvania's elections. In his ruling, Judge Diamond soundly dismissed testimony for the plaintiffs, stating their witness brought no evidence the machine could be hacked and that their testimony lacked credibility. Judge Diamond went on to describe Halderman's claims as a "fantasy." The judge further stated that the paper ballots produced by the ExpressVote XL are both voter-verifiable and fully auditable, noting, "The machine is reliable and easy to use."

7. What happened with the ExpressVote XL during the November 2019 election in Northampton County, Pennsylvania?

In Northampton County in November 2019, a human error in formatting the ballot resulted in the incorrect display of results. This error in initial results reporting was immediately identified on election night and subsequently corrected by physically tabulating each paper record. We can affirm that the issue experienced during the 2019 election in Northampton County will not occur again – a fact, which was proven out during the subsequent Primary, where the county was among the first in the state to report completed election results. The County Council openly praised the technology for the outstanding performance. *Reference: Lehigh County Ramblings, 6/5/2020, "NorCo Council Delighted by Successful Primary", https://lehighvalleyramblings.blogspot.com/2020/06/norco-council-delighted-by-successful.html*

8. Can the ExpressVote XL alter, change or delete my vote?

No. The fact is, there is no ability for the voter's selections to be changed after the voter casts his or her ballot. The design of the ExpressVote card makes it virtually impossible to modify the voter verifiable ballot after it has been printed. It is even more secure than a traditional oval-filled ballot that can be modified with only a pencil or pen. The ES&S paper-based ExpressVote XL has been thoroughly tested and proven to be secure and accurate. As a result, it has been certified by the U.S. Election Assistance Commission, the Pennsylvania Department of State, the State of Delaware, and the State of New Jersey. ES&S performs thousands of hours of testing using millions of ballots to ensure that the voting machines we sell adhere to industry-leading standards. The ExpressVote XL maintains the highest level of physical and digital security controls so voters can trust that every eligible vote is counted as cast.

9. Have other jurisdictions experienced successful elections with the ExpressVote XL?

Today, there are more than 10,500 ExpressVote XL universal voting machines fielded in the country. The ExpressVote XL has been used in many successful elections, including statewide in Delaware, where users and election officials say the machines are "outstanding." Read more here: https://www.essvote.com/blog/industry-news/successful-election-using-expressvote-xl-delaware/

10. Does ES&S support post-election audits?

ES&S is a strong supporter of post-election audits – a way for election officials to verify that votes were counted accurately. Post-election auditing is conducted by election officials. ES&S voting systems provide audit details (logs, cast vote records, reports, etc.) which election officials utilize for this purpose.

11. Does ES&S support the use of paper in elections?

ES&S views paper records as critical for auditing. ES&S decided in 2018 to no longer sell paperless voting machines as the primary voting device in a jurisdiction because it is difficult to perform a meaningful audit without a paper record of each voter's selections. Using a physical paper record sets the stage for all jurisdictions to perform statistically valid post-election audits.

12. Is the ExpressVote XL cost-prohibitive?

When the costs of paper and printing costs associated with elections are figured in with the analysis, the ExpressVote XL has been shown to be a less expensive option over time when compared with systems where voters mark their ballots with a pen. One study showed that when comparing the two methods over the life of the equipment, systems using ballot marking devices are less expensive. According to Charles Dertinger, director of administration for Northampton County, PA, their analysis of costs showed that purchasing the ExpressVote XL system saved the county $600,000 over the course of a decade. *Reference: Lehigh County Ramblings, 6/5/2020, "Northampton County's new voting machines more secure, economical than paper ballots | Opinion", https://www.lehighvalleylive.com/opinion/2019/08/northampton-countys-new-voting-machines-more-secure-economical-than-paper-ballots-opinion.html*

13. Is the ExpressVote XL voter-friendly?

The ES&S ExpressVote XL Universal Voting System has received high praise for the inclusiveness it brings to the election process. The voting machine can be configured to serve every voter as a fully compliant ADA voting solution, ensuring everyone votes in the same private and independent manner. Thus, the reason this product has been nicknamed the "ExpressVote For All." Claims that using the ExpressVote XL would cause long lines is undocumented and in contrast to voter feedback related to newer voting equipment. Jurisdictions decide equipment needs based on the number of voters in a precinct. Generally, lines originate during the check-in process — not at the voting machine. On the ExpressVote XL, voters have an extremely fast voting experience at around 80 seconds on average and in as little as 20 seconds. It allows voters to review their selections twice before tabulation — on the summary screen and the printed card.

