IN THE COMMONWEALTH COURT OF PENNSYLVANIA

MARK BANFIELD, *et al.*, Petitioners, v. CAROL AICHELE, Secretary of the Commonwealth, Respondent.	DOCKET NO. 442 M.D. 2006

[PROPOSED] ORDER

AND NOW, this ________ day of ____________________, _______, upon consideration of Petitioners' Motion for Partial Summary Judgment dated August 5, 2011, Petitioners' Brief In Support of their Motion for Partial Summary Judgment dated September 15, 2011, and any responses or replies thereto, and having heard and considered the argument of counsel, it is hereby **ORDERED** that Petitioners' Motion for Partial Summary Judgment is hereby **GRANTED**.

It is **FURTHER ORDERED** that **JUDGMENT** is **ENTERED** in favor of Petitioners' and against the Respondent on Counts I, IV, VI, IX and X of the Petition for Review.

It is **FURTHER ORDERED** that Respondent is **DIRECTED** to decertify the DREs at issue in this proceeding (specifically the Danaher ELECTronic 1242, the ES&S iVotronic, the Hart eSlate, the Sequoia Edge 2, the Sequoia Advantage, and the Diebold Accuvote TSx) no later than thirty (30) days from the entry of this Order.

It is **FURTHER ORDERED** that Counts II, III, V, VII and VIII of the Petition for Review are **DISMISSED AS MOOT**.

____
DAN PELLIGRINI, Judge

Michael P. Daly (Id. No. 86103)
Meredith N. Reinhardt (Id. No. 93504)
Katie L. Bailey (Id. No. 308748)
DRINKER BIDDLE & REATH LLP
One Logan Square, Suite 2000
Philadelphia, PA 19103-6996
Tel. 215-988-2700

Marian K. Schneider
Attorney-at-Law
295 E. Swedesford Road, #348
Wayne, PA 19087
Tel. 610-644-1925

Michael Churchill
Benjamin D. Geffen
Public Interest Law Center of Philadelphia
125 S. 9th Street, Suite 700
Philadelphia PA 19107
Tel. 215-627-7100

John C. Bonifaz
Voter Action
48 N. Pleasant St., Suite 304
Amherst, MA 01002
Tel. 413-253-2700

Counsel for Petitioners

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MEMORANDUM OF LAW IN SUPPORT OF
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I. INTRODUCTION

The Petitioners are concerned citizens. They include a doctor from Northampton County; a Reverend from Philadelphia County; a computer science professor from Allegheny County and a physics professor from Beaver County;[1] a retired Air Force serviceman and a member of the League of Women Voters from Chester County; a teacher from York County; a homemaker from Bucks County; a journalist from Montgomery County; an art instructor from Centre County; an office manager from Lehigh County; and an artist from Lackawanna County, among others. They come from different regions, generations, backgrounds, and parties, united only by a common concern that their elective franchise is not secured by direct recording electronic ("DRE") machines that produce no record and allow no recount of their votes.

Petitioners are not alone in that. On the contrary, their concerns are shared by electronic voting experts,[2] other technologists,[3] public interest groups,[4] industry groups,[5] and editorialists,[6]

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[1] So much for Petitioners' being "Luddites." Respondent's Brief in Support of Preliminary Objections dated September 22, 2006, at 10. Respondent's name calling is ironic in the extreme because the concerns about DREs are voiced the loudest in the scientific community.

[2] Aside from Dr. Douglas Jones (Iowa) and Dr. Daniel Lopresti (Lehigh), both of whom have volunteered their time to act as Petitioners' expert witnesses, a number of other computer science professors have conducted studies, written papers or issued reports taking issue with the security or auditability of DREs, including but not limited to: Dr. Andrew Appel (Princeton); Dr Patrick McDaniel (Penn State); Dr. David Dill (Stanford); Dr. Aviel Rubin (Johns Hopkins); Dr. Matt Blaze (University of Pennsylvania); and Dr. David Wagner (U.C. Berkeley).

[3] One notable example is Finnish computer programmer and security expert Harri Hursti, who showed that voting machines could be hacked in order to alter election results. *See infra.*

[4] *See, e.g.*, The Verified Voting Foundation, http://www.verifiedvotingfoundation.org; The Organization for Security and Co-operation in Europe, http://osce.org/odhr/elections; Common Cause, http://www.commoncause.org/site/pp.asp?c=dkLNK1MQIwG&b=4773681.

[5] *See, e.g.*, United States Association of Computer Machinery (leading membership organization for computing professional), *E-voting, available at* http://usacm.acm.org/evoting ("Voting systems should also enable each voter to inspect a physical (e.g., paper) record to verify that his or her vote has been accurately cast and to serve as an independent check on the result produced and stored by the system. Making those records permanent (i.e., not based solely in computer memory) provides a means by which an accurate recount may be conducted. Ensuring the reliability, security, and verifiability of public elections is fundamental to a stable democracy.

(Continued)

among others. They are also shared by many state and local governments that have abandoned DREs in favor of optical scan systems that produce a software-independent physical record of each vote the moment it is cast.[7]

More importantly, Petitioners' concerns are also shared by the General Assembly, which amended the Pennsylvania Election Code in 1980 to prohibit the certification of any electronic voting system ("EVS") that does not "provide for a permanent physical record of each vote cast" or allow a statistical recount "using manual, mechanical or electronic devices of a type different than those used for the specific election."[8] Those amendments were an attempt to ensure that EVSs would not have the same fundamental flaw as the lever machines they would be replacing, that is, that they would all produce a record of each vote cast that could be used to audit their recognition and tabulation of votes. Indeed, even Respondent's expert acknowledges that the "the Pennsylvania Legislature recognized a deficiency in lever machines, which did not produce individual vote records" and "when the polls close ... show only cumulative totals."[9]

And yet Respondent certified DREs, which, during the normal course of their operation, also do not "produce individual vote records" and also "show only cumulative vote totals" when

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Convenience and speed of vote counting are no substitute for accuracy of results and trust in the process by the electorate.").

6 *See, e.g.*, *Electronic Voting Machines Start Over,* Philadelphia Inquirer (Feb. 28, 2009) ("Many experts and officials prefer the so-called optical-scan method often used for multiple-choice tests. Voters mark their choices on paper ballots that are read electronically but available for manual recounting."), available at http://articles.philly.com/2009-02-28/news/25282433_1_voting-machines-paperless-voting-sequoia-voting-systems.

7 *See, e.g.*, *id* ("Many states have abandoned the kind of machine being used in New Jersey and Pennsylvania, and only seven still have paperless voting.").

8 *See* 25 Pa. Stat. Ann. §§ 3031.1, 3031.17.

