

STATE OF NORTH CAROLINA
COUNTY OF WAKE

IN THE GENERAL COURT OF JUSTICE
SUPERIOR COURT DIVISION
20 CVS 5035

NORTH CAROLINA STATE CONFERENCE)
OF THE NAACP, et al.,)
)
Plaintiffs,)

v.)

NORTH CAROLINA STATE BOARD OF)
ELECTIONS, et al.,)
)
Defendants,)

**AFFIDAVIT OF VIRGINIA
MARTIN**

AFFIDAVIT OF VIRGINIA MARTIN

I, VIRGINIA MARTIN, do hereby say under oath the following:

1. I am of legal age and competent to provide this affidavit. All the information herein is based on my own personal knowledge unless otherwise indicated.

2. My background, qualifications, and professional affiliations are set forth in my curriculum vitae, which is attached as Exhibit A.

3. I served as Democratic Election Commissioner in Columbia County, New York from 2008 until early 2020. The role of Democratic Election Commissioner in Columbia County is a full-time salaried role overseeing three full-time Democratic staff, one half-time Democratic staff, and 150 or more Democratic seasonal and election-day workers.

4. I am a member of the Election Verification Network, a national organization; a member of the advisory board of the National Election Defense Council; a member of the board of directors of Citizens for Voting Integrity New York; a member of the advisory board of SMART Elections; and a member of the New York Democratic Lawyers Council.

5. I have frequently been called upon to present to groups all around the country that are interested in election security, I have frequently appeared on a variety of radio programs, and I have been interviewed for many newspaper and blog articles about my experience with election security. I have been asked to submit my own articles, as well, and for a brief time wrote a column for a local newspaper.

6. I have an MS and a PhD, both in communication and rhetoric, from Rensselaer Polytechnic Institute in Troy, New York.

7. I oversaw a transition of election systems in Columbia County, New York, to a primarily hand-marked paper ballot system. I have a great deal of experience over dozens of elections overseeing the optical-scan voting, the secure chain of custody, the reconciliation, and the hand-counting of paper ballots. In most elections, we hand-counted multiple races on each ballot in Columbia County and, in every election, the hand counts were completed efficiently and within a reasonable time frame.

8. My county's elections entailed hundreds of thousands of voter-marked ballots and easily millions of votes on individual races. I have personally examined thousands of hand-marked paper ballots.

9. Because of my extensive experience in running secure elections using optical scanners and hand counting a high percentage of the paper ballots therefrom, I have frequently been called

to confer with and advise election-integrity experts, attorneys in election cases, other election officials, and other advocates about the security and feasibility of such processes.

10. I testified at the July 2019 preliminary injunction hearing in *Curling v. Raffensperger*, No. 1:19-cv-2989-AT (N.D. Ga.), and at the October 2020 trial in *Common Cause New York v. Brehm*, No. 1:17-cv-6770-AJN (S.D.N.Y.). My testimony was credited by the court in both cases. See *Curling v. Raffensperger*, 397 F. Supp. 3d 1334, 1399 (N.D. Ga. 2019); *Common Cause New York v. Brehm*, 432 F. Supp. 3d 285, 300, 306 (S.D.N.Y. 2020).

Executive Summary of Conclusions

11. In 2010 I oversaw, with my counterpart, a major voting-system transition. Previously, in-person voting was conducted on a mechanical voting system with no electronic components and essentially no paper ballots. The new system employed optical scanners and hand-marked paper ballots for every voter. It was the first use of electronics in poll sites and represented a sea change in our elections. It required substantial modifications to pollworker training and to election administration in general. There was little difficulty training pollworkers to properly handle paper ballots with voters and there was almost no training needed for voters. The most difficult aspect of the transition was incorporating the optical scanners into the process. Based on my experience, I conclude that North Carolina counties that are currently using ExpressVotes can easily transition to a hand-marked paper-ballot system because they are already using optical scanners.

12. A voting system that (1) employs optical scanners to tabulate the votes, (2) utilizes a scientifically rigorous publicly accessible hand-count audit to provide a high degree of confidence in the results, which is possible only with ballots that were marked by hand, and (3)

features an unbroken chain of custody of the ballots engenders a high degree of public confidence in any given election's results.

13. Experts agree that election results must be publicly verified via audit and that hand-marked paper ballots are essential for an audit. Experts have concluded that BMD elections cannot be audited. Because, in my experience, many local election results have exceedingly close margins, including tie votes and margins of one to ten votes, transparency in vote counting is crucially important for both accuracy and voter confidence.

Experience as Columbia County Election Commissioner

14. I served as Democratic Election Commissioner in Columbia County, New York from 2008 until early 2020. Jason Nastke served as Republican Election Commissioner from 2010 until year-end 2019.

15. The role of Democratic Election Commissioner in Columbia County is a full-time salaried role overseeing three full-time Democratic staff, one half-time Democratic staff, and 150 or more Democratic seasonal and election-day workers. My Republican counterpart had the same staffing.

16. Columbia County currently has more than 45,000 active voters in 50 precincts.

17. Columbia County includes one city, 18 towns and four villages.

18. The Columbia County Board of Elections conducts all federal, state, county and municipal elections with the exception of three villages' elections. All such elections are conducted on hand-marked paper ballots, scanned and tabulated in the polling place by optical scanners and then tabulated in the central office on the central tabulator for the election management system.

19. As required by the Help America Vote Act (HAVA), for all elections run by our board, each polling place is outfitted with at least one Dominion ImageCast accessible voting unit.

20. Since 2010, the Columbia County Board of Elections, comprising Commissioner Nastke and myself, ran 35 elections on Dominion ImageCast optical scan voting machines, followed by a hand count of the voter-marked ballots which I oversaw with Commissioner Nastke.