# ExpressVote® XL

## Full-Face Universal Voting System

### Got It Covered

No worries about protecting the screen when the unit is in storage or being transported — the built-in cover takes care of it.

### Comfortable Voting

The 32" full-face, tiltable screen can display an entire ballot on one screen. Voters can view the ballot in their chosen language.

### Longest Battery Backup

With four batteries, the machine could run the entire day on battery power, if needed.

### Easy Transport

Large, heavy-duty, lockable wheels make for smooth steering and stability.

### Integrated Thermal Printing

No need to purchase ink cartridges or swap them out.

### Paper-based

Voters insert a paper card, which prompts the system to display the correct ballot on the screen.

### Universal Solution

Screen is adjustable for standing and seated voters. Audio-tactile keypad enables voters to control audio and navigate the ballot.

## A Versatile Solution

- Vote Centers
- Precinct Poll Places
- Early Voting
- Election Day

Together with the ExpressPoll® electronic pollbook and ExpressVote® Activation Card Printer, you can quickly check in voters and serve up to 15,000 different ballot styles. This means no more picking and pulling ballots or wasting pre-printed stock — voters get in and out faster.

CHECK IN → RECEIVE BALLOT → VOTE AND TABULATE
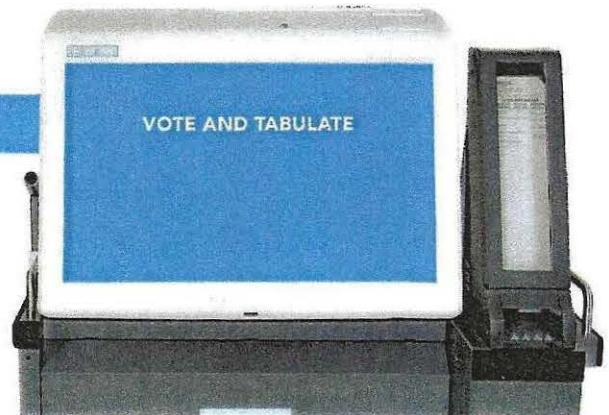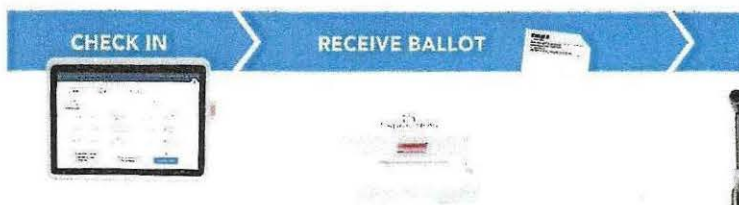
## EASY ELECTION MANAGEMENT

- Simplifies post-election management because no unclear marks need adjudication. Voters are prompted in real-time to address over/undervotes.

- Produces a voter-verifiable paper record that is scanned, tabulated and saved for auditing purposes.

- Prevents voters from getting the wrong ballot style since poll workers don't need to pick and pull ballots.

- Supports many layout options, including grid style for party voting in rows or columns. This configuration can easily be managed by jurisdictions, allowing for the most efficient use of the ExpressVote XL screen.

- Reduces costs by eliminating the need for printing and storing traditional pre-printed paper ballots.

> **Over time, the ExpressVote XL will save us money between the cost of paper, ink and other consumables."**
> BETHANY SALZARULO, CUMBERLAND COUNTY PA ELECTION DIRECTOR

## POLL WORKERS LOVE IT

- Shorter Election Day for poll workers — five steps to open and five to close — so they don't need to arrive as early or stay late.

