Unsworn Declaration Pursuant to C.R.S. §§ 13-27-101 *et seq.*

I, RYAN MACIAS, declare the following:

1. I am over 18 years of age and am competent to testify regarding the matters discussed in this declaration.

2. My areas of expertise include election technology, security, and policy.

3. El Paso County, Colorado retained me in this matter to provide an expert opinion regarding the security, reliability, and accuracy of its election process, including its use of the Dominion Voting System (DVS) Democracy Suite 5.13-CO, as certified and approved for use by the Secretary of State.

4. My *curriculum vitae* is attached to this report as **Exhibit 1**.

EXPERT CREDENTIALS

5. I am the owner of RSM Election Solutions LLC, an election technology and cybersecurity consulting and advising company organized in Washington, D.C., registered as a foreign LLC in Texas, and operating out of Dallas, Texas. RSM Elections Solutions LLC's core principle is "Resiliency in the election infrastructure = Securing election technology + Mitigating risk to the democratic process."

6. I am a subject matter expert with over 17 years of experience in election technology, security, and policy. In this capacity, I have developed

strategies and advise the election community, including federal, state, local, territorial, and tribal (FSLTT) governments, on ways to build resiliency into the election infrastructure. I engage directly with election officials to identify risks to the election infrastructure and election processes, as well as to highlight mitigative measures, compensating controls, and best practices that election officials and private sector partners can implement to manage those risks. For the November 3, 2020, General Election (the "2020 Election"), I also served as an expert observing the hand-count audit and recount in Fulton County, Georgia.

7. I have provided multiple expert reports and opinions regarding voting equipment inspections or reviews performed by entities that are not federally accredited to perform such tasks. These reports and opinions include my Rebuttal Report[1] regarding the Allied Security Operations Group (ASOG) review of the Dominion Voting Systems (DVS) Democracy Suite 5.5 voting system used in Antrim County, Michigan; expert declarations regarding the review by the Arizona Senate and Cyber Ninjas of the Maricopa County, Arizona ballots and election equipment from the 2020 Election; and inspections of the Fulton County, Pennsylvania DVS Democracy Suite 5.5-A. Arizona Secretary of State Katie

[1] *Available at* https://cdn.factcheck.org/UploadedFiles/Rebuttal_ASOG-Antrim_Report.pdf.

Hobbs designated me as one of her expert observers of that Arizona review and asked me to report my findings.[2]

8. Previously, I was the Acting Director of the U.S. Election Assistance Commission's ("EAC's") Voting System Testing and Certification Program, where I led the modernization of the Voluntary Voting System Guidelines ("VVSG"), version 2.0.[3] A primary purpose of the VVSG is to ensure all voting systems used in U.S. elections are secure, accurate, and accessible. I developed the 17-Functions process model that defined the scope of the VVSG 2.0, allowing non-traditional election technologies to be evaluated to the same standards as traditional voting systems. In my role as Acting Director, I also managed multiple voting system applications and testing campaigns, including multiple versions of the DVS Democracy Suite Voting System. In addition, as a Lead Auditor for International Standards Organization (ISO) 9001 Quality Management Systems and ISO/IEC 17025 Testing and Calibration Laboratories, I performed audits on federally accredited voting systems testing laboratories (VSTLs) and registered voting system manufacturers.

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[2] *Available at* https://azsos.gov/about-office/media-center/documents/coliseum-observer-notes-2021.

[3] *Available at* https://www.eac.gov/sites/default/files/eac_assets/1/6/VVSGv_2_0_Scope-Structure(DRAFTv_8).pdf.

9. Before stepping into the Acting Director position, I served as the Senior Election Technology Program Specialist at the EAC for three years. Before joining the EAC, I spent ten years with the California Secretary of State's Office, developing and implementing legislation, policies, and procedures regarding election technology and security, including serving as the technology lead for the Post-Election Risk-Limiting Audit Pilot Program from 2011 to 2013.[4]

10. In preparing this declaration, I reviewed the Verified Petition for Relief and related filings in *Kirkwood et al., v. Williams et al.,* El Paso County District Court Case No. 2022CV31462. I have also conducted a search for and reviewed publicly available material related to this matter.

