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July 31, 2023

The Honorable Kathleen Hochul, Governor of the State of New York
Senate Majority Leader Chuck Schumer
NY Senator Kirsten Gillibrand

Speaker of the House, Kevin McCarthy
House Democratic Leader Hakeem Jeffries

New York State Board of Election Commissioners

Douglas A. Kellner / Co-Chair
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Anthony J. Casale / Commissioner
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We strongly oppose the approval of the ExpressVote XL for use in New York State. It is an all-in-one voting machine, from ES&S, that combines a ballot marker with a printer and a scanner that counts votes using barcodes.

The ExpressVote XL violates multiple New York statutes. We are going to illustrate exactly how, and also have included some photos and documents that we hope you will take the time to examine.

New York's 11.5 million active voters could decide the balance of power in the U.S. House of Representatives in 2024, and it is critically important that both New Yorkers and the rest of the country be *very* confident that our votes are being counted accurately. We have already seen the frustration and violence that can erupt when there is doubt about the accuracy of election results.

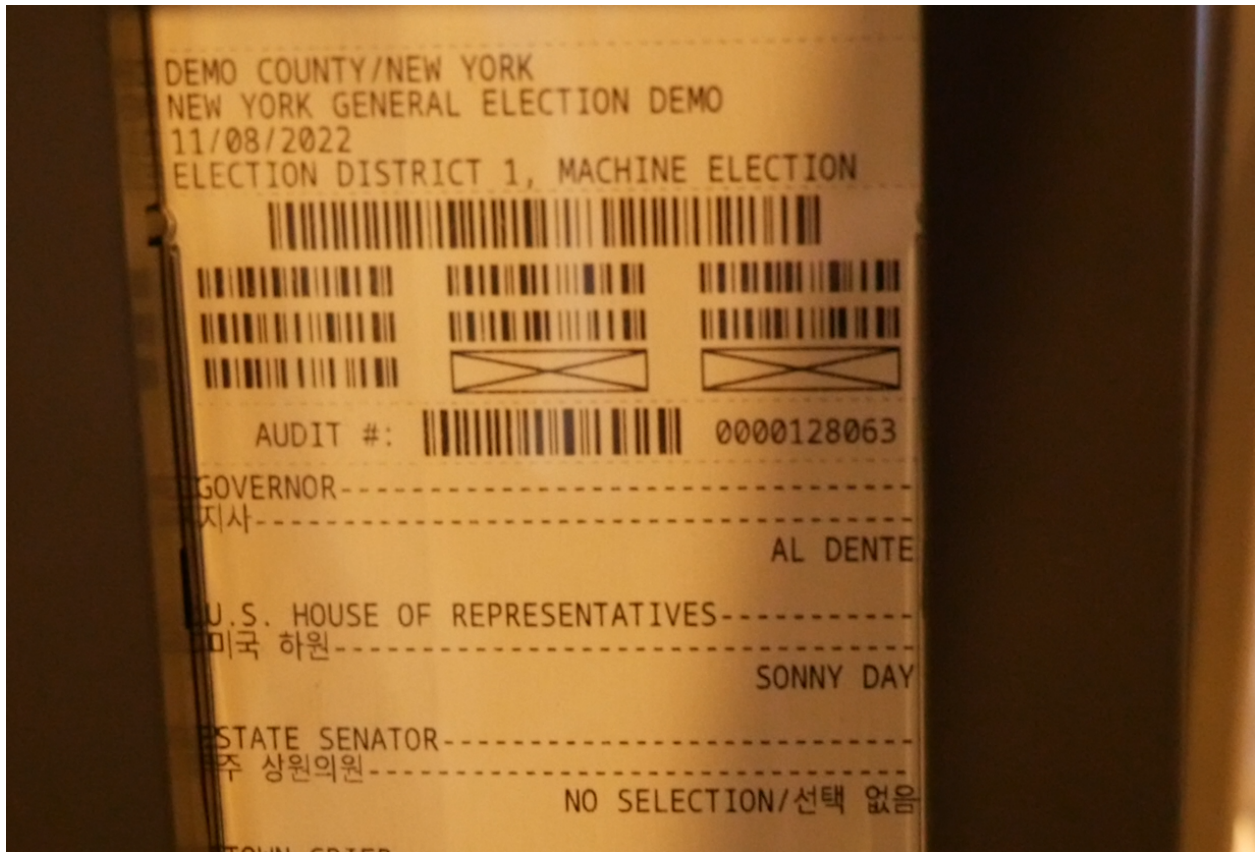
EXPRESSVOTE XL VIOLATES NY STATUTES

We are using a local race as an example of one way that the ExpressVote XL violates New York law, but there are many races where this scenario could play out. **If voters cannot verify their vote for any race, the voting machine, does not legally meet the requirement of:**