- Telescoping privacy curtain includes a vote session light, which allows poll workers to monitor whether the device is in use without compromising voter privacy.
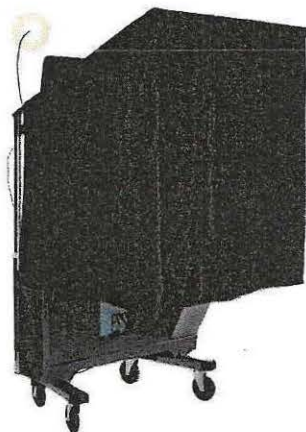
## A GREAT EXPERIENCE FOR VOTERS
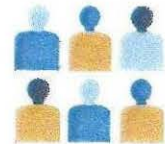
- Fully compliant with the Americans with Disabilities Act (ADA), ExpressVote XL enables all eligible voters to make their selections privately and independently.

- Improves voter confidence because the interface alerts them if they've under/overvoted a contest.

- Provides voters the opportunity to review their selections twice before tabulation — on the summary screen and the printed card.

- All voters can reinsert their printed ballot into any ExpressVote XL, including the one they voted on, and verify they voted as they intended either on the vote summary screen or by listening to the audio playback.

- Extremely fast voting experience — around 80 seconds on average and as little as 20 seconds.

## SECURITY YOU CAN COUNT ON®

The ExpressVote XL offers so many security features; we couldn't include them all here. To learn more about the great lengths we go to protect our systems and data, visit **essvote.com/feature/security**.

**SPECIFICATIONS**

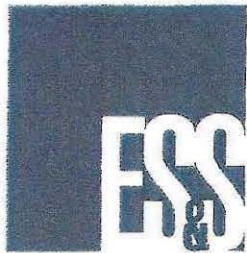Ballot style capacity: Up to 15,000

Languages supported: Any language in audio and 12+ in text

Assistive devices supported: Headphones, audio-tactile keypad, rocker switch device, sip-and-puff device

Dimensions (H x W x D):
Operational - 73" x 45.5" x 25" | Stored - 54.5" x 45.5" x 25"

Battery backup: 7 hours with 2 batteries, 14 hours with 4 batteries

# ExpressVote® XL
## Full-Face Universal Voting System

The purpose-built, paper-based ExpressVote XL full-face Universal Voting System maintains the highest levels of physical and digital security controls. It provides voter confidence with on-screen, printed and audio playback options for vote selection verification. The unit's security features control access to critical system components.

## PHYSICAL AND SYSTEM ACCESS CONTROLS

- Lockable doors with an optional unique key for each unit
- Tamper-evident seals imprinted with identification numbers
- Access codes required to gain administrative access

## MEDIA MANAGEMENT

- All USB flash drives are validated to ensure that they are the approved type and programmed for the expected function.
- The election programming and vote data are encrypted and digitally-signed, so the system can verify that they are from a trusted source and have not been altered.

## SYSTEM APPLICATION CONTROLS

- The firmware is designed to operate only as intended and protects against user error or nefarious manipulation.
- A self-diagnostic test is performed at startup and alerts of errors or inconsistent system changes before the election data is introduced.
- A detailed audit log is generated of all actions and events that occurred on the unit.

## ENCRYPTION, HASH VALIDATION AND DIGITAL SIGNATURES

- Files that contain voters' selections have the time stamp obscured to protect their privacy.
- All vote data is digitally signed as it is committed to memory to protect against modification.
- Files with vote data and results are encrypted and digitally signed at poll close to protect them during transfer.

## CAST PROCESS

- During the cast process, vote data that is read from the voter-verified paper record is recorded. The print head lifts out of contact with the paper path, allowing the ballot to pass through to the secure card container.

# ExpressVote XL Tabulation and Auditing

## PAPER BALLOT CARD

- Provides a verifiable paper vote record for every voter, containing both human-readable selections and corresponding machine-readable barcodes

- Can be read by any ExpressVote XL unit before tabulation to verify the voter's intent was captured accurately

## IS THE PAPER FROM THE EXPRESSVOTE XL AUDITABLE?

Yes. Just as hand-marked paper ballots can be inspected or audited by hand or by machine, so can ballot cards. A ballot card contains the same data as a hand-marked ballot, displayed in different ways. During a post-election hand-count audit, candidate names are used to count the vote.

ES&S fully supports the use of paper ballots and post-election audits to ensure accuracy and increase confidence in our country's election process. A physical paper record of the selected candidate names provides the means to a statistically valid post-election audit.