21. New York State was the last state to comply with the Help America Vote Act. This was, as I recall, due to the state's refusal to adopt any of the then-available systems, which did not meet its standards for accuracy and security, in particular, systems which did not rely on hand-marked paper ballots. To comply with HAVA, New York State demanded modifications of then-available optical-scan systems and successfully secured modifications that it deemed satisfactory from vendors Sequoia Voting Systems, which preceded Dominion, and from ES&S. The system that New York State demanded was an optical-scan system utilizing hand-marked paper ballots and a post-election hand-count audit. It rejected DRE and touchscreen systems altogether as insecure and unauditible.

22. Given the monumental nature of the change in the method of vote counting, I consulted academic research and governmental reports on electronic voting systems. In light of that research and those reports, Commissioner Nastke and I were unwilling to trust the computer-reported election results. Neither did we find that New York State's newly enacted audit regulations would provide us the level of confidence that we needed that the results were accurate.

23. In my readings I learned that the vulnerabilities of electronic processes, and particularly those used in elections, were widely known and have been documented by computer scientists and others. One example, a paper by Feldman, Halderman, and Felten, entitled "Security

Analysis of the Diebold AccuVote-TS Voting Machine in 2006,” was published in *Proc. 2007 USENIX/ACCURATE Electronic Voting Technology Workshop*. Another was by Appel, Ginsburg, Hursti et al: “The New Jersey Voting-machine Lawsuit and the AVC Advantage DRE Voting Machine,” which was published in *Proc. Electronic Voting Technology Workshop/Workshop on Trustworthy Elections (EVT/WOTE)*, Montreal, Canada, Aug. 2009. I also read about failures with optical scanners. I also read about election audits designed to achieve a high level of confidence that the machine-reported results had identified the correct candidates as winners, or had correctly reported the wishes of the voters on ballot propositions.

24. Commissioner Nastke and I relied on those writings as we developed policies and procedures for ensuring the security of elections conducted in Columbia County. As a result, we committed to conducting 100% hand counts of all votes cast in the 2010 elections, and that is what we did in the September and November 2010 elections. In subsequent elections we reduced the number of races that we counted while agreeing that, if either of us should desire to count additional races, we would do so. We continued that policy through the November 2019 election, which was the last election that either of us administered.

25. I as commissioner would not have certified an election conducted on an electronic system if I could not have personally known, via non-electronic means, either by my own visual examination or that of other trusted individuals, that the vote totals as calculated were accurate. I so testified to the New York State Assembly Election Law Committee in 2010 before Columbia County made the final transition to electronic voting machines. Since that transition, both Commissioner Nastke and I personally or through trusted individuals verified the accuracy of vote totals in every election. We did so efficiently, quickly, and without incurring high costs.

26. In Columbia County, the process of conducting elections, which is largely the same across New York State, is as follows:

1. Candidates qualify for ballot positions by filing with our Board of Elections, or, for cross-county elections, with the New York State Board of Elections.
2. For cross-county elections, the New York State Board of Elections certifies its ballot to our county.
3. Municipalities inform us of their ballot questions.
4. Our board builds the ballots.
5. Once approved, ballots are printed for use as non-scannable absentee and affidavit/provisional ballots and for optical-scan ballots for issuance at the polls. Optical-scan ballots undergo logic and accuracy (preLAT) testing.
6. During Early Voting and on Election Day, pollworkers issue paper ballots to the voters who, after marking them by hand, cast them by placing them in the optical scanner, which tabulates their votes and deposits their ballots in a secure ballot box. At the close of polls, polling place results are publicly announced and posted.
7. Immediately after the close of polls, the secured memory cards from the precinct scanners; all the ballots, voted and unvoted; the pollbooks; and other election materials are brought, securely via a bipartisan team, to the county Board of Elections where our bipartisan staff aggregates the tabulations from the memory cards. Results reports are issued, posted on the board's website, and securely uploaded to the State Board of Elections. All election materials are secured in a room behind two locks with different keys, one held by the Republican commissioner and one held by the Democratic

commissioner, so that no materials can be accessed without the presence and assent of the other party.

8. Following the election, and prior to the certification of the results, pollworkers in bipartisan teams of two or four reconcile all election materials and then hand count/audit some number of ballots to verify the machine totals. We believed that this verification was particularly important in small municipal races where a few votes can change the outcome of an election.

Columbia County's Experience Transitioning to a Primarily Hand-Marked Paper Ballot System

27. As Columbia County Election Commissioner I had experience with overseeing a major voting-system transition in which our county moved to a hand-marked paper ballot, optically scanned system. In Columbia County, we were able to transition efficiently and effectively to a new system.

28. I therefore have personal experience in transitioning tens of thousands of voters from a mechanical lever voting-machine election to one with paper ballots and optical scanners. That transition was accomplished effectively and without significant difficulty by implementing a voter-education program, primarily at the poll site on election day, utilizing oral instructions from poll workers as well as graphically illustrated written instructions. My county's experience was that voters had little to no difficulty understanding how to properly vote such a hand-marked paper ballot. In my role as Commissioner, on election days I frequently visited the polling places and observed voters voting by paper ballots that they marked by their own hand.

29. In September 2010, as stated above, Commissioner Nastke and I ran the first electronically counted election in Columbia County when New York State mandated a transition

from mechanical lever voting machines to a system employing electronically tabulating optical scanners and voter-marked paper ballots subject to a mandatory hand-count audit.