OPINIONS

I. Opinion 1: The Petitioners, including their expert, make many claims based on a lack of understanding of the complexity of the election process, as well as a misconception of what a voting system is and its role in the election process.

11. Understanding how to audit or reconstruct an election requires knowledge of the complexity of the election process. Most voters and members of the general public perceive the election process as a monolithic system—the

[4] *Available at* https://www.sos.ca.gov/elections/ovsta/frequently-requested-information/post-election-auditing-regulations-and-reports/post-election-risk-limiting-audit-pilot-program-2011-2013.

"voting system"—because that is the only portion of the voting process the voter interacts with on a reoccurring basis. But the voting system is only one component of the election process, understandably an especially important one. In fact, running an election requires data from multiple systems and processes, including candidate filing systems; precinct boundary or geographic information systems (GIS); voter registration systems; voter check in data; the voting system, etc.

12. Furthermore, many people who purport to be election technology experts, auditors, or cybersecurity professionals working in the election space lack the understanding of the voting system, itself, as they perceive it to be a singular component or device.

13. The Petitioners and their expert seem to share the viewpoint that the voting system is a singular device because they only assessed one component of the voting system, the Election Management System; they did not assess the data, records, or security of the voting devices that voters interact with, including the paper ballots and ballot marking devices, nor did they review and assess the tabulators that actually count the votes.

14. The Petitioners and their expert have a misconception that the DVS Democracy Suite 5.13-CO does not comply with the Federal Election Commission's (FEC's) 2002 Voting System Standards (VSS) based on this limited

understanding—or at least limited review—of a single voting component, rather than reviewing the voting system as a whole.

II. Opinion 2: The voting system used in El Paso County—DVS Democracy Suite 5.13-CO—provides the capability for the designated election official to preserve "all records and papers which come into his possession relating to any application, registration, payment of poll tax, or other act requisite to voting in such election" for a period of 22 months after an election, in accordance with the FEC 2002 VSS.

15. FEC 2002 VSS § 2.2.11 restates 42 U.S. Code § 1974 though 1974e, in part, and additional clarification on the retention requirement. Further, FEC 2002 VSS § 2.2.11 cross-references the "audit trail information spelled out in subsection 4.5" (*sic* – should be § 4.4, entitled "Audit Data"), which provides requirements for audit trail information.

16. The portion of 42 U.S. Code § 1974 though 1974e included in the FEC 2002 VSS §2.2.11 states "all records and paper that came into (their) possession relating to an application, registration, payment of poll tax, or other act requisite to voting." The only relevant part of that sentence that pertains to a voting system is "**or other act of voting**" (emphasis added). In El Paso County, the only voting system component used "in the act of voting" is the ImageCast X (ICX). Voters with specific needs (e.g., visual, language, tactile, etc.) may use the ICX if

they need assistance in the act of voting and marking a paper record (e.g., ballot). The ICX generates a log file, as required by FEC 2002 VSS. All other acts of voting pertaining to the voting system (i.e., not to voter registration, check-in, etc.) are performed using a hand marked paper ballot and can be maintained by the election official in accordance with the requirements.

17. These data make it possible to audit and reconstruct the outcome of the election.

18. Notably, the Petitioners and their expert did not reference reviewing the ICX, the only device applicable to this section of the FEC 2002 VSS.

III. Opinion 3: The DVS Democracy Suite 5.13-CO voting system produces the necessary data for El Paso County to audit and reconstruct the outcome of the election.

19. As previously mentioned, the data needed to audit, recount, or reconstruct the outcome of the election requires the voter verifiable paper records, which include hand marked paper ballots and the printouts from the ICX ballot marking devices.