# ES&S Security Philosophy

Nothing is more important to ES&S than protecting America's democracy through secure and accurate elections. That's why every ES&S product reflects the company's three-part security philosophy:

- **Design:** All products are designed, without compromise, to meet the latest and ever-evolving standards in security, accuracy and reliability.

- **Testing:** In addition to ES&S testing protocols, all tabulation systems are rigorously tested and certified by the federal Election Assistance Commission (EAC), which reflects security and performance standards developed by scientists, academia and election officials. The ES&S testing protocol also involves testing by independent, accredited laboratories. ES&S submitted our end-to-end voting configuration for Cybersecurity and Infrastructure Security Agency (CISA) critical product evaluation (CPE) at Idaho National Labs.

- **Implementation:** The entire ES&S team is devoted to ensuring that each piece of technology performs as expected on election day, helping election officials uphold the laws of their state which mandate strict physical security and tight chain of custody of all voting machines.

Perhaps most importantly, ES&S' essence — its very being — is predicated on providing America with secure, accurate and accessible elections. Every person at ES&S holds themselves, and each other, accountable for this mandate, and is proud to serve a role in this noble purpose.

# Testing & Accuracy

In order to earn EAC certification, voting systems must be tested for conformance to pre-established standards. Certification testing under the EAC's program can only be performed by accredited Voting System Test Labs (VSTLs), which have demonstrated technical competence to test voting systems.

**ES&S ELECTION** Systems & Software

## CERTIFICATION TEST PROCESS

The testing generally consists of three phases:

**Pre-test Activities** → **National Certification Testing** → **National Certification Report Issuance and Post-test Activities**

## CERTIFICATION TESTING

### SOURCE CODE INSPECTION

Both manual and automated source code inspections are performed for the following types of inspections: Compliance, Functional, COTS, Security, and Build.

### OPERATION ENVIRONMENTAL TESTING

**Availability:** This tests that equipment will respond to operational commands and accomplish the function. For example, pushing the power button will turn on or off the equipment.
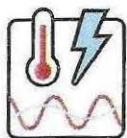
**Temperature and Power Variation:** This procedure tests system operation, consisting of ballot-counting cycles, under varying environmental conditions for at least 163 hours.

**Product Safety:** This evaluates the voting system to the requirements set forth in UL-60950-1, "Safety of Information Technology."

**Maintainability:** The ease with which maintenance actions can be performed.

### PERFORMANCE-BASED SYSTEM TESTING

**Volume & Stress:**
These tests investigate the voting system's response to short term overloads, such as processing atypical high volume of ballots/voters per precinct and processing more than expected number of precincts.

**Logic & Accuracy:**
This tests the ability of the voting system to capture, record, store, consolidate, and report the specific selections, and absence of selections, made by the voter.

This test requires the system to correctly read **1.5 million consecutive ballot positions without error.**
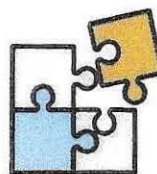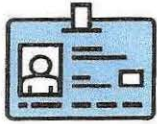
**System Integration:**
The primary objective of this test is to validate that the voting system functions correctly when all the elements (hardware, software, documentation, etc.) are used together.

# CERTIFICATION TESTING (CONTINUED)

## SECURITY

Security requirements apply to the system's hardware, software and documentation. During the Security Tests, the voting system shall be tested for:

**Access Control**: Procedures and system capabilities that limit or detect access to critical system components in order to guard against loss of system integrity, availability, confidentiality, and accountability.

**Physical Security**: Measures and procedures that prevent disruption of the voting process at the polling place and corruption of data.
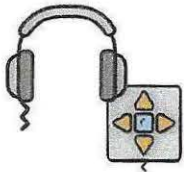
**Software Security**: Standards that address the installation of software, including firmware, in the voting system and the protection against malicious software.