9 *See, e.g.,* Rebuttal to the Reports of Petitioners' Experts Daniel Lopresti, Ph.D. and Douglas W. Jones, Ph.D. dated August 5, 2011 ("Shamos Rebuttal Report") ¶ 9 (attached hereto as Ex. 1); Report of Respondent's Expert Michael I. Shamos, Ph.D., J.D. dated July 11, 2011 ("Shamos Report") ¶ 115 (attached hereto as Ex. 2).

the polls close. In fairness, the certification decision was made under extraordinary political pressure; as Respondent herself has argued, it was made "in the context of a deadline for using voting systems that comply with HAVA," which made "millions in federal funds" available if —but only if—the Commonwealth acted before the deadline that had been set by Congress.[10] But the result was the equivalent of kicking the tires, a series of examinations of a few things by a few people for a few hours. And as we now know, the examinations did not catch a number of deficiencies one would have expected them to catch (such as the inability of one DRE to tabulate votes for cross-filed candidates), and relied in large part on security testing that had been performed by Independent Testing Authorities ("ITAs").[11] This despite the fact that Respondent's own examiner (and her expert in this case) had described the ITA testing process at that time as "dysfunctional" and "not only broken, but virtually nonexistent."[12]

In any event, Respondent has resisted review of the certification decision at every turn. Respondent began by making a veritable kitchen sink of procedural objections, all of which this Court rejected and none of which the Supreme Court agreed to hear on an interlocutory basis.[13]

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10 Respondent's Brief in Support of Preliminary Objections at 24 & 4 n.3. Her expert has acknowledged this pressure as well. *See, e.g.*, Testimony of Michael I. Shamos before the Environment, Technology, and Standards Subcommittee of the U.S. House of Representatives' Committee on Science dated June 24, 2004 ("Shamos 2004 Testimony") at 2 (attached hereto as Ex. 3) ("The problem this year is that many states, wishing to avoid the negative experience of Florida in 2000, have rushed to acquire new voting systems with which they are unfamiliar").

11 *See* Excerpts from the Deposition of Michael I. Shamos dated July 22, 2011 ("Shamos Dep.") at 86 (attached hereto as Ex. 4) ("...[t]hat's the whole point of the ITA system, is to avoid having the states respectively test the same thing 50 times that the ITA could test once."); Excerpts from the Deposition of Jonathan M. Marks dated July 29, 2011 ("Marks Dep.") at 195-96 (attached hereto as Ex. 5) (noting ITA report used by examiner as resource in preparing examination report); Excerpts from the Deposition of M. Glenn Newkirk, CBCP dated July 11, 2011 ("Newkirk Dep.") at 170-71; 186-87 (attached hereto as Ex. 6).

12 *See* Shamos 2004 Testimony at 1 (Ex. 3).

13 Among other things, Respondent argued that: Petitioners' claims were untimely under Pa.R.A.P. 1512(a), even though those claims were directed to the Court's original rather than appellate jurisdiction; Petitioners' claims were either unripe or alternatively barred by laches,

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Her substantive defenses fare no better. As for Petitioners' request for an order directing her to reexamine the DREs (Count VI), she has reversed course entirely, arguing not that she has no duty to reexamine the DREs, but that this claim is now moot. Specifically, she suggests that she has mooted this claim by sending a letter that represents that reexaminations will be conducted "in due course" at an unspecified date. That is too cute by half. A claim cannot be mooted by a mere assurance of performance, and this thinly-veiled attempt to do so cannot be taken seriously. *See infra* Section IV.A.

As for Petitioners' claim that the DREs do not "provide for a permanent physical record of each vote cast" as required by 25 Pa. Stat. Ann. § 3031.1 (Count I), that is true both of the data the DREs store electronically until it is erased during the course of the next election, as well as the data the DREs could in theory (but do not in practice) store on paper after an election. Electronic data is not "permanent" or "physical" in any meaningful sense of the words, and any suggestion to the contrary would interpret that requirement out of existence. Printing out individual vote data on paper immediately after an election would create a "physical" record, but the paper they generally use is receipt-grade thermal paper that is "notorious for not being very permanent" because it fades when exposed to heat.[14] In any event, the record is clear that DREs do not produce such records in the normal course of their operation during elections. Recognizing this, Respondent suggests that the words "provide for" do not mean that the machines must actually produce these vital records, but rather that they need only be "capable of

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even though they had been required to vote using illegal voting machines and filed suit only a few months after doing so; and Petitioners had failed to exhaust their administrative remedies, even though they were no such remedies available to them.

[14] Report of Douglas W. Jones, Ph.D. on behalf of Petitioners dated July 31, 2011 ("Jones Report") ¶ 36 (attached hereto as Ex. 7).

producing" them if someone decides to print them out in the days or months after an election—an interpretation that defies both the dictionary and common sense. *See infra* Section IV.B.

As for Petitioners' claim that the DREs do not allow a statistical recount "using manual, mechanical or electronic devices of a type different than those used for the specific election" as required by 25 Pa. Stat. Ann. § 3031.17 (Count IV), the lack of a permanent physical record of each vote makes any meaningful recount impossible. After all, as Respondent's own expert acknowledges, "the purpose of having a permanent physical record is to permit recounting."[15] Respondent tries to dodge this problem by arguing that the only purpose of a recount is to test the tally of the total number of votes that were cast for each candidate ("tabulation"), and not the recognition of individual votes as having been cast for one candidate or another ("capture").[16] That defies common sense. Indeed, as even Respondent's own expert admits, "[t]he purpose of the voting machine was to capture the voters' choices."[17] What good is a "recount" that does not purport to test the central "purpose of the voting machine"? And what good is a machine that does not allow such testing? It follows that the dog and pony show permitted by DREs cannot possibly qualify as a "recount" within the meaning of the Election Code. *See infra* Section IV.C.

And as for Petitioners' claim that Respondent's certification of the DREs denied them the equal protection and uniform application of law as guaranteed by the Pennsylvania Constitution (Counts IX and X), those claims are established by the Election Code violations discussed above. The inability to produce a record and allow a recount of votes cannot withstand any degree of

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15 *See* Shamos Rebuttal Report ¶ 7 (Ex. 1).

16 *See* Shamos Report ¶ 51 ("The purpose of a recount is to determine whether the original tabulation was performed accurately.") (Ex. 2); Shamos Rebuttal Report ¶ 18 ("Its purpose is to verify the integrity of the tabulation (counting) process, not the original vote recording process.") (Ex. 1).

17 *See* Shamos Report ¶ 122 (Ex. 2).

scrutiny, let alone the strict scrutiny to which burdens on the elective franchise are subjected. That citizens' fundamental right to vote has been subjected to such disparate treatment violates their rights to equal protection under and uniform application of the law. *See infra* Section IV.D.

In denying Respondent's preliminary objections, this Court found that the facts alleged in the Petition stated a claim that the DREs violated the Election Code and that by certifying them Respondent has denied Petitioners the equal protection and uniform application of state law.[18] The record adduced during discovery bears all of that out. Indeed, the parties generally agree about what the DREs can and cannot do as a matter of fact. For present purposes, the parties really only disagree about what the Election Code requires the DREs to do as a matter of law. If Petitioners' reading of the Election Code is the right one—and as we explain below, it is—then Petitioners are entitled to the entry of partial summary judgment in their favor.