New York Election Law § 7-202 (e), “A voting machine or system to be approved by the state board of elections shall: **provide the voter an opportunity to privately and independently verify votes selected** and the ability to privately and independently change such votes or correct any error before the ballot is cast and counted;

Here is what the ExpressVote XL summary card looks like. (Image 1) It does not print the standard hand-marked paper ballot that we have used in New York for the last ten years. It prints a summary card of what the computer’s programming indicates are the voter’s choices. It has text for the voters to read (if they can read the small print behind the plastic barrier.) **But it does not count this text list of candidates and referendums. It prints barcodes at the top of the ballot, and those barcodes are what the ExpressVote XL scanner counts.**

Image 1: ExpressVote XL Summary Card behind polycarbonate (plastic) barrier



Here is a scenario that demonstrates why the ExpressVote XL violates New York Election Law § 7-202 (e)

In this example, there is a race for District Leader in Flatbush Brooklyn, New York (Assembly District 42.) There are two people running Ella and Eduardo.

In the ballot programming of the ExpressVote XL, the barcodes for Ella and Eduardo get flipped. The text is correct, but the barcodes are wrong.

When voters choose Ella, instead of the barcode that represents a vote for her, the machine prints Eduardo's barcode. When voters choose Eduardo, the machine prints the barcode that is a vote for Ella.

So to recap: Ella is getting Eduardo's votes and Eduardo is getting Ella's votes.

Voters have no way of correcting this, or even knowing that it's happening. They see the text for the candidate they voted for and are happy believing their vote is being counted correctly. There are also no numbers shown on the barcodes, so there is literally no way for a voter or candidate to check if the barcode is correct.

In New York currently there is a mandatory audit of three percent of the machines in each election. In the past, this audit was done manually by looking at the ballots.

However, due to a change in the law, counties are now allowed to audit their ballots by running them through a scanner from a different vendor, as long as that vendor is approved by the State Board of Elections for that purpose.

The vendor that is approved is Clear Ballot. Clear Ballot says that currently 43 of New York's 62 counties (most of the counties) audit their ballots by running them through the Clear Ballot scanners. This includes all five counties in New York City, which is the largest jurisdiction, with approximately 4.6 million active voters.

We asked Clear Ballot if the ExpressVote XL ballots will be audited by reading the text, or reading the barcode.

James Rundlett, the National Sales Manager of Clear Ballot responded that they are not currently certified to audit ExpressVote XL in New York, but said, "We do have experience auditing the ExpressVotes in other states through reading the **barcodes**. We **do not read the text.**" (His emphasis.)

Returning to our misprogrammed Brooklyn District Leader election.

The candidates campaigned quite differently. Ella has a lot of strong, influential connections, but ran a quiet campaign. Eduardo is very outgoing. He was on social media and went to lots of events.

It is a close race, but in the end, Ella has the most people vote for her. Her strong connections and long service in the community make the difference for most voters. 51% of the voters in Assembly District 42 chose Ella. **But because of the barcode**

programming error, the machine gave Ella's 51% of the vote to Eduardo, and Eduardo's 49% of the vote to Ella. Eduardo is declared the winner. Because Eduardo was so outgoing, no one, not even Ellas questions his win. Ella feels discouraged and never runs for office again.

After the election, as we said, there is an audit. The ballots from three percent of the machines are run through scanners from Clear Ballot. Since those scanners also count only the barcodes, the mistake is not discovered. There is a final hand-count audit of three percent of the three percent of the Clear Ballot scanners. This 3% of 3% usually ends up being the ballots from **one** voting machine that are counted by hand. It must be a voting machine with at least 50 ballots, so officials usually pick the machine with the least number of ballots over 50. The machine for the hand-count is not randomly drawn, and there is no requirement that it be. In our imaginary test case, officials pick a small district in Sunset Park to count by hand. ***Ella and Eduardo's race is not even on that ballot. They are in a small local race in Flatbush. No one looks at their race by hand at all. The ballots from Ella and Eduardo's race are never examined, and no one knows that the wrong winner was chosen.***

ES&S says at their demonstrations that encoding the vote in a barcode is basically identical to the way New York counts its votes now. But this is not true.