## HARDWARE ENVIRONMENTAL TESTING

These tests simulate the stresses that voting machines and ballot counters face during storage, transport, maintenance, and repair. Tests include:

- Bench Handling
- Vibration
- Low Temperature
- High Temperature
- Humidity
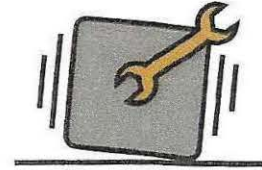
## ELECTRICAL HARDWARE TESTING

These tests demonstrate the system's ability to be able to continue operating, without damage or loss of data, while facing a range of electrical conditions:

- **Electrical Supply**: Tests the ability to operate with the electrical supply ordinarily found in polling places, central tabulation facilities, or computer room facilities.
- **Backup Power**: Tests that all voting machines are capable of operating with no interruptions for at least two hours on backup power.
- **Electrical Power Disturbances**
- **Electrical Fast Transients**
- **Lightning Surges**
- **Electrostatic Disruptions**
- **Electromagnetic Emissions**
- **Electromagnetic Fields**

## USABILITY/ACCESSIBILITY

These tests focus on voters and poll workers being able to successfully interact with voting systems.

It ensures general usability with voting systems and alternative language requirements follow state or federal law.

It includes all voters, including those who have physical, sensory, or cognitive disabilities. It also assists those not usually described as having a disability, e.g., voters with poor eyesight or limited dexterity.

## PHYSICAL CONFIGURATION AUDIT (PCA)

A comparison of the voting system components submitted for testing to the manufacturer's technical specifications. It confirms that the documentation submitted meets the national certification requirements.
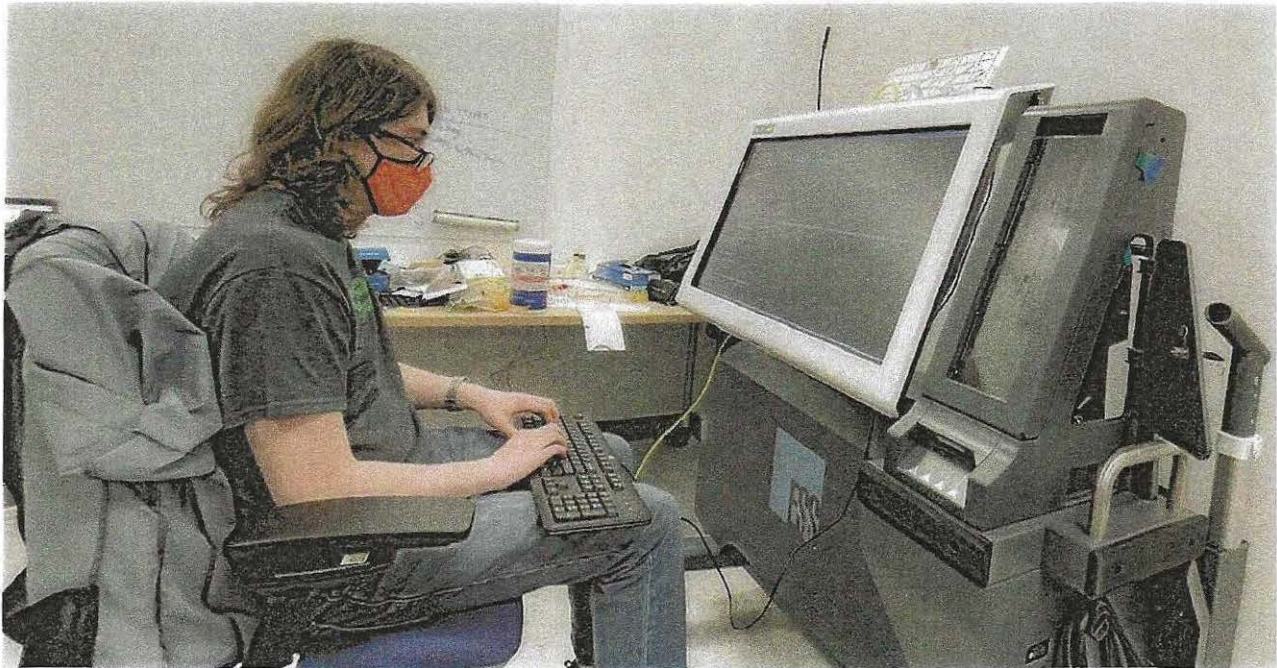
## TECHNICAL DATA PACKAGE (TDP) REVIEW

A formal review of the documentation submitted along with the system under evaluation.

July 27, 2021 by Scott Bureau

# RIT cybersecurity student researchers put voting machine security to the test

**Penetration test of ES&S voting machine searches for possible attacks and vulnerabilities**



Robert Gray, a third-year computing security BS/MS major, was part of an undergraduate team that conducted a penetration test of an ExpressVote XL voting machine.