II. BACKGROUND

A. Lever Machines

Before the introduction of EVSs, lever machines were the first voting "technology" in Pennsylvania. Lever machines are comprised of a lever for each candidate and a ballot choice. In order to cast a vote, a voter pulls a selected lever, mechanical wheels turn to register the vote

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18 *See* Opinion dated April 12, 2007, at 17 ("Electors allege that a BIR is not necessarily a 'permanent physical record' of the vote case ... because it is simply the data recorded by the software, correctly or incorrectly. Because a BIR may not be a 'permanent physical record' of the vote cast, we cannot dismiss Count I...."); *id.* at 16-17 ("The Secretary does not explain, and, at this stage of the proceedings, there is no evidence to explain how a board is to conduct a statistical recount using a different type of device if the permanent physical record of each vote cast on a DRE is not independent of the data in the electronic storage system."); *id* at 20 ("Article VII, Section 6 does not permit DREs that ... provide no means for vote verification or vote audit."); *id.* at 20 n. 13 ("Electors allege that, unlike any other voting system, the challenged DREs have no meaningful recount of audit mechanisms when they malfunction."); *id.* at 22 ("Electors allege that the Secretary's DRE certifications have deprived Electors of their uniformity rights because the certifications allow some counties to use DREs that lack effective mechanisms for election audits .... ").

and an internal system of locks prevents the voter from voting more than allowed in a given race.[19] Lever machines do not allow meaningful recounts, however, because they only keep vote totals and did not keep records of individual votes.[20] That flaw led to the gradual development of other voting technologies, including punched cards (the deficiencies of which were revealed in 2000) and then EVSs.

B. EVSs and the 1980 Election Code Amendments

In 1980, the General Assembly amended the Election Code to allow the use of EVSs and to require that any EVS certified for use in the Commonwealth not suffer from the same fundamental flaws as the lever machines they would be replacing. *See, e.g.,* 25 Pa. Stat. Ann. 3031.7; 25 P.S. 3031.1. EVSs fall into two principal categories: (1) optical scan systems; and (2) DREs.

1. Optical Scan Systems

With an optical scan machine, a voter marks a paper ballot and that ballot is then read by a computerized scanning machine. In a precinct-count system, voters insert a marked ballot into a scanner at the polling place and are instantly notified if there are any overvotes or undervotes on the ballot, thereby allowing them to make corrections or to obtain a new ballot.[21] In a central-

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19 *See* Jonathan Pron, *Electronic Voting Systems in PA; A primer on Electronic Voting Systems in Pennsylvania, available at* http://www.seventy.org/Elections_Electronic_Voting_Systems_in_PA.aspx (last visited September 13, 2011); Daniel P. Tokaji, *The Paperless Chase: Electronic Voting and Democratic Values,* 73 FORDHAM L. REV. 1711, 1719 (2005).

20 *See* Shamos Report ¶ 115 (Ex. 2); Shamos Rebuttal Report ¶ 9 (Ex. 1). Jones Report ¶ 41-42 (Ex. 7).

21 Tokaji, *supra* note 19 at 1721-22.

count systems, marked ballots are sent from a polling place at the close of polls to a central scanning location.

2. DRE Machines

DRE machines vary in design and user interface by manufacturer. There are different ways a voter can make his or her vote selection on a DRE machine: touch screen, push buttons or scroll wheels. Some DRE machines allow a voter to move from one screen to the next by turning a scroll wheel. Some touch screen DRE machines allow the voter an option to press a "next page" or "previous page" button to navigate between screens, while others move automatically to the next screen. The manner in which a ballot is presented to the voter also varies among DRE machines: "full face" DREs allow the voter to see the entire ballot at one time, while others require a voter to navigate between screens to view the entire ballot.

DREs purport to store election data identifying who a ballot was cast for and the number of votes cast for each candidate (as well as information pertaining to a ballot question) within each DRE unit itself. There are a variety of electronic memories that are used in the DRE machines: EPROM, EEPROM, RAM, PROM, flash memory and PCMCIA. As Dr. Lopresti explained in his July 29, 2011 Expert Report, all of these internal electronic memories are alterable and have security vulnerabilities. *See* Lopresti Report at 3-5 (attached hereto as Exhibit 11).

Certain data stored on DREs is known as a cast vote record ("CVR") or "ballot image retention" ("BIR"). The latter name has fallen out of disfavor, however, because it suggests, incorrectly, that the DREs actually retain an image of the ballots that are cast. They do not. On the contrary, the CVR is merely the data recorded by the software, correctly or incorrectly. *See, e.g.*, Jones Report ¶ 34 (Ex. 7). DREs are "capable of producing paper copies" of the CVR

data. Shamos Report ¶ 114 (Ex. 2). "Normally this is done, if at all, at the close of voting." *Id.* Dr. Jones explained in his report: "[t]he printed ballot-image report or cast-vote record produced by the thermal printer on a DRE voting machine or by the full-page printer on an election management system is not simply a copy of the data that was retained in the memory of the voting system." Jones Report ¶ 34 (Ex. 7). Indeed, the election data stored on the DRE is in a "form that is resistant to any human interpretation" and software or firmware that is used to print the data converts the data to text so it can be interpreted by the human eye. *Id.*

C. **The 2000 Election and HAVA**

In October 2002, the Help America Vote Act (HAVA), 42 U.S.C. §§ 15301-15545 was enacted in part in response to the controversy surrounding the November 2000 presidential election. HAVA was designed to "prevent a recurrence of the difficulties experienced during the Presidential Election of 2000."[22] HAVA allocated a significant amount of funding to the States for complying with its requirements, most notably the replacement of lever voting machines and punched card systems with EVSs.[23] In order to receive federal funds, Pennsylvania was required to do so by the first federal election after January 1, 2006.[24] As the deadline quickly approached, it was "all hands on deck" for the Secretary.[25] As the Secretary candidly observed at the time, "[e]very day that goes by without additional certified systems puts the Commonwealth, particularly the Department, in a terribly [sic] predicament. If needed, I will begin handling this

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[22] Pennsylvania Department of State's website dedicated to the Help America Vote Act, *available at* http://www.portal.state.pa.us/portal/server.pt/community/hava/12563 (last visited September 13, 2011).

[23] Pennsylvania State Plan, as amended 2005, at 1-2 (attached hereto as Ex. 8).

[24] *Id.* at Element 12, at 56.

[25] *See* Marks Dep. at 22 (Ex. 5).

matter personally."[26] Eventually the Commonwealth conducted certification examinations for seven DRE machines in a four month period from November 2005 through February 2006. Since the November 7, 2006 general election, all sixty-seven Pennsylvania counties use either a DRE or an optical scan machine.

D. The Examination, Certification and Operation of DREs in Pennsylvania

In order for Pennsylvania counties to utilize a particular EVS, the Election Code requires that the system be examined and certified by the Commonwealth. The machines at issue in this litigation were examined by statutory examiners Mr. Glenn Newkirk and Dr. Michael Shamos.

According to Commonwealth practice, at the conclusion of a statutory examination, the examiner prepares a written report recommending whether or not the system should be certified, and may propose conditions. After receiving the examiner's report, the Secretary of the Commonwealth determines whether to certify the system for use in Pennsylvania. The Secretary issues a certification report outlining its certification decision. The majority of these reports include conditions that must be satisfied either by the DRE vendor or the counties before the DRE machine would be in compliance with the Election Code.