Currently all voters fill in an SAT-style bubble and those ballots are counted by scanners. The type of error we've just described could *not* happen with our current system. When voters fill in the bubbles next to the name of the candidate, they are automatically checking that it is their candidate. There is the possibility that the scanner might *count* their bubble incorrectly, which is why we conduct audits. But that is a different risk than the possibility that the vote itself represents the wrong candidate. Our audits are not structured to catch this mistake, and they will not. **Mistakes do and will happen. But they must be able to be caught and corrected. With the ExpressVote XL, voters cannot verify who they voted for. Mistakes will go uncorrected, and incorrect candidates will be chosen. This is clearly a violation of New York Statutes.**

There are many other ways that the ExpresVote XL violates New York Statutes.

The ExpressVote XL also has a design flaw that allows for the printer to print on ballots after they have been cast. The company says in [this video](#) that they've repaired this issue, but Election Security expert Andrew Appel says that [they have not](#). We agree with Professor Appel. And it's not that hard to understand why. ES&S says they put a mechanical gear in place that only allows the ballot to be printed on when it's going in one direction. Well, if you want to print on the ballot, you have the software loop it around again and run it through in that same direction. **So the ballot can still be printed on after the voter casts their votes. According to experts, it can "if hacked, can add, delete, or change votes on individual ballots — and no voting machine is immune from hacking."** There are [two](#) detailed [articles](#) by voting

machine expert Kevin Skoglund about how votes could be altered, by changing the barcode.

This violates New York Election Law § 7–202 (r) (ii) A voting machine or system to be approved by the state board of elections shall: ensure the integrity and security of the voting machine or system by: providing a means by which a malfunctioning voting machine or system shall secure any votes already cast on such machine or system;

Once the voter casts the ballot, it is “already cast” but if the machine is malfunctioning and prints on that ballot, then the machine has not secured those votes.

New York already (unwisely) has another voting machine in service with this design flaw: the Dominion ICE machine. The Board requires a special audit of the ICE machine, to check if it is printing more sessions than it is authorized to. So, for example, if the ICE machine only has *three* accessible sessions, it's only supposed to have *three* printing sessions. In this way, they try to make sure that the ICE machine is not printing when it's not supposed to be. And if it is, the Board takes this very seriously. It instructs the counties that if they find two machines that are printing more than authorized, [“the State Board of Elections must be notified immediately.”](#) (P. 25)

It's possible to do this check on the ICE machine, because it is designed differently than the ExpressVote XL. The ICE machine still allows most voters to use hand-marked paper ballots, and only voters who choose to use the machine as an accessible ballot marker need to have the machine print a ballot for them. So the number of times the machine prints will logically match the number of accessible sessions.

The ExpressVote XL is designed completely differently. *All* voters use the touchscreen, *all* summary cards are printed by the machine. **So the audit that the Board has chosen to try and discover any malfunction from the printer design flaw, will not work with the design of the ExpressVote XL.**

There is *no* way for elected officials, candidates, or voters to determine that NO barcode has been changed, or that all the selections are what the voters have chosen. This is especially so on down-ballot races, which as we have shown, will likely never be looked at in a hand-eye comparison audit. **This is a violation of statute.**

Here is another likely scenario that will violate New York statutes. Suppose that the ExpressVote XL goes out of calibration. An out of calibration machine can cast the vote for the wrong candidate. In Northampton County PA, [30% of the ExpressVote XL machines were delivered out of calibration](#). In this scenario hundreds of voters vote on the machine selecting the wrong candidate and having a vote for the wrong candidate printed and counted. The summary card has small print and is behind plastic. Multiple studies have shown that very few voters check computer-generated ballots for accuracy. Finally, after several hours, one voter

notices that the machine is printing a different candidate than she chose. Technicians are called and the machine is taken out of service. **There is no way for the incorrect votes that have already been cast to be corrected.** Those votes were “already cast,” but there is no way now to secure them from a “malfunctioning voting machine.” **So this scenario also violates §7–202 (r) (ii).**

But it violates another provision of the NY Election Law as well. Imagine that this scenario takes place in 2024. The race is for President of the United States, and there is no way to determine how many incorrect votes have been cast for the President. **We could have riots.**

This violates Election Law § 7–201 (1) that requires that voting machines approved by the board must be able to be used “safely.”