Commissioners in 48 other counties in the state had made a similar transition during a 2009 pilot of the new voting systems, and the remaining 14 made the transition with Columbia County in September 2010. I conferred with other New York election commissioners and exchanged information on the kinds of process-related and administrative changes necessary for this significant transition of voting procedures.

30. During these two years, 2009 and 2010, counties trained inspectors who successfully operated electronic scanners and successfully provided voters with the correct paper ballot for their election. Counties placed paper and ballot-printing orders that were successfully made and filled without difficulty.

31. The September and November 2010 elections were the first in which all voters in all counties in the state voted on a system that electronically tabulated votes from hand-marked paper ballots.

32. At the polls, poll workers instructed voters on how to properly mark a ballot. Voters signed the paper poll book, they were given a paper ballot and a privacy sleeve that would shield the voted ballot from prying eyes, and they carried their ballot and privacy sleeve to a table where they marked their ballot behind the shield of a privacy booth. In the booth, posted instructions could be consulted once again. Voters walked their voted ballot to the optical scanner, where a poll worker provided brief instructions on how to insert the ballot into the scanner and how to watch the small LCD monitor to determine if their ballot had been successfully scanned and cast.

33. Only a small minority of voters had any question about how to vote a paper ballot, as it is a simple and routine process. In conducting the post-election hand counts of hundreds of thousands of ballots over the years, my experience was that it is exceptionally rare to encounter a voter's ballot markings that cannot be reasonably interpreted as to the voter's intent. Instead of casting an ambiguous ballot, the great majority of voters simply ask for a new ballot when they make errors in the marking of their ballot.

34. During the transition to hand-marked paper ballots, the most frequent error voters made was a failure to adequately fill in the voting oval. Another was using a pen that was not recognizable by the optical scanner. However, neither occurred with great frequency, and both were very easily averted with very simple educational techniques. The frequency of such errors, negligible during the transition period, decreased even further since that time. But it should be noted that, in both cases, a human review of the ballots easily adjudicated the votes to determine voter intent so that all votes could be counted.

35. The September and November 2010 elections were the first in which poll inspectors in Columbia County were required to understand and manage the proper execution of a wide variety of many new processes, documents, and reports. Most of those processes, documents, and reports had been developed at the state level and introduced to the counties, which then implemented them, as did Commissioner Nastke and I.

36. The transition represented a sea change in how elections are run, morphing away from a legacy voting mechanism that was solid, immobile, self-contained, impenetrable, and completely mechanical. The new system was based on electronic tabulating processes reliant on programming, on voter-marked paper ballots for every single voter, and on far more complicated

security protocols. It was a system that featured dozens more moving parts than a lever-based election.

37. While the transition was challenging, it was successfully made. In New York State no county failed to procure sufficient ballots, to deploy enough machines, to train enough inspectors, or to have its voters successfully vote. No county failed to conduct the required post-election 3% hand-count audit.

38. In fact, Columbia County successfully conducted a 100% post-election hand-count audit, much more than was required. While it was challenging, we successfully completed it without making any errors.

39. Columbia County developed a simple but airtight chain-of-custody procedure, for ballots and all other election materials, that was initiated immediately upon the close of polls. At close of polls, materials were bipartisanly transported to the Board of Elections to be bipartisanly secured until reconciled and then hand counted in the days following. It proved to be completely effective and efficient, and it engendered the confidence of voters. The process was still in use through the last election that Commissioner Nastke and I oversaw, the November 2019 general election.

40. Based on my experience, I believe that it is highly feasible to transition from a system employing touchscreen ballot-marking followed by optical scanning to one that uses hand-marked paper ballots followed by optical scanning.

Moving N.C. Counties to Hand-Marked Paper Ballots is Feasible, Straightforward

41. Based on the transition to hand-marked paper ballots counted by optical scanner in Columbia County, New York and other jurisdictions with which I am familiar, it is my opinion

that in North Carolina a switch to hand-marked paper ballots using the optical scanning capabilities of its current voting system is feasible and economical.

42. The hand-marked paper ballot optical scan system in use in New York State is straightforward for administrators and poll workers to use. It is extremely easy for voters to use. The paper ballot is fed into the scanner, which after scanning it and tabulating its votes then stores it securely in a ballot box. Even if a mechanical scanner problem is unexpectedly encountered, the hand-marked paper ballots in use by voters can be deposited in the secure emergency-ballot box and counted later—which would not be possible with nonexistent vote summary cards that missing or malfunctioning BMD units had failed to produce.

43. In my experience, voters have no trouble understanding how to hand-mark a paper ballot or insert it into an optical scanner or locked emergency-ballot box in the polling place. Training time for pollworkers is not lengthy, and education time for the voters is minimal.

44. Instructing voters and especially pollworkers on electronic equipment, which touchscreen/BMDs are, is infinitely more complex than working with hand-marked paper ballots. In 2010 when we instituted optical scanners, we needed to train half of our inspectors, whom we called machine, or primary, inspectors, on the optical scanners. Quite a few of the older inspectors refused to learn the electronic equipment and some of them retired rather than face the challenge. In 2019 when we instituted electronic poll books, we had to train the other half of our inspectors, whom we called clerical inspectors, on the new poll books. Quite a few of the older inspectors refused to learn the equipment and some retired. While there were many inspectors who achieved competence and welcomed the electronic devices, there was a not insignificant number of others for whom the equipment remained a challenge.

45. Immediately adopting hand-marked paper ballots and continuing to use North Carolina's current optical scanning system should require minimal training time as the system components are already in use by elections staff. Hand-marked paper ballots have been used by hundreds of thousands of North Carolina voters to vote absentee by mail, and many to vote provisionally.