Despite the numerous substantive requirements for certification, the examinations of the six DREs at issue in this litigation took approximately one day but never more than two days.[27] The examiners received operating manuals and technical data packages ("TDP") from the DRE vendors which are typically several hundred page documents with detailed information about the

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26 Email from Pedro Cortes to Kenneth Rapp dated September 19, 2005 (attached hereto as Ex. 9).

27 *E.g.*, Newkirk Dep. at 150 (explaining Hart examination lasted one day) (Ex. 6); *Id.* at 249 (stating Danaher re-examination lasted one day); *Id.* at 295 (AVS examination lasted one day); Shamos Dep. at 104 (noting Diebold examination lasted first full day and carried over until second day) (Ex. 4); *Id.* at 74 (noting ES&S examination lasted two days).

operation and functionality of the particular DRE. In some cases, the examiner would not receive this information until after the examination had concluded.[28] In other cases, the examiner would receive some but not all of this information.[29] Under either scenario, the statutory examiner Mr. Newkirk testified that these materials sometimes were not reviewed at all as part of the examination.[30]

Among the seventeen mandatory requirements of 42 Pa. Stat. Ann. § 3031.7, three require that the DREs satisfy certain security standards:

- Section 3031.7(11) requires that the voting system "is suitably designed and equipped to be capable of absolute accuracy, which accuracy shall be demonstrated to the Secretary of the Commonwealth." (emphasis added)

- 3031.7(12) mandates that the electronic voting system "[p]rovide[] acceptable ballot security procedures and impoundment of ballots to prevent tampering with or substitution of any ballots or ballot cards."

- Section 3031.7(17)(i) requires that the voting system "be constructed so that every person is precluded from tampering with the tabulating element during the course of its operation."

Despite these specific security requirements, the Commonwealth's statutory examiners did not conduct rigorous security tests.[31] They did not review the DRE's source code.[32] Instead,

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28 Newkirk Dep. at 153 (noting with respect to Hart Intercivic examination: "I don't believe I had received the full TDP at the time of this examination.") (Ex. 6).

29 Newkirk Dep. at 152 (noting with respect to Hart Intercivic examination "I think I had received some of the technical materials from the system but I don't believe I received the full TDP package.") (Ex. 6); *Id.* at 153 ("I don't believe I received the full TDP package"); *Id.* at 295 ("I do not recall if I had received any subsequent parts or all of the TDP, and I don't recall what other documents I would have received in advance.").

30 Newkirk Dep. at 153 (noting never received full TDP for Hart examination) (Ex. 6); *Id.* at 252 (noting did not review Danaher TDP because "re-examination" not "examination").

31 Although Dr. Shamos and Mr. Newkirk testified that they engaged in some security testing, the examinations were so brief that there would not be enough time to conduct thorough and exhaustive security tests. *E.g.,* Newkirk Dep. at 186-87 (relying on ITA reports for certain security tests) (Ex. 6); Shamos Dep. at 83 ("[T]pically what I'll do is when I'm reviewing the structure of the system in advance, I will see where I think there are potential vulnerabilities during the exam.") (Ex. 4).

they deferred to the reports prepared by ITAs for security testing and source code analysis.[33] The Commonwealth statutory examiners admitted that they do not routinely review ITA reports as part of their examination process because in some instances the ITA report is not received until after the examination is concluded.[34] Further, even if an ITA report were reviewed, the Commonwealth's own expert and statutory examiner Dr. Michael Shamos testified the ITA testing is flawed.[35] Thus, the actual examination process is reduced to limited routine tests, no source code review and blanket reliance upon ITA reports that the Commonwealth's own expert admits are not reliable.

Once certification was granted, there was no meaningful oversight by the Commonwealth to ensure that any conditions identified in the certification reports were ever satisfied by counties or vendors. Indeed, with respect to the DRE machines at issue in this litigation, the

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(Continued)

32 Shamos Dep. at 75 (noting with respect to ES&S exam he had the source code available but does not recall whether actually looked at it) (Ex. 4); *Id.* at 106 (noting had source code but does not recall if he looked at it in connection with Diebold examination); Newkirk Dep. at 166-67 (stating he did not review source code in connection with Hart examination) (Ex. 6); *Id.* at 253 (did not review source code in connection with Danaher re-examination).

33 Shamos Dep. at 86 (Ex. 4) ("...[t]hat's the whole point of the ITA system, is to avoid having the states respectively test the same thing 50 times that the ITA could test once."); Marks Dep. at 194 (Ex. 5) (noting ITA report used by examiner as resource in preparing examination report); Newkirk Dep. at 170-71 (noting relying upon source code analysis in ITA reports) (Ex. 6). *Id.* at 186-87 (noting didn't examine particular security issue with removable cartridges because that security analysis was within scope of ITA review).

34 Shamos Dep. at 105 (noting ITA documents were not provided in advance of examination with respect to Diebold examination) (Ex. 4).

35 Shamos Dep. at 27 (discussing presentation where he concluded that "[t]oo many systems pass ITA qualifications that shouldn't") (Ex. 4); *Id.* at 30-31 (agreeing that half of the voting machines examined in PA have significant defects that the ITA laboratory should have caught; "[w]hen a system comes for certification in Pennsylvania, the only flaws that it should conceivably have are failure to comply with Pennsylvania procedures, the way we count votes in Pennsylvania. I shouldn't find flaws that ought to have been detected by the ITA, yet I did. So that suggested to me that the ITA process wasn't adequate."). *Id.* at 47("additional testing beyond ITA certification is needed to test the security of DREs before they're used in an election.").

Commonwealth's certification was contingent upon the compliance of either the individual counties or vendors of the DRE systems with specific conditions. Representatives from the Commonwealth testified that as a general matter, the Department of State does nothing to ensure that certification conditions are ever satisfied.[36] Instead the Commonwealth relies on an "expectation" that the counties and vendors will comply with the specified conditions. Moreover, the Commonwealth had no specific information regarding whether the conditions included in the certification reports of the DREs at issue in this litigation had been satisfied.[37]

1. <u>The Danaher ELECTronic 1242</u>

The Danaher ELECTronic 1242 is a full-face DRE voting system used in connection with the Guardian Election Management System. Evaluation of ELECTronic 1242 Voting System & Guardian Election Management System by Michael Shamos dated September 2005 at COM000065 (attached hereto as Exhibit 10). The Danaher system records voter choices in six different computer memory locations. Expert Report of Daniel Lopresti, Ph.D. dated July 29, 2011 ("Lopresti Report") at p. 4 (Ex. 11). The machine uses a memory cartridge inserted in the back of the machine that contains the ballot definition files which allow the machine to conduct the elections. *Id.* "The cartridge also contains three distinct memories for storing vote data: one EPROM and two EEPROMs. Vote data is also stored inside the ELECTronic 1242 itself in three separate RAM locations." *Id.* The initial examination of the Danaher system occurred on June

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36 Marks Dep at 110-11 (Ex. 5).

37 Marks Dep at 111-15; 129-32 (testifying that Commonwealth has no knowledge whether conditions in ES&S certification report were ever satisfied); *Id.* at 140-42; 155-57 (testifying that Commonwealth has no knowledge whether conditions in Diebold certification report were ever satisfied) (Ex. 5); *Id.* at 160-62 (testifying that Commonwealth has no knowledge whether conditions in Sequoia AVC Advantage certification report were ever satisfied); *Id.* at 165-66 (testifying that Commonwealth has no knowledge whether conditions in AVS Winvote certification report were ever satisfied).