20. Additionally, the election officials scan the record creating a digital representation of the paper record for use by the voting system. Those digital records are secondary sources of data that the voting system captures and

maintains. El Paso County could use the digital records to audit, recount, and reconstruct the outcome of the election.

21. El Paso County has demonstrated that they maintained the analog and digital record through the numerous election audits and recounts performed since 2020. The risk-limiting audits verifies that both sources of data (i.e., paper and digital records) match the voter's intent and ensures the systems count the vote accordingly. El Paso County performed recounts using the original data (i.e., paper records) to reconstruct the outcome of the election. Additionally, El Paso County provided the digital record to a different voting system company (i.e., a competitor) to have that company perform another recount. The other company used the secondary source of data (i.e., digital records) to produce the outcome of the election on its voting system and compared it to the results from the El Paso County DVS Democracy Suite 5.13-CO.

22. Some members of the public have been skeptical of the federal and state certification (i.e., testing in a laboratory or test environment) process, stating that they believe the certification processes are insufficient proof that the voting system meets requirements. The evidence El Paso County produced is both clear and convincing to show that the data (i.e., paper and digital records) maintained by the designated election official allows for an audit, recount, and reconstruction of the outcome of the election.

IV. Opinion 4: The voting system used in El Paso County—DVS Democracy Suite 5.13-CO—produces the necessary records to comply with the FEC 2002 VSS.

23. To determine compliance with a standard, such as the FEC 2002 VSS, the person assessing such compliance must understand the construct of the standards, the intended purpose of those standards, and the objectives the standards are trying to achieve. The FEC 2002 VSS is comprised of two parts, Volume I[5] and Volume II.[6] In total, the intent of the two volumes is to "specify minimum functional requirements, performance characteristics, documentation requirements, and test evaluation criteria. The Standards address what a voting system should reliably do, not how system components should be configured to meet these requirements… The Standards are not intended to define appropriate election administration practices. However, the total integrity of the election process can only be ensured if implementation of the Standards is coupled with effective election administration practices."

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[5] *Available at* https://www.eac.gov/sites/default/files/eac_assets/1/28/Voting_System_Standards_Volume_I.pdf

[6] *Available at* https://www.eac.gov/sites/default/files/eac_assets/1/28/Voting_System_Standards_Volume_II.pdf

24. The standards include specific requirements and universal characteristics. They also provide purpose and intent, or other clarifying language, to assist with the test evaluation, as well as take into consideration the practices (i.e., manual process, procedures, etc.) that election administrators use in the overall election process.

25. The FEC 2002 VSS defines a voting system as "a combination of mechanical, electromechanical, or electronic equipment. It includes the software required to program, control, and support the equipment that is used to define ballots; to cast and count votes; to report and/or display election results; and to maintain and produce all audit trail information."

26. As previous mentioned, and as defined by the FEC VSS 2002, a voting system is comprised of multiple components (i.e., hardware) and the software that runs those components. Each device and its software must produce and maintain audit trail information that relates to the function or functions (e.g., define ballots; cast and count votes; report and/or display election results) that the specific device or software performs.

27. The DVS Democracy Suite 5.13-CO used in El Paso County is comprised of the following components and functions:

a. The Election Management System (EMS) is a set of computers running the Democracy Suite software and applications that define ballots and report election results.

b. The ImageCast X ballot marking device, which aids a voter in the casting of the ballot by allowing the voter to interact with a computer to mark the ballot electronically before printing the paper record for verification, and before submitting the paper record for tabulation.

c. The ImageCast Central (ICC) scanner and tabulator which scans the paper record to create an image (i.e., photograph) of the ballot, and tabulates (i.e., counts) the voter's vote selections.

28. Each of the respective devices produces the required audit log data for the function or functions it performs and provides the capability to maintain and retain that data.

29. For example, § 2.2.4 describes the "integrity" standards specific to "the vote recording and counting process." The ICX performs the vote counting functions, and the ICC performs the vote recording and counting functions. Therefore, the requirements set forth in § 2.2.4 only pertain to the ICX or ICC voting devices.