46. No new system selection, certification, testing and implementation is required for the deployment of hand-marked paper ballots counted by the DS200 optical scanners already in use. The results of such tabulations should of course be verified by hand-count audit techniques, either through sampling techniques or full hand counts where preferred or where necessary in the event that vote-count discrepancies are discovered.

47. The transition to a primarily hand-marked paper ballot system can be accomplished smoothly, securely, and effectively by North Carolina counties.

48. In my estimation, the transition in New York (and Columbia County) from a fully mechanical system to an optical-scanning system represented a far greater change, incorporating the introduction of more complicated processes, than would Plaintiffs' proposed transition from a complicated electronically marked ballot/optical scanning system to a hand-marked paper ballot/optical scanning system.

49. The proposed transition is relatively simple. An existing and complex electronic voting process utilizing a touchscreen device to produce and mark ballots, which is dependent upon properly functioning electronic poll books to produce a voter access card to initiate the voter's session, followed by the tabulation of those BMD-marked ballots on optical scanners, would shift to a system exclusively of optical scanners tabulating votes on hand-marked paper ballots that are unreliant on any electronic process. The only equipment needed for ballot marking would be pens. The proposal would greatly simplify the process of voting. It would also simplify

verifying the accuracy of election results, since verification would not entail examining electronic processes or voting-machine code. Verification would rest on ensuring the physical security of the paper ballots, which is a simple matter that we mastered in Columbia County as have many other boards, and then on conducting hand-eye audits of those ballots. Even if some administrative inconvenience is incurred in making the near-term transition, it is an essential price to pay to secure safe, auditable, and confidence-building elections.

50. To conduct early voting at centers using hand-marked paper ballots, the following can be developed and undertaken, sometimes in combination:

1. Paper-ballot-inventory management plans based on past voting trends for each early-voting center.
2. Careful ballot-inventory daily monitoring supplemented by Ballot-on-Demand printers.
3. Ballot-inventory management aided by a few roving teams of technicians to assist with printing issues, inventory shortages, etc.
4. Clear protocols for unexpected ballot shortages.
5. Requiring that two pollworkers, ideally from opposing political parties, check the accuracy of the ballot style before issuing the blank ballot to the voter.
6. Requiring that high-traffic early-vote centers be managed by experienced staff.

51. In my estimation, and given that the State of North Carolina already employs optical scanners for the vote summary card ballots produced by the ExpressVote machines, and employs paper ballots and optical scanners for provisional and mail ballots, and given that many individuals who are voters have encountered optically scanned forms at some point in their lives, the transition from using the electronic touchscreen BMD for marking and printing a vote

summary card to having a pollworker hand a paper ballot to a voter, to be hand-marked and then fed into the same electronic optical scanner, is feasible for election administrators, poll workers, and voters to manage.

52. Securing paper ballots at the poll site and during transport to their ultimate destination for central count has traditionally been part of the North Carolina elections process, given that pollworkers have always secured provisional hand-marked paper ballots marked in the polling place, as have all other states since the implementation of the Help America Vote Act. Securing more ballots will be a very simple process, easily implemented with minimal revisions to current written procedures. Based on my experience in Columbia County's conversion to a hand-marked paper ballot system, it is my opinion that transitioning to a primarily hand-marked paper ballot system will ease, not increase, the burden on poll workers and election administrators.

53. In my experience, when a scanner became temporarily inoperable, voters expressed little concern about having to deposit their voted ballots in a secure emergency-ballot box for later scanning. Voters who were given the choice to vote instead at a later hour when the scanner was likely to be working again typically chose instead to deposit their voted ballots in the secure emergency-ballot box without scanning it first. Thus, even in the absence of an operational optical scanner, an election can continue with minimal, if any, inconvenience to voters. This is the case if there is no scanner present in the poll site, if an insufficient number of scanners are delivered to the poll site, and if a scanner breaks down.

54. When hand-marked paper ballots are used, it is simple and inexpensive to expand capacity at the polling place in instances in which high turnout occurs. More ink pens and cardboard privacy booths and possibly a modest addition of pollworkers are required, but no additional voting-system equipment is necessary.

55. In addition, when hand-marked paper ballots are employed, if paper copies of voter registration rolls are available, problems with electronic pollbooks need not cause voting delays. In contrast, voter access to the BMD can be interrupted when electronic pollbooks are not working properly and fail to produce a voter activation card. If no voter activation card is produced, no vote summary card/ballot can be produced.

56. A voting system employing hand-marked paper ballots will exhibit a great deal of continuity with Defendants' existing systems. Ballots will be programmed, tested, printed, and tabulated on the same system as they are today for mail absentee ballots and for provisional ballots, and, in terms of tabulation, for in-person voting ballots as well.

57. Pollworkers can easily be trained to issue paper ballots instead of activation cards for the BMD. I am confident that pollworkers would find the issuance and control of paper ballots to be far easier than operating BMD machines, with all their operational and maintenance issues. The physical security required for the paper ballots would be much like the security protocols the pollworkers employ today for the paper provisional ballots.

Multiple Potential Sources for Additional Paper Ballots

58. In North Carolina, paper ballots such as absentee mail ballots and provisional ballots are regularly printed and used in elections. With the transition to all hand-marked paper ballots, ballot print orders can simply be increased. Pollworkers can easily issue printed paper ballots to voters in the polling place rather than BMD activation cards.

59. It was my experience as an election commissioner that election boards procured their ballot paper or their printed ballots from vendors far and wide, vendors not limited to the state of residence, that more than one paper stock will perform well in a particular scanner, and that vendors are able and willing to produce ballots that conform to a scanner's specifications.

60. In fact, ES&S, the manufacturer of the ExpressVote and with whom Defendants' election boards have a working relationship, prints ballots or contracts out ballot printing and would be one logical source for ballots.