8, 2005 by Dr. Shamos. He prepared a report recommending certification provided that eleven "deficiencies" were cured. Evaluation of ELECTronic 1242 Voting System at COM000075 (Ex. 10). The machine was certified by the Commonwealth.

During the May 2005 Municipal Primary Election in Berks County, an incident occurred where a number of votes were lost on the Danaher system. Inspection and Re-Examination of ELECTronic 1242 at COM000079 (attached hereto as Exhibit 12). During the course of poll worker operation of data packs, a number of votes were overwritten and erased from the data packs. Newkirk Dep. at 246-47 (Ex. 6). The Commonwealth's examiner Mr. Newkirk admitted that those votes had been permanently lost. *Id.* Re-examination of the Danaher was ordered to determine if it could be used in the November 8, 2005 general election. *Id.* The re-examination was scheduled for November 2, i.e., only six days before the November 8 election. Mr. Newkirk testified that his re-examination was even more abbreviated than a typical examination with respect to the materials that he reviewed in advance of the examination, in light of the fact that this was a "re-examination" not an "examination." *Id.* at 248-49.

One day before the election, Mr. Newkirk issued a report recommending that certification be maintained despite the permanent loss of votes in Berks County, which he attributed to poll worker error rather than a deficiency of the DREs. *Id.* at 246. Mr. Newkirk did not know how voting would have occurred in the election the following day in Berks County had he recommended de-certification. *Id.* Mr. Newkirk was similarly unaware of any contingency plan for voting in Berks County had he recommended de-certification. *Id.* The representative from Commonwealth produced to testify on this issue also had no knowledge. Deposition of Ian J. Harlow dated July 29, 2011 ("Harlow Dep.") at 344-45 (excerpts attached hereto as Ex. 13). In fact, there is no evidence in the record that the Commonwealth ever seriously considered the

possibility that the Danaher system might be recommended for decertification in light of the Berks County incident. The Danaher system is currently used by six counties.[38]

2. <u>The ES&S iVotronic</u>

The ESS&S iVotronic is a touchscreen DRE and uses a variety of devices to store electronic voting data.

> The Personalized Electronic Ballot [("PEB")] is a palm-sized rectangular device that is inserted in the iVotronic. Ballot definitions are transferred from the PEB to the iVotronic. Supervisor PEBs are used to activate the iVotronic for each voter. A Master PEB is used to collect and store the votes from one or more iVotronic machines. The Master PEB is transported from the polling place to a central location and the vote data read and accumulated by ES&S' Unity software. Each machine also contains internal memory and a compact flash memory card to which vote data is written.

Lopresti Report at 4 (Ex. 11).

On November 16-17, 2005, Dr. Shamos conducted the examination of the ES&S System. He recommended certification contingent upon remedying fourteen deficiencies, five of which he highlighted as sufficiently serious to require repair prior to certification. Evaluation of iVotronic Touchscreen System & Unity Software by Michael Shamos dated Dec. 2005 at COM000263 (attached hereto as Ex. 14). One of the conditions for certification included: "iVotronic must be reconfigured to produce an onboard zero tape at each machine." *Id.* Dr. Shamos noted earlier in his report that if the iVotronic were not re-configured, it would contravene one of the mandatory requirements of the Election Code, 25 Pa. Stat. Ann. §

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[38] To identify what voting system is used by each county as set forth *infra* sections II.D.1-II.D.6, see *www.votespa.com*, the Department of State's online voting information and resource center, *available at* <u>http://www.votespa.com/portal/server.pt/community/home/13514</u> (last visited September 15, 2011).

3031.7(16)(v). *Id.* at COM000259. On December 22, 2005, the Secretary certified the ES&S System contingent upon satisfying eleven conditions. The onboard zero tape re-configuration was not among the conditions for certification in the report even though Dr. Shamos had concluded that, without such a condition, the ES&S System would be in violation of the Election Code. Examination Results of the Electronic Systems and Software, Inc., iVotronic Touchscreen Voting System with Unity Software at COM000272-82 (attached hereto as Ex. 15); Shamos Dep. at 103 (Ex. 4). A representative of the Commonwealth testified that it was within the Secretary's discretion not to impose that particular condition for certification. Marks Dep. at 103-05 (Ex. 5).

On March 28, 2006, Dr. Shamos conducted a re-examination of the ES&S system because ES&S discovered an error in the system's firmware that was not detected by Dr. Shamos during his initial examination. *See* Evaluation of Election Systems and Software, Inc. iVotronic 9.1.4.1 and Unity Software 3.0.1.0 dated April 2006 at COM000266 (attached hereto as Ex. 16); Shamos Dep. at 101-02 (Ex. 4). Again, Dr. Shamos recommended certification contingent upon satisfaction of fourteen conditions. Condition No. 2 was the same condition referenced in his first examination report that the Commonwealth declined to enforce: "iVotronic must be reconfigured to produce an onboard zero tape at each machine." April 2006 Evaluation of iVotronic at COM000269 (Ex. 16). Dr. Shamos noted further in this report:

> [I]t would be gratifying if the vendor would take the time to read the Secretary's reports and take the time to remediate the observed problems instead of doing nothing about them. It is unlikely that I would recommend certification at any subsequent examination unless problems 2, 6 and 7 are repaired by the vendor.

Id. at COM000270. On April 7, 2006, the Secretary again granted certification pending satisfaction of five conditions. In this report, the Secretary included the onboard zero tape re-

configuration condition. Amended Report of the Examination Results of the Election Systems & Software, Inc. iVotronic Touchscreen Voting System with Unity Software at COM000283-88 (attached hereto as Ex. 17). The Commonwealth took no meaningful steps to follow up with the vendor or the counties to ensure that any of these conditions were ever satisfied. Marks Dep. 111-17 (Ex. 5). The ES&S System is currently used by twenty-seven counties.

3. **The Hart eSlate**

The Hart Intercivic eSlate encodes ballot definitions to PCMCIA cards called "Mobile Ballot Boxes." Lopresti Report at 4 (Ex. 11). "These PCMCIA cards are installed into a console ('Judge's Booth Controller or JBC') which is used at the polling place to control access to all eSlates at the precinct. eSlate machines are connected to the JBC via cables. Vote data is stored on internal memory in the JBC and the MBB PCMCIA card. In addition, vote data is stored on internal memory in the eSlate itself." *Id.* On August 16, 2005, Mr. Newkirk examined the Hart Intercivic system. His report dated October 28, 2005 recommended certification but noted six anomalies he had identified in the examination. Hart InterCivic Voting System Inspection and Examination Results dated October 28, 2005 at COM000133-153 (attached hereto as Ex. 18). On November 18, 2005, the Secretary issued an certification report granting certification.[39] Examination Results of Hart InterCivic's eSlate Electronic Voting System at COM000171-176 (attached hereto as Ex. 20). The Hart Intercivic eSlate voting system is used by four counties.