None of these scenarios could happen with our current voting system. With our current system, most voters fill out a hand-marked paper ballot. Our current ballot-markers print a ballot that looks like a hand-marked paper ballot, and in both of these set-ups voters have ample opportunity to examine the ballot and ensure their votes are correct.

We will demonstrate one other violation.

New York Election Law § 3–222 (2) requires “Voted ballots shall be preserved for two years after such election.” New York also has a requirement that elections that are closer than a .5% margin of victory be recounted completely by hand. New York City has ranked choice voting. [In 2021, a Harlem City Council primary had to go thirteen rounds](#) in order to be decided. The margin of victory was less than .5%, so the ballots were counted by hand. This included being handled, sorted, stacked and recounted many times. **5,796, of the 28,096 ballots in the race were handled in the final thirteenth round of the count.**

New York ballots must therefore must be able to last for two years and withstand multiple hand recounts. The ExpressVote XL summary card is made of flimsy paper and printed with a thermal printing process. [Experts say this summary card cannot withstand the required two years retention period.](#) They say the information will likely fade. **This is a violation of New York Election Law § 3–222 (2)**

The thermal paper summary cards also cannot withstand the required hand recounts and potential exposure to hand sanitizer.

Below is an ExpressVote XL summary card from an ExpressVote XL demonstration with hand sanitizer rubbed on it. The information with the recorded votes is almost completely gone.

Please see next page. (Image 2)

Image 2: ExpressVote XL thermal paper summary card with hand sanitizer on it

GENERAL ELECTION DEMO
08/2022
ELECTION DISTRICT 1, MACHINE ELECTION

AUDIT #: 0000130567

GOVERNOR
지사 ----- JEANNIE OLOGY

U.S. HOUSE OF REPRESENTATIVES
미국 하원 ----- SONNY DAY

STATE SENATOR
주 상원의원 ----- PATTY MELT

TOWN CRIER
타운 크라이어 ----- PEG ASUS

MEMBER OF THE ASSEMBLY
하원의원 ----- WARREN PEACE

BOARD OF COMMISSIONERS
카운티 위원회 ----- DOM ANOSE
WILL HUGH MARIMEE

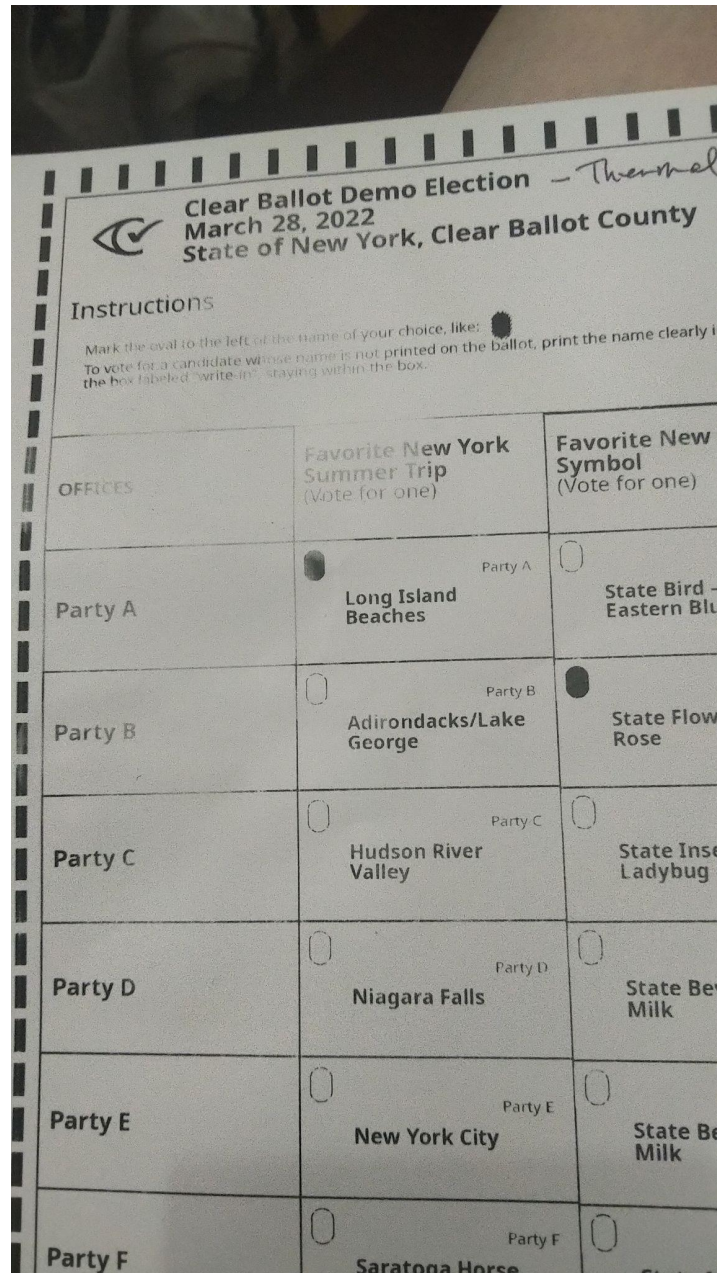
MINISTER OF SILLY WALKS
바보의 장관 ----- WILLY R WHOANTEE