61. Another source for ballots would be the counties' current printers for mail and provisional ballots, who simply would need to increase their print runs for every ballot style. All ballot styles are required to be printed under the current election scheme. Counties currently print a number of mail and provisional ballots equal to some percentage of the voter rolls, and, in the current coronavirus environment they are likely printing a much higher percentage of all registered voters. They would simply need to increase that percentage. Given the current emphasis on voting by mail, the in-person turnout, for early voting or for election-day voting, will surely show a substantial decrease from prior years, thereby requiring far fewer in-person paper ballots.

A BMD Voting System is Much Slower than a Hand-Marked Paper Ballot Voting System

62. As commissioner, in the exercise of my due diligence, I followed the experiences of other counties and other states in order to prepare appropriately for elections in Columbia County. I paid close attention to problems experienced by other boards using other optical scanners, and particularly the Dominion ImageCast, which was my board's machine. Prior to 2019 and in advance of our first deployment of KnowInk electronic poll books in 2019, I also paid attention to reports of other boards' problems with electronic poll books and in particular KnowInk poll books. It is my experience that commissioners at other boards of election, especially those using the same or a similar voting system, will pay attention to problem reports. I believe that those

experiences are relevant and may warn of future failures that could be averted if Defendants were to choose not to use their existing BMD system.

63. Research conducted by the Commonwealth of Pennsylvania's Department of State in November of 2018 indicates that the ExpressVote BMD accommodates 20-60 voters/hour. These numbers assume that (1) the voter is able to receive a voter activation card, which is not always possible if the electronic poll book has not been delivered to the poll site or for some reason fails to produce the card, (2) an appropriate number of ExpressVote BMDs have been delivered to the poll sites and are working properly, and (3) the voter is able to access an available ExpressVote BMD with that card. The Department of State's research further indicates that the DS200 optical scanner, which is the same scanner in use by Defendants, can accommodate 120-180 voters/hour. That throughput reflects the DS200's ability to scan either a vote summary card, as produced by the ExpressVote BMD, or a hand-marked paper ballot, as could be produced by the great majority of voters with the assistance only of a working pen.

64. The conclusion that I, with considerable experience as an election commissioner, draw from this research is that no more than 60 BMD voters can be processed in an hour, but three times as many—up to 180 voters who were not using the BMD but instead were hand-marking their paper ballots—could be processed in an hour. It is my experience that voters mark their paper ballots rather quickly and that their time at the optical scanner is extremely short. It was never my experience, with hand-marked paper ballots optically scanned, that any of our poll sites had a voter flow of only 20 voters per hour if there were voters waiting to vote. That would have been unthinkable. I believe that at least two voters per minute and perhaps three could be processed through our optical scanners, resulting in a potential throughput of 120-180 voters, similar to the research herein cited.

65. What's more, the amount of working equipment needed for an ExpressVote BMD election far surpasses the amount needed for a hand-marked paper ballot election—multiple working BMDs that process voters slowly, plus a smaller number of DS200s, are needed for the former, while only pens and paper ballots plus the same number of DS200s as needed for a BMD election are needed for the latter. And if the DS200 should break down, the paper-ballot marking system will continue to be operational and voters can deposit their ballots in a secure emergency-ballot box.

Hand-Count Audit Processes Secure Elections by Verifying Voter Intent

66. As stated above, part of my job as Columbia County Election Commissioner was to stay abreast of voting system technology and election security trends and emerging issues. The new technology of Ballot Marking Devices adopted by Defendants is complex and expensive technology that I would not have considered using because the results cannot be audited, as concluded by Andrew Appel and Philip Stark in their paper “Evidence Based Elections: Create a Meaning Paper Trail, Then Audit,” scheduled to appear in the *Georgetown Law Technology Review*.

67. It is crucial that voter intent be determined and honored. It was my experience that optical scanners sometimes did not discern and accurately tally votes that were marked in a fashion that the scanners were not programmed to recognize.

68. While we in Columbia County did not experience scanner misprogramming, miscalibrations, or misreads, the fact is that those were potential problems that our board's policy aimed to avoid by conducting a robust hand count.

69. As stated above, during the transition to the new voting method, the most frequent error voters made was a failure to adequately fill in the voting oval, which might not be recognized by

the scanner as a vote. Another was using a pen that made a human-recognizable mark that was not registered by the optical scanner. Neither occurred with great frequency. But in both cases, a human review of the ballots easily adjudicated the votes to determine voter intent so that all votes could be counted. The same would have been true in the event of misprogramming, miscalibration, or misreads.

70. After the close of every election, my department, assisted by perhaps as many as 20 bipartisan election workers, conducted a hand count of a number of races to verify the accuracy of the optical scanning tabulations and to determine who really won. The trained counters that we employed during our audits came to recognize the kinds of markings that a scanner will count as a vote and those that a scanner will entirely fail to discern. In such a case, the voter's intent was interpreted by bipartisan teams and was honored.

71. Our audit began with the New York State mandated audit of 3% of the voting machines deployed in the county, which in our case was one machine, and per statute we fully hand counted every race on all the ballots cast on that machine. Then, for all ballots cast in the county, we fully hand counted all municipal races in which there were more candidates than there were offices to be filled and all ballot propositions. We counted federal, statewide, countywide or regional races at the request of any candidate, party, or either commissioner until the requestor was satisfied that the scanner's outcome was accurate. Unless a race fell under the 3% audit referenced above, we did not hand count it if there were no more candidates than there were offices to be filled.