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[39] On February 6, 2006, Hart Intercivic demonstrated a new version of the eSlate. On February 24, 2006, the Secretary issued an amended Certification report certifying the updated version of the Hart Intercivic System. Amended Report of the Examination Results of the Hart Intercivic eScan Optical Scan Reader and eSlate Electronic Voting System at COM000183-187 (attached hereto as Ex. 19).

4. The Sequoia Edge 2

The Sequoia Edge 2 is a touchscreen DRE that uses several different types of memory. "Votes are stored both internally and on a removable 'Results Cartridge' which is a PCMCIA card. These cards are removed at the end of the election and read by a card reader so that vote totals can be accumulated." Lopresti Report at 4 (Ex. 11). An examination of the Edge 2 was conducted by Dr. Shamos on August 16, 2005 and January 25, 2006. In his examination report, Dr. Shamos recommended certification contingent on satisfaction of certain conditions. The Sequoia Edge 2 was certified for use in the Commonwealth on February 15, 2006 pending satisfaction of three conditions. Certification Report of Sequoia's AVC Edge 2 Electronic Voting System dated February 15, 2006 at COM000236-242 (attached hereto as Ex. 21). The Sequoia Edge is currently used by one county.

5. The Sequoia Advantage

The Sequoia Advantage is a full-face push button DRE voting system that loads ballot definitions and stores vote data using a "Results Cartridge" PCMCIA card. The Advantage system also contains internal memory upon which the voting is stored." Lopresti Report at 4 (Ex. 11). The Sequoia Advantage was examined on March 28-29, 2006 by Dr. Shamos. Dr. Shamos issued an examination report and recommended that the system not be certified based on significant anomalies identified in his report. Evaluation of WinEDS Tabulation Software by Michael Shamos dated May 2, 2006 at COM000203-225 (attached hereto as Ex. 22). Approximately two weeks later, however, on April 11, 2006, Sequoia Advantage was again presented for certification in an examination conducted by Dr. Shamos. Dr. Shamos's examination report dated May 2, 2006 recommended certification contingent upon remedying six anomalies and an additional nine anomalies that needed to be corrected in subsequent versions of

the Advantage system. *Id.* at COM000226-235 (Ex. 22). One of these anomalies involved security concerns involving the lack of encryption on vote data files on Advantage Results Cartridge used with the Sequoia Advantage system. Lopresti Report at p. 9 (Ex. 11). In both of his examination reports, Dr. Shamos noted this concern as something that needed to fixed in subsequent versions of the Advantage system. *Id.* On May 8, 2006, the Secretary issued a report certifying the Sequoia Advantage contingent upon the same conditions identified in Dr. Shamos's examination report but classified the security concern regarding lack of encryption as a mere recommendation, not a requirement. Examination Results of Sequoia's AVC Advantage Electronic Voting System at COM000243-250 (attached hereto as Ex. 23). The Sequoia Advantage is currently used by two counties.

6. <u>The Diebold Accuvote TSx</u>

The Diebold system is a DRE touchscreen voting system that uses a removable PCMCIA memory card and internal flash memory to store CVR data. Lopresti Report at 4. Dr. Shamos examined the system on July 18-19, 2005 and issued a report recommending that it not be certified for approximately eight reasons. Evaluation of AccuVote OS, AccuVot TSx, GEMS Election Management System and Accessories by Michael Shamos dated October 2005 at COM000001-15 (attached hereto as Ex. 24). On November 22, 2005, however, he re-examined the system and during this examination recommended certification provided that seven conditions were satisfied. Evaluation of AccuVote, AccuVote TSx, GEMS Election Management System and Accessories by Michael Shamos dated December 2005 at COM000016-31 (attached hereto as Ex. 25). On December 22, 2005, the Secretary issued a report certifying the Diebold system contingent upon certain conditions being satisfied. Examination Results of the Diebold Election Systems' at COM000032-41 (attached hereto as

Ex. 26). On January 7, 2006, Dr. Shamos issued a re-examination report in light of learning from Professor David Wagner, a computer security expert at the University of California at Berkeley, about a security vulnerability known as the Hursti exploit that was also possible on the Diebold DRE system certified in Pennsylvania ("Hursti 2"). Evaluation Upon Re-Examination of AccuVote OS, AccuVote TSx, GEMS Election Management System and Accessories by Michael Shamos dated January 2006 at COM000043 (attached hereto as Ex. 27); *see also id.* at COM000042-50. Dr. Lopresti explained in his report how the exploit works:

> The Hursti "exploit" . . . allows the internal memory of the Diebold AccuVote TSx DRE to be reprogrammed to run arbitrary software of the attacker's own choosing, leaving no evidence that the system has been compromised. The Princeton research team demonstrated how votes can be stolen from one candidate and given to another in a way that cannot be detected through the standard auditing mechanisms provided by the machine. Only a modest level of technical expertise and a few minutes alone with the AccuVote TSx are required to pull off this attack, which can be put into places days, weeks, or months before an election.

Lopresti Report at 7 (Ex. 11). This exploit was not detected in Dr. Shamos's initial examination of the Diebold DRE system. *Id.*

Upon re-examination, Dr. Shamos reviewed the source code of the Diebold system and reviewed Diebold's written assurances that the Hursti exploit was not possible on the system. Shamos Dep. 118-20 (Ex. 4). In light of those findings, he recommended continued certification. *Id.* The Secretary adopted this recommendation provided certain conditions were satisfied in an Amended Certification Report dated January 17, 2006. Amended Certification of the Diebold Election Systems' AccuVote TSx Direct Recording at COM000051-62 (attached hereto as Ex. 28). The Diebold system is currently used by sixteen counties.

7. The AVS Winvote

The AVS Winvote is a touch screen DRE with a wireless local area connection ("LAN"), a 15" color screen, and built in battery backup power, modem and printer. Examination Results of the Advanced Voting Solutions WinVote Direct Recording Electronic Voting System with WinWare at COM000126 (attached hereto as Ex. 29). Once a voter inputs his or her vote on the touch screen, votes are stored on four redundant memories. *Id.* Mr. Newkirk completed a one day examination of the system on September 19, 2005. During that examination, he noted fourteen anomalies with the system and recommended certification contingent upon AVS fixing those anomalies. Five of the anomalies were designated as "major" anomalies including concerns of potential "security holes" in the AVS system.[40]

The Secretary adopted the recommendation of Mr. Newkirk and issued a certification report on February 17, 2006 certifying the AVS system for use in Pennsylvania. Certification was granted provided the vendor satisfied nine conditions which mirror in large part the anomalies identified in Mr. Newkirk's examination report. *Id.* at COM000131-132.

E. The Failure and Decertification of the AVS Winvote

After certification, a number of problems came to light with respect to the AVS system. Contrary to Pennsylvania Election Code, AVS upgraded its software on its machines in Pennsylvania without notifying the Commonwealth. AVS should have presented its system for re-examination after the upgrade. Marks Dep. at 244 (Ex. 5).