STATE REFERENDUM
주 국민투표 -----

NO SELECTION
선택 없음

CHARTER AMENDMENT

Image 3: Clear Ballot thermal paper ballot with hand sanitizer on it

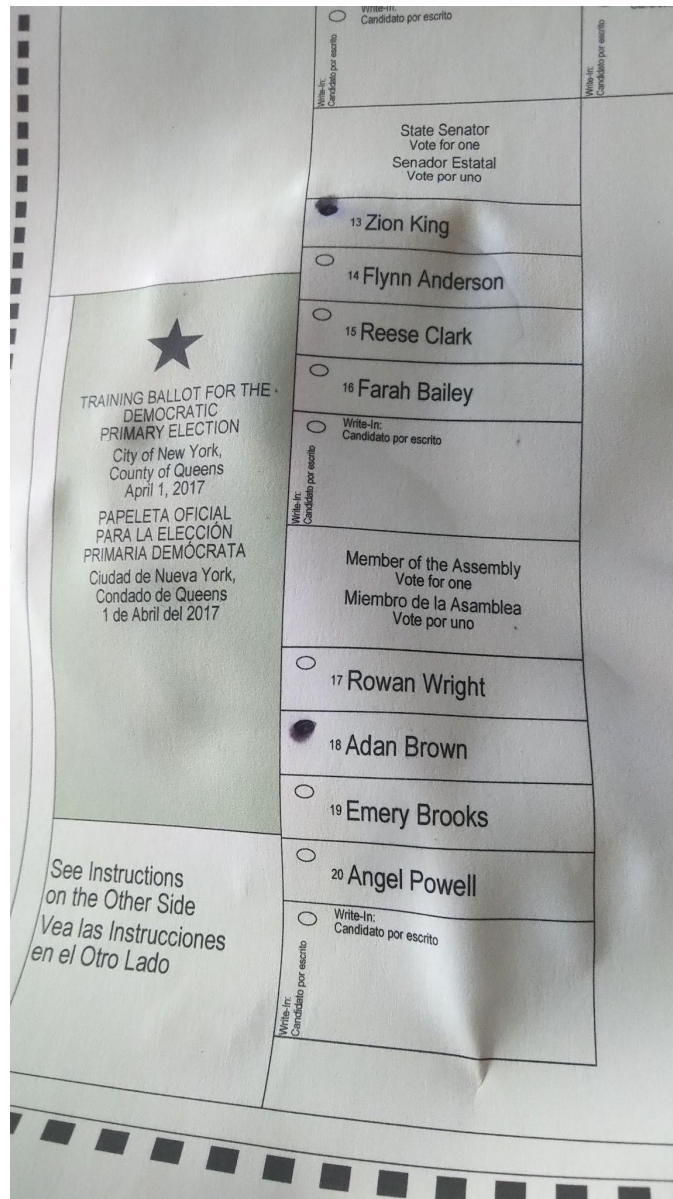


Clear Ballot also has submitted a voting machine that can print on thermal paper.

Clear Ballot has a number of advantages.

1. They have also submitted a standard ballot with standard printing. So their voting machine does not require the use of thermal paper. New York can continue our standard printing process if we prefer.
2. Because the Clear Ballot machine prints a ballot that replicates a hand-marked paper ballot, even with hand sanitizer on it, the votes themselves remain clearly visible.

Image 4: New York City's current ballot with hand sanitizer rubbed on it. It remains completely legible.