72. Over the course of the 10 years that we verified our results via hand count, we hand counted hundreds of thousands of ballots. As discussed below, our verification procedures were particularly important in the municipal elections we conducted which determined the local

governance of our local communities. Significant public policy is decided in municipal elections, many times by just a handful of votes and sometimes by just one. Municipal elections, given their stakes but their typically small size, generally demand the most precision in election security and accuracy.

73. I have overseen audits of many thousands of ballots and I have spent many hours observing the handling of ballots. I have concerns about the feasibility of conducting a hand-to-eye audit of the thermal-paper vote summary cards that serve as ballots in Defendants' elections. As these ballots resemble cash register receipts, which are small and slippery, tend to curl up, resist lying flat, and smudge easily, I have doubts that their material is a suitable one for repeated handling and scrutiny. Additionally, thermal paper receipts tend to fade over time. Many receipts are printed with the barest of ink. One voting-machine vendor warns not to handle thermal receipts after using hand sanitizer or wipes as it could affect the receipts' legibility. I am concerned that their legibility will not survive the federally required 22-month retention period. Hand-marked paper ballots exhibit none of these problems.

Columbia Voters Expressed Confidence in Elections With Hand-Marked Paper Ballots

74. As Election Commissioner, I spoke frequently with many voters across Columbia County, who provided feedback regarding their perceptions concerning the effectiveness of our voting systems. These conversations occurred on election days, over the course of the years in my capacity as commissioner, and over the course of the years in private conversations.

75. It was my experience as an election commissioner that voters gained great confidence and reassurance from casting their votes on a paper ballot that they marked themselves, that they knew was clearly marked, and that they knew would survive election day for hand-count examination of their marks to verify their votes. It was my experience that voters in my county

were exceedingly confident that the vote counts that Commissioner Nastke and I certified and which they were welcome to attend and closely observe were absolutely correct.

76. It was my experience as an election commissioner that voters were reassured by the presence of non-electronic pen and paper processes at the polls, as present in our paper poll books and our paper ballots that they marked themselves. I heard from many voters that they are skeptical of the mutable and hackable nature of electronic processes as they have been introduced into elections, especially in light of recent years' news of foreign nation-state election-hacking attempts.

77. There were a great many instances in which I was informed by voters and election workers that they were highly confident of our election results because of the robust hand-count audits that our office conducted. I would estimate that there were dozens of times that I overheard election workers at their poll sites explain to voters that their votes would be counted by hand after they were scanned by the voting machines. Many of these same workers also worked after the election in bipartisan teams of two to reconcile all election materials, including ballots, in the days immediately following the election. Many of them also worked in bipartisan groups of four, comprising two Democrats and two Republicans, to hand count the votes on the majority of those ballots.

78. Additionally, all of the election workers that I trained, which were all the election-day workers ("clerical inspectors") that signed in voters and gave them their ballots, heard me explain how the secure chain of custody of the ballots was achieved, in particular explaining their own role in that ballot security. They heard me explain the role of the bipartisan "ballot catcher" teams that collected election materials, including ballots, at the poll sites subsequent to bipartisan election workers signing the appropriate forms to relinquish those materials so as to be

conveyed to a single vehicle in which those two ballot catchers would travel to the Board of Elections. They heard me explain how the post-election reconciliation of election materials by bipartisan teams was conducted at the Board of Elections, and how the hand-count audit was subsequently conducted. They were informed that the public was welcome to attend the reconciliation and audit.

79. Additionally, the highly secure and quite public nature of these processes was explained in a number of media, including numerous newspaper articles, several interviews on local radio, and several local public presentations. For example, I authored a column with four installments that was published in *The Columbia Paper* during the winter of 2010/2011 called “Your Vote Counts.” A *Columbia Paper* editorial on October 22, 2010 entitled “E-voting imperils basic right,” a *Columbia Paper* article on March 22, 2012 entitled “They keep voting honest, one ballot at a time,” and a *Register Star* article on July 7, 2015 entitled “County becoming known for hand-counting votes” represent just a few of the many items that appeared in the local press. Letters to the editor such as one in *The Columbia Paper* of December 23, 2010 entitled “Martin’s efforts are gift to voters,” were published, and grateful letters to us commissioners were penned. Apart from election days or election scenarios, I often heard people talk about our unique audit, and people often expressed their gratitude to me for the existence of that audit. In my estimation, it was well-known that bipartisan teams publicly hand-counted the great majority of our ballots and that everyone was welcome to attend that audit.

80. During the 10 years that optical scanners were employed in our elections, there was only one challenge filed against our final counts of the millions of votes cast on machine-counted ballots. That challenge claimed that a single ballot that was identifiably marked should not be counted.

81. In my estimation, as a result of our robust hand-count audit, and as revealed by the absence of legal challenges to the vote totals from machine-counted ballots, there was no lack of confidence in our elections.

82. I believe that another factor contributing to the high confidence in our elections was the physical hands-on nature of voting. As regards hand-marked paper ballots, the relevant factor was the way that voters cast their vote via the simple act of manually inking bubbles that they could first examine with their own eyes as they filled in those bubbles, and then review again before inserting them into the optical scanner. There were probably a dozen occasions on which voters expressed to me that they felt good about marking a ballot themselves by hand.

83. Some of those voters, and probably many dozens of others, remarked to me that they missed the physical acts associated with voting on the old mechanical lever machines that predated the county's optical scanners. Voting on a lever machine involved manually pressing down a metal pointer on the machine's face to vote for a candidate, and they missed doing that. They also told me that they missed manually pulling the "big red lever" across the face of the machine to close the curtain to give them voting privacy, and then, when they were done manually selecting their candidates, to open that curtain and cast those votes. Almost every single person who spoke on this subject said they loved how physical the act of voting was, and they especially loved ending their voting session with the loud and unmistakable "ka-CHUNK" that accompanied the casting of their votes. They missed the sound effects.