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[40] One of the major anomalies concerned the system's modem based transfer of voting results from polling places to the county election office. Mr. Newkirk commented: "the potential security holes and operational difficulties associated with using modems to transfer data from polling places to election offices with this system outweigh the convenience of having early, unofficial results." Advanced Voting Solutions Inspection and Re-Examination Results dated November 22, 2005 at COM000118 (attached hereto as Ex. 30). Another major anomaly concerned weak passwords that did not adhere to "increasingly strong industry standards." *Id.*

Additionally, after Mr. Newkirk's examination and certification it came to the Commonwealth's attention based on an election failure that the AVS was unable to tally cross filed votes. Mr. Newkirk testified that during his examination he made a mistake and "overlooked" that particular part in the examination process. Newkirk Dep. at 321 (Ex. 11).

On December 28, 2007, AVS's voting system was decertified by the Commonwealth.[41] AVS failed to comply with the requirements of the Pennsylvania election code, including failure to comply with applicable federal requirements.[42]

F. The Subsequent Examination of DREs by Other States

In 2007, California and Ohio issued comprehensive reports documenting serious security vulnerabilities with the very DREs certified in Pennsylvania.

As a result of California's "Top to Bottom" review, issued on August 3, 2007, Secretary of State Debra Bowen decertified the Diebold AccuVote TSx DRE, the Hart Intercivic eSlate DRE and the Sequoia AVC Edge 2 DRE due to numerous security issues with those voting systems.[43] The Top to Bottom review was significantly more thorough than any of the

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[41] This was not the first time actual election conditions revealed a fatal deficiency in the Secretary's certifications. In 2004 the Secretary de-certified the Patriot Unilect DRE because of thousands of unexplainable undervotes. Voting Machine Problems in Pennsylvania – VotePA (P-14296-97) (attached hereto as Ex. 31).

[42] Letter dated December 28, 2007 notifying AVS of de-certification at COM004358-60 (attached hereto as Ex. 32).

[43] Dr. Lopresti's Expert Report dated July 29, 2011 at 7 highlights the problems identified in the California Top to Bottom Review with respect to three of the DRE machines at issue in this Action. For example, the Top to Bottom review detailed an attack on the Diebold in which a voter could use "a few easily concealed tools, can reset the TSx DRE to administrative mode, delete all ballots cast thus far on the machine, and restart the election on the unit." Lopresti Report at 7 (Ex. 11). With respect to the Hart Intercivic eSlate DRE, the TTB report determined that "software running on the Hart system often fails to check the validity of input values it receives from outside sources, opening the system to a common type of attack that is frequently used by 'hackers' to take control of computers over the Internet." *Id.* (Hart Source Code Review). And, the Sequoia AVC Edge 2 was also decertified as a result of the California Top to

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examinations conducted by Pennsylvania. Independent technical experts were employed to conduct detailed source code analysis and penetration testing. Lopresti Report at 7-8 (Ex. 11).

Similarly, the Ohio EVEREST study conducted by the State of Ohio resulted in the Secretary's recommendation of decertification of all DREs from elections in Ohio on December 14, 2007. *Id.* at 8. Like the California Study, Ohio EVEREST was more thorough and intensive than any examination in Pennsylvania. The DRE systems discussed in the Ohio EVEREST report that are pertinent to this litigation include the Diebold AccuVote TSx DRE, the Hart Intercivic eSlate DRE and the ES&S iVotronic DRE.[44]

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Bottom Review. "[T]he California Red Team determined that the Sequoia Edge firmware includes a shell-like scripting language, interpreter, in apparent violation of Section 4.2.2 of the 2002 Voting Systems Standards, which provides commands for setting the supposedly tamper-proof protective counter of the machine, setting the machine's serial number, overwriting other software and firmware in the system (including the audit trail), and rebooting the machine at will (p. 7 of "Security of the Sequoia Voting System")." *Id.* at 7. *See also* Excerpts from California Top to Bottom review at 15 (attached hereto as Ex. 33). The full California Top to Bottom review is *available at*: http://www.sos.ca.gov/voting-systems/oversight/top-to-bottom-review.htm. Subsequently, California conditionally recertified the systems and permitted them to be used in limited circumstances such as with early voting and for persons with disabilities as long as enhanced security measures and post-election audit procedures were observed.

44 Lopresti Report at 8 (Ex. 11). Specifically, with respect to the Diebold AccuVote Tsx, "the Ohio examiners found that buffer overflows – a common type of programming error – present in the Premier software can be exploited by an attacker to run arbitrary code on the DRE which can then propagate to other components in the election system, including the GEMS server." Additionally, the Hart Intercivic eSlate DRE also was flawed because "the Ohio examiners found that the Judges Booth Controller, which administers the DRE units, generates supposedly 'random' voter access codes that are easy to predict after viewing a small number of past codes. Exploiting this vulnerability would allow an attacker to vote multiple times using the DRE." *Id.* Finally, with respect to the ES&S iVotronic DRE, "[t]he Ohio examiners found that the iVotronic can be rebooted by a voter with the use of a simple magnet . . . . At best, this would make the machine unusable for a period of time – the modern day equivalent of locking voters out of the polling place." *Id.* Excerpts from Ohio EVEREST Report (attached hereto as Ex. 34). The full Ohio EVEREST Report is available at: http://www.sos.state.oh.us/SOS/upload/everest/14-AcademicFinalEVERESTReport.pdf.

The Commonwealth, Dr. Shamos and Mr. Newkirk all admitted that they were familiar with the Ohio EVEREST and California Top to Bottom Studies when the studies were issued.[45] They also admit that no steps were taken to re-evaluate the appropriateness of certification of the DRE systems in light of these studies.[46] This despite the fact that Dr. Shamos concedes that "the Ohio and California reports raise important security issues" and that "the evidence adduced by California and Ohio should be considered by the Secretary" in deciding "which remediations of the identified systems might be undertaken to counteract their security vulnerabilities." Shamos Report ¶¶ 91, 126 (Ex. 2).

G. The Petitioners' Requests for Reexamination

In January, March and April 2006, Petitioners Reed, Fewless and Berquist formally requested reexaminations of the Danaher ELECTronic 1242, Diebold Accuvote TSx and ES&S iVotronic. Each request was signed by ten or more registered electors and accompanied by a check in the amount of the requisite reexamination fee as required by 25 Pa. Stat. Ann. § 3031.5.[47] Each was denied.[48] Then, on July 25, 2011, nearly five years later, Petitioners Reed, Fewless and Berquist received letters from the Secretary of the Commonwealth indicating that re-examinations would occur "in due course."[49] On August 25, 2011, Petitioner Banfield requested reexamination of the Sequoia AVC Advantage, Sequoia Edge and Hart Intercivic

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45 Newkirk Dep. at 213-17 (Ex. 6); Shamos Dep. at 258-59 (Ex. 4); Marks Dep. at 226-32 (Ex. 5).

46 Marks Dep. at 226-232 (Ex. 5).

47 Letters from Petitioners Reed, Fewless and Berquist requesting re-examination (attached hereto collectively as Ex. 35).

48 Letters from P. Cortes (attached hereto collectively as Ex. 36).

49 Letters from C. Aichele (attached hereto collectively as Ex. 37).

eSlate.[50] Like Petitioners Reed, Fewless and Berquist, Petitioner Banfield complied with the requirements of 25 Pa. Stat. Ann. § 3031.5. Just yesterday, Petitioner Banfield received a similar response, that is, a letter stating that reexaminations would be performed at some unspecified date in the future.