A team of Rochester Institute of Technology students was granted the opportunity to conduct an independent security test of the ExpressVote XL voting machine for Election Systems & Software (ES&S), the largest voting device manufacturer in the United States.

After weeks of research, the team conducted a 10-day penetration test on the ExpressVote XL voting machine. As a result of the engagement, the student researchers found zero attacks that could alter or manipulate a voter's choices under real-world conditions at an active polling site.

"This is a testament to the security of this piece of our nation's critical infrastructure and the strength of our nation's elections," said Chris Wlaschin, senior vice president and Chief Information Security Officer at ES&S. "The comprehensive nature of the penetration tests, the high-quality analysis conducted by the RIT team, and the actionable recommendations set forth in the report have laid the foundation for a potential long-term security testing relationship between RIT and ES&S."

Since the 2016 and 2020 election cycles, public interest in voting security has intensified. Government and cyber experts say the potential for cyberattacks on election infrastructure continues to be a growing threat to national security.

"It's the reason why ES&S continues to focus on the security of its voting systems and partnering with third-party researchers to ensure the resilience of election equipment," Wlaschin said. "Every eligible voter should know that their ballot is being counted as cast."

Ian Stroszeck, a fifth-year computing security BS/MS student, feels the same way. He has always had an interest in government, even opting to become a poll worker in Monroe County to better understand how elections are conducted. Recognizing how relevant last year's election was to his studies, he and a team of computing security students wanted to test the security of electronic voting hardware for their undergraduate capstone project.

"It's important to do this because of the current lack of public research out there," said Stroszeck, who is from the Rochester, N.Y. suburb of Brighton. "To alter the integrity of an election you don't even have to attack the device—you just need to create uncertainty. These companies need to be open and let the public know that they are, in good faith, striving to keep these machines as secure as possible."

Stroszeck—along with Andrew Afonso, a fifth-year BS/MS student from Hubbardston, Mass.; Robert Gray, a fourth-year BS/MS student from Canandaigua, N.Y.; and Daniel Monteagudo, who graduated with a bachelor's in computing security in 2021 and is from Staten Island, N.Y.—worked with RIT's Global Cybersecurity Institute (GCI) to reach out to several manufacturers and government entities to gauge interest in security testing a voting machine. ES&S returned the call.

"I thought it was unique that a respected academic institution came to us and we saw a real opportunity for testing in New York," said Wlaschin. "There is immense value in conducting independent testing with academia and I found the quality beyond reproach."

ES&S interviewed the students and faculty to make sure the penetration testing program was legitimate, respected and guided by professional and ethical behavior. Wlaschin also wanted to review the testing site, located in the GCI's Eaton Cybersecurity SAFE (Security Assessment and Forensic Examination) Lab.

The RIT team went to work creating threat models for the ExpressVote XL, a ballot marking device and tabulator designed to be accessible for all voters. It has a full face 32-inch interactive touchscreen and a scanner/printer that produces a voter-verifiable paper record. The ExpressVote XL is pending certification in New York and is already being used by voters in Pennsylvania, New Jersey, and the entire state of Delaware.

For the penetration test, the RIT students developed two scenarios where the voting machine might likely be found.

In the first attack scenario, the team envisioned that the device would be located in an unsecured storage closet. There, attackers would likely have access to the device for hours with nobody watching them.

In the second scenario, the team envisioned the device in an active polling place. Attackers in this environment would only have a few minutes alone with the device before poll workers would likely get suspicious. The device would be turned on and logging all actions.

"There was nothing we could find—in either scenario—that someone can do to change a voter's choices in the real world," said Stroszeck.

The students invited people to vote on the machine in a mock election in order to gather feedback on the usability and timing of voters voting on the machine. They started with physical access control testing, by looking at the



During the engagement, RIT student researchers tested software security and physical security, including testing tamper seals on the voting machine.

tamper seals and locks on the machine. Additionally, they tested the touchscreen, storage devices, operating system, and firmware. They also attempted to modify the paper ballot to alter votes or change the count of votes.