84. Based on the thoughts that voters shared with me, it is my view that simple physical actions, like pressing down a pointer, pulling back a lever, directly pressing pen to paper, and hearing a sound indicating mission accomplished, afford voters a gratifying physical sense of agency. I do not believe they would have felt so confident and gratified if a computer's

touchscreen was the agent. Nor do I believe that a computer's spewing of a ballot that looks and feels like a cash register receipt, that does not present the actual ballot's full face, that does not present all candidates, whether voted for or rejected, that does not identify ballot propositions by name but instead by an utterly nondescriptive number, will leave the voter with the sense that she has exercised her democratic right to vote.

85. My experience has always been that voters took their voting very seriously and very personally. My sense is that, to the extent that electronic processes are minimized and physical ones maximized, voters experience a greater feeling of having participated in this fundamental civic institution of voting. My sense is that observing a bar code on one's "ballot" could introduce a level of uncertainty, of obscurity, of non-transparency, that would give a voter pause. This may be particularly relevant in the current climate in which digital tracking across the Internet of Things is leaving people increasingly skeptical about the levels of privacy that they can reliably count on. A multitude of articles in the press, along with untold number of social media posts, bear this out. With hand-marked ballots, voters can easily see that their paper ballot was torn out of a pack of 50 identical ballots and that it does not include their name or their voter number or any other means of connecting their vote choices to their own personal identities. I question whether voters will have confidence that a bar code produced by a computer that gave them authorization to vote only because it recognized their personal voter identification data is not encoding their own voter identification into the mysterious, enigmatic, unintelligible bar code that was produced by that same computer as a "ballot." There is no comparable aspect to a paper ballot. There is no opaque aspect to a paper ballot.

86. There also were hundreds of times that voters expressed to me the horror that some citizens in this nation have to vote on a touchscreen voting machine. Many others expressed

horror that other counties and states do not hand count their ballots in the manner that Columbia County does.

Local Elections Are Frequently Decided By Small Margins and a Few Votes Matter

87. Municipal elections across the country are frequently close elections with only a few votes constituting the margin of victory. For example: in Saratoga County, New York, which is two counties north of Columbia County, in the City of Saratoga Springs, there was a 2017 referendum to change the form of city government. Nearly 9,000 votes were cast and the election was decided by only 10 votes. Notably, the loser in this election asked the Saratoga County board for permission to see the ballots or for a recount but was denied on the grounds that election law prohibited such access. Following the board's rebuff, relief was sought from the courts, but the petitioner was again denied access. To my knowledge that access was never granted. Had that election been held in Columbia County, a public hand count of all 9,000 ballots would have been undertaken as a matter of course, without need for legal petition. Given the importance of getting the accurate outcome that reflects the will of the voters, I believe strongly that leaving the results to an unauditible, flawed touchscreen/BMD system employing ballots that are tabulated via humanly unreadable bar codes that the voter cannot verify before casting her or his ballot, and from which the results therefore cannot be audited or recounted, is taking an unacceptable risk in election administration.

88. Many municipal elections are decided by just a few votes. Some larger elections are, as well. In Columbia County, between 2001 and 2017, in municipal elections there were 10 tie elections, 18 elections won/lost by one vote, 16 elections won/lost by two votes, and 10 elections won/lost by three votes. Many more elections were won, or lost, by fewer than 10 votes.

89. In our county's elections and in 100% of the municipal races in which there were more candidates than there were offices to be filled, and 100% of all ballot questions, hand-marked paper ballots were counted by optical scanner and then were recounted by hand to be certain that the results reflected the will of the voters. We placed significant emphasis on ballot security and chain of custody documentation.

90. Our method married an electronic system with a hand-to-eye system: on election night, it provided unofficial scanner tabulations quickly, and they were later verified or modified by hand counts in the following days and in advance of final certification.

91. Optically scanned hand-marked paper ballots are the foundation for a near-total guarantee that tabulation processes can and will successfully count votes as voters cast them. This can be accomplished by properly securing the paper ballots and by conducting a robust and scientifically sanctioned risk-limiting audit that is open to candidates, parties, voters, and election officials.

92. Particularly in light of the fact that many races are decided by a small handful of votes, I would not certify an election unless I had total confidence in the secure chain of custody of all ballots, total confidence that those ballots reflected each voter's and nothing but each voter's electoral selections, and very high confidence that the electoral results reflected the wishes of the voters as proved to me by a very robust hand count of those ballots. To certify an election in the absence of these criteria would represent a dereliction of duty on my part.

93. I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

This, the 30th day of June, 2020

Virginia Martin
[NAME]

I, the undersigned notary public, hereby certify that VIRGINIA MARTIN personally appeared before me this day and acknowledged the due execution of this AFFIDAVIT.

Witness my hand and official seal, this the 30th day of June, 2020.

Kathy Anne Schweizer
Notary Public

My commission expires 9/25, 2021.