This is the ballot that is used by New York City pen and paper voters and the Automark, the current ballot-marking device in New York City. Hand sanitizer was rubbed into it. But there was almost no effect. The paper ruffled a little, but the text remained crystal clear. The votes are still easy to read.

The ExpressVote XL summary card is an inexcusable degradation of our current sturdy ballot. **It is also a clear violation of New York Election Law.**

SOURCE CODE ERRORS

Finally, we want to point out that the ExpressVote XL has 450 open security discrepancies in the testing reports from the New York testing lab, SLI Compliance. It is not legal for the Board to approve a voting machine with discrepancies that place it in violation of requirements. (NYSTEC is a 2nd testing lab that summarizes and checks the SLI report.)

From the [NYSTEC Testing Oversight of ES&S Express Vote \(EVS\) 6.3.0.1](#) (P. 11)

“In a code review, a discrepancy occurs when the source code does not meet defined requirements or specifications, does not function as intended, or allows a security breach. In all other testing, a discrepancy occurs when an element of the voting system does not meet defined functional or security requirements. **The final count of open discrepancies reflects issues that were not addressed during the certification process and that remain in violation of requirements.**”

Image 5: Page from the NYSTEC Testing Oversight of ES&S Express Vote (EVS) 6.3.0.1 Public Report v1 (P. 11)



4 Discrepancies

4.1 SLI Findings

SLI reports a discrepancy found during testing as a “JIRA.” In a code review, a discrepancy occurs when the source code does not meet defined requirements or specifications, does not function as intended, or allows a security breach. In all other testing, a discrepancy occurs when an element of the voting system does not meet defined functional or security requirements. **The final count of open discrepancies reflects issues that were not addressed during the certification process and that remain in violation of requirements.**

TABLE 1, COUNT OF ALL DISCREPANCIES REPORTED BY SLI

	REPORTED TEST ISSUES (JIRAS)	SOURCE CODE	SECURITY SOURCE CODE (POTENTIAL VULNERABILITIES)	TOTAL
Discrepancies found during testing	34	20	430	484
Open discrepancies	0	20	430	450

(P. 6 from the NYSTEC Testing Oversight of ES&S Express Vote) “**Several issues were found by SLI during their review of the source code ... As a best practice in software development, code should not rely on external environmental controls for security, therefore, NYSTEC recommends that ES&S remediate these issues in their code,** along with the list of issues they agreed to address...”

(P. 9 from the NYSTEC Testing Oversight of ES&S Express Vote) **“In total, 43,218 potential vulnerabilities were identified** by Checkmarx, but approximately 94% of findings were marked as “Not Exploitable.” The other findings were put into a list of 430 potential vulnerabilities. SLI has classified the “Exploit Potential” of these 430 potential vulnerabilities to require “Extensive knowledge of the system or a Vendor Insider”.

Attackers exist who do have extensive knowledge of the system, including vendor insiders. So SLI Compliance identified these threats, and they cannot be ignored, wished away, or dealt with at a later date. They must be addressed prior to any consideration of approval.

SUMMARY

To summarize, the ExpressVote XL violates these NY Election Laws:

- § 3–222 (2) The ExpressVote XL summary cards cannot be guaranteed to withstand the required two year retention period and the extensive handling that New York ballots must be able to withstand.
- § 7–201 (1) The ExpressVote XL cannot be used safely in the current political climate with many mass shootings and violence over election results a looming reality.
- § 7–202 (e) Voters cannot verify their selected votes
- § 7–202 (r) (ii) The ExpressVote XL cannot ensure the integrity and security of the voting machine or system. It does not provide a means by which a malfunctioning voting machine or system can secure the votes already cast on that machine

The ExpressVote XL has tens of thousands of discrepancies, over 400 of which are considered “exploitable” (serious), have not been resolved and are in violation of requirements.”

We understand from documents reviewed via public records request that [ES&S threatened to sue the New York State Board of Elections](#). It is never fun to experience bullying or coercive behavior, but we expect our public agencies to do the right thing and stand up to unethical forms of persuasion.

There is widespread [dismay](#) and even alarm among both voters and experts that the state is considering this illegal voting machine. **Please reject its use and assure voters and candidates that you will continue to uphold the law and protect their best interests.**

Thank you.

Sincerely,
Lulu Friesdat
SMART Elections, Co-Founder & Executive Director