30. A specific requirement within that section (§ 2.2.4.1(h)) states that the devices performing vote recording and counting process must "[m]aintain a

permanent record of all **original audit data** that cannot be modified or overridden but may be augmented by designated authorized officials in order to adjust for errors or omissions" (emphasis added).

31. As it relates to the ICC's vote recording functionality, the original audit data used for recording and counting votes is the paper record. The voting system complies because it allows for the paper record to me maintained permanently without modification. Additionally, since the ICC also performs a counting function, by tabulating off the digital record, an argument can be made that original audit data used for counting is the digital record; and therefore, the ICC should maintain the digital record permanently. The DVS Democracy Suite 5.13-CO provides the capability to maintain and have the election official retain both records (i.e., paper and digital) permanently.

32. The two scenarios above demonstrate that the DVS Democracy Suite 5.13-CO complies with the FEC 2002 VSS requirements for § 2.2.4 and § 2.2.4.1(h).

33. Notably, the Petitioners and their expert never referenced reviewing either the ICC or the ICX—the only devices applicable to § 2.2.4 and § 2.2.4.1(h) —yet they claimed that the voting system did not comply those sections.

V. Opinion 5: Reformatting the hard drive before installing the trusted build is a best practice and the reformatting process does not violate the FEC

2002 VSS requirements for the voting system to produce and maintain audit records.

34. Pursuant to U.S. Code Title 52, Subtitle II, Chapter 209[7], the U.S. Election Assistance Commission created the Voluntary Voting System Guidelines (VVSG) 2005 (a.k.a. VVSG 1.0)—the successor to the FEC 2002 VSS. A requirement in the VVSG is for EAC accredited testing labs to witness the final build of the certified voting system software from its source code. The purpose is to ensure that the source code reviewed and evaluated by the testing lab is used to develop the software that will be used by each jurisdiction. It also provides the ability for an election jurisdiction to validate the integrity of the software received[8].

35. Over time, the election industry began referring to the copy of the software as the "Trusted Build" because the chain of custody remained intact, starting with the source code and running all the way through the time the software is installed on the jurisdiction's voting equipment.

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[7] *Available at* https://uscode.house.gov/view.xhtml?path=/prelim@title52/subtitle2/chapter209&edition=prelim

[8] *Available at* https://www.eac.gov/sites/default/files/document_library/files/VVSG.1.0_Volume_1.PDF (§7.4.4)

36. Further, the Colorado Secretary of State, as part of its certification process, mimicked the VVSG requirement for a witness build, as described in the Colorado Secretary of State's "Voting Systems Trusted Build Procedures."[9] In part, the Colorado Secretary of State defines a trusted build (or trusted compilation) as "a build performed with adequate security measures implemented to give confidence that the executable code is a verifiable and faithful representation of the source code. The primary function of a trusted build is to create a chain of evidence which allows stakeholders to have an approved model to use for verification of a voting system."

37. To ensure a voting system contains nothing except the "Trusted Build" software on the voting equipment, the jurisdiction must start by cleaning (a.k.a. sanitizing) the system and remove all data or software on the device. Sanitizing the system is a best practice from a functional, security, and compliance perspective, as described in the following:

a. From a functional standpoint, the jurisdiction's voting devices—as it relates to the DVS Democracy Suite 5.13-CO voting system used in El Paso County—are commercial off the shelf (COTS) computers, tablets,

[9] *Available at* https://www.sos.state.co.us/pubs/elections/VotingSystems/files/trustedBuildProcedures.pdf

and scanners. This means the computers, tablets, and scanners can be purchased commercially by the general public for business or personal use. The COTS devices typically come preloaded with software already on them (e.g., operating system, games, drivers, applications or 'apps,' etc.). Wiping the devices clean ensures there is nothing on the voting system that could affect the system or software once installed.

b. It is the jurisdiction's responsibility to ensure that the voting system does not have any non-certified software, including malicious software (a.k.a. malware), on the voting devices. Sanitizing each device prior to installing the certified software (i.e., Trusted Build) provides that assurance.

    i. A non-technical analogy is a company is baking a wedding cake. The company must clean and sanitize the pots and pans before they are used in the baking process. This protects against any other ingredients that could alter the flavor or texture of the cake, and also allows for the company to comply with FDA safety standards.