KATHY-ANNE SCHWEIZER
#01SC5049981
Notary Public, State of New York
Qualified in Columbia County
My commission expires SEPTEMBER 25th, 2021

Virginia Martin
Curriculum vitae

724 Warren St. #2
Hudson, NY 12534

(518) 755-1521
virginiamartin2010@gmail.com

EDUCATION

PhD, Communication and Rhetoric 2005
Rensselaer Polytechnic Institute, Troy, NY
MS, Communication and Rhetoric 2000
Rensselaer Polytechnic Institute, Troy, NY
BA, English/Communication 1999
Skidmore College University Without Walls, Saratoga Springs, NY

PROFESSIONAL EXPERIENCE

Columbia County Board of Elections
➤ Democratic Commissioner 2008-2020 (Feb)
Columbia County Healthcare Consortium's Kids in Motion Program
➤ Farm to School consultant 2010-2012

Teaching

University at Albany (NY)
➤ Dept. of Communication, Adjunct Professor 2006-2008
Rensselaer Polytechnic Institute (Troy, NY)
➤ Dept. of Language, Literature, and Communication, Teaching Assistant 2000-2004

TESTIMONY / PRESENTATIONS / PANELS / INTERVIEWS. etc.: Election Security

Kill Chain: The Cyber War on America's Elections, released March 2020
➤ interviewed and filmed during June 2019 primary election
US District Court, Southern District of NY, Common Cause v. NYS Board of Elections
➤ personal declaration/affidavit, September 2019
➤ personal testimony at trial, October 2019
Citizens for Voting Integrity New York, Hastings on Hudson: panel presentation, October 2019
US District Court, Northern District of GA, Curling v. Kemp
➤ personal declaration/affidavit and 2 supplementals, August 2018-June 2019
➤ personal testimony at hearing, July 2019
State of Rhode Island Board of Elections: participant, Risk Limiting Audit Pilot, January 2019
GA Superior Court, Curling v. Kemp, CD6 special election
➤ expert affidavit, May 2017
GA Senate Ethics Committee, consideration of HB316 re hand-marked paper ballots
➤ expert statement, March 2019
Expert statement re hand-marked paper ballots re upcoming voting machine purchase, South Carolina, February 2019
Bard College Lifetime Learning Institute, speaker, "Women in Politics," April 2018

California Election Integrity Coalition, National Take Back the Vote Conference, Berkeley, CA

➤ October 2019

➤ October 2017

Sierra Club Hudson-Mohawk Chapter; February 2017, March 2018

Center for National Security, Fordham Law School, NYC, January 2017

George Washington University, Washington, DC, Election Verification Network, March 2017

National Press Club, Washington, DC, with Congressional candidate Tim Canova, October 2016

Bureau of Labor Statistics, Washington, DC, Washington Statistical Society, October 2016

Hastings on Hudson/Westchester, League of Women Voters: March 2017, May 2018

Dobbs Ferry, League of Women Voters of the Rivertowns: annual meeting keynote, May 2017

UDC David A. Clarke School of Law, Washington, DC: Jonathan Simons' *Code Red*, May 2015

Left Forum, John Jay College of Criminal Justice, NYC, 2016 and 2017 (panelist)

Radio: *Writer's Voice*, Progressive Radio Network, June 2016; *BradBlog*, October 2015; WOOC

Sanctuary for Independent Media, Troy, NY, May 2018; WGXC, Hudson NY, various

Columbia Paper, Chatham, NY: *Your Vote Counts*; regular column, 2010-2011

Alliance for Democracy/Justice Rising: "Hand Counting Ballots for Accurate Election Results,"
September 2016

MEMBERSHIPS: Election Security

National Election Defense Council: Advisory Board

Election Verification Network: member

SMART Elections: Advisory Board

Citizens for Voting Integrity New York, Board of Directors

New York Democratic Lawyers Council: member

PAPERS/PRESENTATIONS/PUBLICATIONS: Academic

Martin, V. "Feeling a Thought Through Song." In *The Big Red Songbook*. Eds. Green, Archie, D. Roediger, F. Rosemont, S. Salerno. Chicago: Charles H. Kerr Publishing Company, 2007.

Martin, V. "*You Can't Weave Cloth With Bayonets*": *The Role of Singing in the 1912 Lawrence Textile Strike*. Doctoral dissertation, Rensselaer Polytechnic Institute. 2005.

Martin, V. "'All Races Need Apply': The Wobblies as Early 20th-Century Model of Inclusion and Union." Rhetoric Society of America conference, Austin, TX. May 2004.

Halloran, S., Martin, V., Moore, V. "Rhetorical Spectacle on the Erie Canal: The Third Annual Tugboat Roundup." Rhetoric Society of America conference, Las Vegas, NV. May 2002.

Martin, V. "The Rhetoric of Democracy: The Story of Joe Hill." Rhetoric Society of America conference, Las Vegas, NV. May 2002.

Halloran, S., Martin, V. "The Prudence of the Curmudgeon." National Communication Association conference, Atlanta, GA. November 2001

FELLOWSHIPS AND SCHOLARSHIPS

2004: School of Humanities and Social Sciences Fellowship, Rensselaer Polytechnic Institute

1999: Graduate School Fellowship, Rensselaer Polytechnic Institute

1997: Patricia B. Trbovich Memorial Scholarship, Skidmore College University Without Walls

COMMUNITY SERVICE (selected)

Hendrick Hudson Chptr, Nat'l Assoc, Daughters of the Amer Revolution First Vice Regent	2016-present
Clarion Concerts/Classics on Hudson Member, Board of Directors	2014-present
Friends of Taconic State Park Member, Board of Directors, Secretary	2014-present
Hudson Literacy Fund Member, Board of Directors	2014-present
Columbia County Democratic Committee Member	2003-present
<i>Farming Our Future</i> conference Member, Steering Committee	2012-2017
Upper Hudson Planned Parenthood Member, Board of Directors	2009-2015
103rd Assembly district, NYS Candidate, Democratic Party and Working Families Party	2006
Women's Press Club of New York State, Albany, NY Member, Board of Directors; Vice President, Awards; Recording Secretary	1994-2014 1994-1998

NOTARY PUBLIC, STATE OF NEW YORK