"We really liked the device's defense-in-depth approach and the number of safeguards in place," Stroszeck said. "All of the restricted input points were out of reach or secured with multiple tamper seals."

The team did identify a limited number of specific areas for improvement and offered recommendations on how to incorporate these improvements into the ExpressVote XL. These recommendations did not represent problems that could actually be exploited during an election, as they were protected by compensating controls, explained Wlaschin. The recommendations ranged from strengthening the locks and seals to improving the functionality of the software. The company plans to incorporate the student's recommendations into its next product release.

"Some people have alleged that attackers could easily change the election results in the ExpressVote XL machine," said Wlaschin. "The RIT team disproved this and affirmed that you are not able to manipulate the machine without detection."

RIT's Department of Computing Security gave the RIT students the Top Capstone Project of the Year award for their work.

In the future, researchers in the GCI want to partner with more businesses and organizations to provide security testing services for voting systems.

"It was surprising that during our research we could not find an established route through government agencies for someone to do independent testing of voting machines," said Afonso. "The states agencies we contacted to arrange access to a machine to test did not have an established process to handle such a request. I hope that we can establish GCI as a new type of testing lab for testing the security of voting machines."

# To ensure every vote is counted and every voice can be heard

HAZEL N. DUKES, President of the NAACP New York State Conference | 5/27/2021

I believe there is one truth about elections that every single New Yorker can stand behind: all eligible voters deserve to cast their vote freely and fairly, with a ballot that is easy to understand and use.

Black and Brown communities are vulnerable to disenfranchisement. Fifty-six years after the Voting Rights Act was signed into law, we are still witnessing nefarious efforts to suppress Black and Brown voters. The NAACP was integrally involved in helping to pass the landmark Voting Rights Act. As president of the NAACP New York Conference, I remain committed to upholding the spirit of the law. We cannot allow what happened in Georgia to happen here in New York. We are at risk of a similar fate of disenfranchising voters if we do not ensure that voters are educated about the new Ranked Choice Voting (RCV). We need to simplify the process and modernize our voting technology to make sure every vote is captured, regardless of background and race, and people can engage in the democratic process, for which activists who came before us fought and died.

That is why today, I am calling on the State Board of Elections to put politics aside and move ahead with approval of machines that provide universal access to the ballot and make the voting process less daunting and more user-friendly for all. I recently had the opportunity to view a voting machine called the ExpressVote XL, and I believe this advanced, secure technology is exactly what New Yorkers need.

Universal voting machines like the ExpressVote XL allow all voters—including voters with a disability or those who speak a language other than English—to make their selections on a high-tech touchscreen. This technology walks voters step-by-step through ranked choice races, preventing them from common errors which could invalidate their ballot. The machine then produces a physical paper record of the voter's selections to review and approve before casting their vote. I have been casting votes for many years, and from what I observed during the demonstration, I am confident that ExpressVote XL will improve the integrity of our voting system for all voters, while ensuring we count every vote.

New York is far behind other cities and states, such as Philadelphia, Delaware, and New Jersey that have access to this technology. Our State Board of Elections has prevented New York City and every other city and county in the state from using the newer, tested and proven technology provided by the ExpressVote XL.

With a modern paper-based touchscreen voting machine, voters can view their entire ballot at one time, presented in a way that is easy to understand, choosing the language with which they are most comfortable. What is more, the disabilities community also advocates for these universal voting devices to be made available to all voters because they are fully ADA accessible, creating equal access for all.

The very act of exercising our Constitutional right to vote is often frustrating and disastrous. Long lines and complicated ballots deter people from voting. Voting ought to be accessible to every eligible voter. We cannot afford to wait any longer on making the decision to approve ExpressVote XL. The Democratic Primary is just weeks away. While it is too late to make changes that will have a meaningful impact on this primary, we should be looking toward the future. Too much is at stake with thousands of voters going to the polls, a myriad of election races, a complicated ballot, and numerous languages spoken. Using the most advanced technology will help prevent voter confusion, and move New York from bringing up the rear to the front in voting machine modernization.

To the State Board of Elections, I ask you to do what's right by all New York voters and move quickly to approve the ExpressVote XL, so every vote is counted and every voice can be heard.


*http://amsterdamnews.com/news/2021/may/27/hazel-dukes-naacp-vote/*