38. As it sounds, sanitizing the voting devices before the installation of the trusted build will remove all software and data. This does not, however, mean that the voting system does not comply with the FEC 2002 VSS for data retention. FEC 2002 VSS § 2.2.1.1, Data Retention, states that "all systems shall provide for maintaining the integrity of voting and audit data during an election and for a

period of at least 22 months thereafter." Additionally, it states that the entity responsible for preserving all records is the appropriate state or local election official.

39. Nothing in the FEC 2002 VSS states that, in order to maintain integrity and preserve all records for at least 22 months, the appropriate state or local election official must retain such data on the device in which it was originally produced or created, as implied by the Petitioners and their expert. To the contrary, the FEC 2002 VSS Data Retention requirements state "[i]n many voting systems, the source of election-specific data (and ballot formats) is a database or file...It is not necessary to retain this information on electronic media if there is an official, authenticatable printed copy of all final database information. However, it is recommended that the state or local jurisdiction also retain electronic records of the aggregate data for each device."

40. The DVS Democracy Suite 5.13-CO produces the records, on the respective voting devices, and provides for that data to be maintained for 22 months. It is the responsibility of the election official to preserve those records in a format (e.g., paper or electronic) the official so chooses.

41. Generally, election officials choose to preserve and retain election records from the voting system on external media (e.g., external hard drive, USB flash drive, etc.), in electronic format, as was done in El Paso County. As such,

when El Paso County sanitized the voting system prior to installing the trusted build, best practices were followed. Further, the sanitization process did not violate the FEC 2002 VSS requirements for the voting system to produce and maintain audit records.

VI. Opinion 6: The accuracy of the voting system used in El Paso County—DVS Democracy Suite 5.13-CO—complied with the FEC 2002 VSS accuracy requirements that exceeds the accuracy rate of hand counting.

42. Pursuant to the FEC 2002 VSS § 3.2.1, Accuracy Requirements, "the system shall achieve a target error rate of no more than one in 10,000,000 ballot positions" or 0.00001%.

43. In 2018, a study entitled "Learning from Recounts,[10]" looked at recounts across multiple technologies, as well as hand counting in two elections that had recounts (Wisconsin's 2011 and 2016 elections). The authors of the study came to the following conclusion:

a. Scanning paper ballots produces a more accurate election night count than hand-counting ballots.

[10] *Available at* https://www.liebertpub.com/doi/full/10.1089/elj.2017.0440

44. Further, in 2012, a National Science Foundation (NSF) funded study by Rice University and Clemson University, entitled "Hand counts of votes may cause errors[11]," found the following:

a. The researchers found a one-half to one percent error rate for the "read and mark" method, and up to a two percent error rate for the "sort and stack" method; and

b. One of the authors, Michael Byrne of Rice University, stated "Nearly all elections require humans to count ballots by hand, but this task almost always results in human error."

45. In general, the election community—including the election officials that conduct elections; the private sector partners that support them; and election experts who work in the field of post-election audits, recounts, and other hand tallies—recognize that humans are prone to errors. This is especially true when humans are required to perform monotonous tasks, particularly for extended periods of time and/or after working a long shift (i.e., at the end of election day after polls close). This has been researched and known by election experts, at least as far back as 1934. At that time, hand counting was the most prevalent method of counting ballots. Joseph P. Harris, who authored the book "Election

[11] *Available at* https://www.sciencedaily.com/releases/2012/02/120202151713.htm

Administration in the United States[12]," wrote "[t]he counting of paper ballots, often lasting far into the night, and made by tired and frequently incompetent persons, is highly conducive to mistakes and frauds…It cannot be denied that the only way to avoid this tedious job of counting the ballots and to guarantee an honest and accurate count is to use voting machines."

46. Based on my review of the Verified Petition for Relief and related filings; research conducted on items relating to the petition; and my knowledge of election technology, security, and policy, I find that there is no reason to grant the Petitioners' request "to discontinue using a computer voting system in El Paso County," nor should the Petitioners' request "to use a hand count to tabulate votes cast in El Paso County in the November 2022 election and in elections thereafter" be granted.

47. In fact, discontinuing the use of a computer voting system in El Paso County would make the county more susceptible to errors and inaccuracies. As defined by the FEC 2002 VSS, the voting system is used to "define ballots," in which case discontinuing the use of a computer voting system would not only require El Paso County to hand count ballots, but also force them to hand

[12] *Available at* https://www.nist.gov/system/files/documents/itl/vote/harris_6.pdf

transcribe a ballot for every voter or have the voter hand write the name of the candidate for whom the voter intends to vote.

I declare under penalty of perjury under the law of Colorado that the foregoing is true and correct.

Executed on the 15th day of November, 2022.

Ryan Macias (Printed Name)

Ryan Macias Digitally signed by Ryan Macias Date: 2022.11.15 22:07:50 -06'00' (Signature)

Exhibit 1

Ryan Macias

RSM Election Solutions LLC

(E) Ryan@RSMElectionSolutions.com (P) 805.345.9050

Professional Profile

Advising, strategizing, and developing policy for 17 years with a proven record of significant, successful contributions in election administration, election infrastructure, technology security, and standards development.

Experience

RSM Election Solutions LLC– Election Technology & Cybersecurity Consultant/Owner: (05/2019 – Present)

Develop methodologies and strategies for evaluating critical products, assets, and appliances used to secure critical infrastructure, with emphasis on election infrastructure technologies.

Assess the needs of United States (U.S.) and international government entities, particularly election authorities, in procuring and implementing cybersecurity infrastructure projects.

Provide expert research, analyses, and recommendations on U.S. funding of international government entities, such as U.S. Agency for International Development (USAID) funded projects for securing democratic institutions around the world.

Audit the resiliency and cybersecurity of major critical infrastructure projects to identify risk, estimate the impact, and assess the value added.

Advise election officials on process, procedures, rules, and regulations to address changes in election technology infrastructure and election administration.

Testify, provide oral testimony, written declarations, and consultation on election technology and security litigations and hearings in state and federal courts.

Lafayette Group Inc.– Subject Matter Expert, Election Security: (05/2019 – Present)

Strategize, advise, and provide stakeholder engagement to the Election Security Initiative (ESI) at Cybersecurity and Infrastructure Security Agency (CISA).

Partner with state and local election officials to build resiliency in their election infrastructure by assessing risk and identifying resources that can mitigate the risk.

Collaborating with election officials, election infrastructure providers, non-governmental organizations, and the electorate on the risks to the democratic process.

U.S. EAC– Acting Director, Testing & Certification (03/2019 – 05/2019)

Managed the development of publications and trainings for stakeholders on election technology and cybersecurity.

Served as the U.S. Election Assistance Commission (EAC) lead on critical infrastructure issues.

Lead to the Technical Guidelines Development Committee (TGDC) a federal advisory committee encompassing experts in the field of security, accessibility, standards development that advise on the development of HAVA compliant election technology principles, guidelines, and standards.

Collaborated with state and local election officials implementing new legislation, rules, regulations, and standards for election infrastructure.

Developed strategies and methodologies for balancing security with accessibility in election technology in compliance with the Help America Vote Act (HAVA) 2002.

U.S. EAC– Sr. Election Technology Program Specialist (05/2016 – 05/2019)

Engineered a new strategic approach for federal certification of voting systems, restructuring internal policies, processes, and procedures - focusing on the auditing and conformance to International standards for security, quality assurance, and configuration management.

Transformed the scope of voting system standards to implement a functional process-based model providing adaptability across multiple election technologies.

Project Manager for federal voting system certification - analyzing voting systems to determine conformance with federal standards, policies, and procedures.

Developed nationally recognized publications and trainings on the best practices for securing, procuring, and implementing election technology; many of which have been referenced in technical or policy related publications.

Implemented a risk-based approach to analyze and identify current threats and challenges in election technology, particularly regarding cybersecurity and information operations.

California Secretary of State– Sr. Election Technology Analyst (08/2006 – 05/2016)

Collaborated with legislators, election officials, and special interest groups to develop legislation, regulations, and policies for election systems including the California Voters Choice Act, California Voting System Standards, and remote accessible vote by mail systems legislation and standards.

Advise the Secretary of State and Executive Staff on the certification and implementation of election technologies, such as voting systems and remote accessible vote by mail technologies to ensure that all voters have an opportunity to vote privately and independently.

Professional Organizations & Committees

Member – National Task Force on Election Crises

Member - GCA Cybersecurity Toolkit for Elections Advisory Group

Program Committee Member – E-Vote-ID 2020: International Conference for Electronic Voting

Steering Committee Member for the Center for Internet Security (CIS) Rapid Architecture-Based Election Technology Verification (RABET-V)

Former State of California appointee to the U.S. EAC's Standards Board

Education & Professional Certifications

Bachelor of Science, Business Administration (Finance) – California State University, Sacramento

Certified Election/Registration Administrator (CERA)

Lead Auditor - ISO 9001 & ISO 17025

Certified as a Protected Critical Infrastructure Information (PCII) Authorized User

Projects & Publications

- EXPERT WITNESS TESTIMONY on behalf Arizona Secretary of State Katie Hobbs: Kari Lake, et al. v. Katie Hobbs, et al., in the United States District Court for the District of Arizona, Case #2:22-cv-00677
- AFFIDAVIT on behalf of the Secretary of the Commonwealth of Pennsylvania: Fulton County, Pennsylvania, et al., v. Secretary of the Commonwealth in the Commonwealth Court of Pennsylvania, Case #277 MD 2021.
- DECLARATION on behalf of Secretary of State's Motion to Intervene: Arizona Democratic Party and Steve Gallardo v. Karen Fann et al., Superior Court of the State of Arizona for the County of Maricopa County, Case #CV-2021-006646.
- Rebuttal Report to the Allied Security Operation Group (ASOG) Antrim Michigan Forensics Report.
- Election Security Risk in Focus: Ransomware – Trained hundreds of election administrators on the cybersecurity risks and mitigative measures related to ransomware in the election infrastructure.
- MEMORANDUM in Opposition re13 MOTION for Preliminary Injunction: Harley et al v. Kosinski et al, United States District Court in the Eastern District of New York, Case #1:20-cv-04664.
- MEMORANDUM in Opposition re26 MOTION for Preliminary Injunction: Taliaferro et al v. North Carolina State Board of Elections et al, United States District Court for the Eastern District of North Carolina Western Division, Case #5:20-cv-00411.
- Election Security Risk Profile Tool – Collaborator on the methodology for a simple, non-technical tool that provides mitigations for the non-cybersecurity professionals to understand.
- Co-Author of the Harvard Belfer Center Defending Digital Democracy Project (D3P) *State and Local Election Cybersecurity Playbook* and *The Elections Battle Staff Playbook*.
- Trainer and scenario builder for the D3P State and Local Election Official Tabletop Exercise and Battle Staff Bootcamp.
- Contributor to CIS *A Handbook Election Infrastructure Security* and *Election Technology Procurement Guide*.
- Lead on EAC Voluntary Voting System Guidelines v. 2.0 focusing on providing technologies that are both secure and accessible.
- Created the 17-Functions process model that defined the Scope of the VVSG 2.0 so that non-traditional election technologies could be tested to the same standards as traditional voting systems.