III. STANDARD AND SCOPE OF REVIEW

A. Standard of Review

In matters addressed to the Court's original jurisdiction, applications for summary relief pursuant to Rule of Appellate Procedure 1532 are subject to the same standard of review as motions for summary judgment filed pursuant to Rule of Civil Procedure 1035. *See* Pa.R.A.P. 1532, note (b) ("Subdivision (b) authorizes immediate disposition of a petition for review, similar to the type of relief envisioned by the Pennsylvania Rules of Civil Procedure regarding . . . summary judgment.); *see also McGarry v. Pennsylvania Bd. of Prob. & Parole*, 819 A.2d 1211, 1214 n.7 (Pa. Commw. Ct. 2003) (Pelligrini, J.). Summary judgment should be entered if "there is no genuine issue of any material fact as to a necessary element of the cause of action or defense which could be established by additional discovery or expert report." Pa.R.C.P. No. 1035.2(1).

In making that determination, the record is reviewed in the light most favorable to the nonmoving party, *Marks v. Tasman*, 527 Pa. 132, 134-35, 589 A.2d 205, 206 (1991), and all doubts are resolved against the moving party, *Pennsylvania State Univ. v. County of Centre*, 532 Pa. 142, 144-45, 615 A.2d 303, 304 (1992). In short, summary judgment is proper if the right to relief is clear and free from doubt. *Ducjai v. Dennis*, 540 Pa. 103, 113, 656 A.2d 102, 107 (1995), *overruled in part on other grounds*, 555 Pa. 59, 722 A.2d 1061 (1999). If it is, it "serves

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[50] Letter from Mark Banfield dated August 25, 2011 (attached hereto as Ex. 38).

to eliminate the waste of time and resources of both litigants and the courts in cases where a trial would be a useless formality." *Mucowski v. Clark*, 404 Pa. Super. 197, 201, 590 A.2d 348, 350 (Pa. Super. Ct. 1991).

B. Scope of Review

In matters addressed to the Court's original jurisdiction, the Court's review is plenary and the Court may review anything in the record. Respondent suggests otherwise, stating in her own Motion that "[t]he scope of review of the Petition" is "limited" to whether the Secretary's "adjudication" is "in accordance with law" or based on "substantial evidence." Respondent's Application for Summary Relief ¶ 13. That is patently wrong; Respondent's examinations of the DREs may have been public proceedings but they had none of the trappings of an "adjudication" (i.e., testimony under oath, an opportunity for Petitioners or anyone else to present or cross-examine witnesses or object to evidence, an allocation of the burden of proof, etc.) such that the scope of this Court's review would be limited in any way. *Cf. Segal v. Dep't of Pub. Welfare*, 145 Pa. Commw. 385, 387-88, 603 A.2d 668, 669 (1992) (cited by Respondent) (noting that agency "issued a final order adopting the Attorney Examiner's recommendation in its entirety. Ivy Hill's appeal to this Court followed."). In any event, this Court has stated that, "[o]n issues of statutory interpretation . . . [its] scope of review is plenary, and . . . [its] standard of review is de novo." *Bender v. Pa. Ins. Dep't*, 893 A.2d 161, 162 (Pa. Commw. Ct. 2006).

IV. DISCUSSION

A. Petitioners Are Entitled To Summary Judgment on Count VI Because Respondent Admitted That She Violated 25 Pa Stat. Ann. § 3031.5 By Rejecting Reexamination Requests Made By Ten Or More Qualified Registered Electors

The Election Code requires the Secretary to reexamine electronic voting system if ten or more qualified registered electors request a reexamination and pay the requisite filing fee:

(a) … Any ten or more persons, being qualified registered electors of this Commonwealth, may, at any time, request the Secretary of the Commonwealth to reexamine any electronic voting system theretofore examined and approved by him. Before any reexamination, the person, persons, or corporation, requesting such reexamination, shall pay to the Treasurer of the Commonwealth a reexamination fee of four hundred fifty dollars ($450)….

(b) Upon receipt of a request for examination or reexamination of an electronic voting system as herein provided for …, the Secretary of the Commonwealth shall examine the electronic voting system and shall make and file in his office his report, attested by his signature and the seal of his office, stating whether, in his opinion, the system so examined can be safely used by voters at elections as provided in this act and meets all of the requirements hereinafter set forth....

25 Pa. Stat. Ann. § 3031.5.

The record establishes that Petitioners Reed, Fewless and Berquist complied with the requirements of 25 Pa. Stat. Ann. § 3031.5 by submitting reexamination requests signed by ten or more qualified registered electors and tendering checks in the requisite reexamination fee. *See* Letters of January, March and April 2006 to P. Cortes (Ex. 35).[51] It also establishes that the Secretary ignored the requirements of 25 Pa. Stat. Ann. § 3031.5 by rejecting the reexamination requests. *See* P. Cortes letters of February 3, April 7 and April 18, 2006 (Ex. 36). Respondent does not deny those facts. Indeed, she admitted all of them in discovery. *See* Objections and Responses to Petitioners' Third Set of Discovery Requests dated July 14, 2011, Nos. 1-6, 11-20 (attached hereto as Exhibit 40). It follows that there is no genuine issue of fact concerning whether Petitioners are entitled to judgment in their favor.

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[51] Petitioner Brau also requested a reexamination of the AVS WinVote pursuant to and in compliance with 25 P.S. § 3031.5 and the Secretary also rejected that request. *See* A. Brau Letter of March 27, 2006 (attached hereto as Exhibit 39). The Secretary decertified that machine in 2007, however, after it was revealed in an actual election that the machine was incapable of processing votes for cross-filed candidates in municipal primaries. *See supra* Section E.

In light of that, Respondent has been obliged to defend her inaction on legal grounds. Initially she argued that mandamus was improper because she had unfettered discretion to deny a requests whenever she believed a reexamination was not warranted. This Court unanimously rejected that position as incompatible with the plain language of the Election Code:

> The Secretary also argues that Electors are not entitled to mandamus relief because Electros do not have a clear right to have the Secretary re-examine a DRE in a particular manner. . . . However, Electors do not allege in their Petition that any Elector asked the Secretary to re-examine a DRE in a particular manner. Thus, we shall not consider this matter further.

Opinion dated April 12, 2007, at 7. Indeed, the dissent made that point even more forcefully:

> Upon receipt of such a request, the Secretary "shall examine the electronic voting system...." In short, Section 1105-A of the Election Code establishes that the Secretary has a mandatory duty to perform a reexamination upon proper request.... The language of Section 1105-A(b) of the Election Code is plain and direct. Upon receipt of a request for reexamination, the Secretary must examine the electronic voting system. It does not contain a "provided, however" exception that references Section 1105-A(d). It is up to the Secretary how to examine the electronic voting system, but examine it he must under the most straightforward reading of Section 1105-A(a) of the Election Code.

Id. at 9-10 (Leavitt, J. dissenting) (citations omitted).

Having lost that fight, Respondent now suggests that this claim is no longer justiciable. Specifically, she argued in her Application for Summary Relief, which is currently in abeyance,[52] that she mooted Petitioners' claims through the simple expedient of sending a few letters stating that reexaminations will be "arrange[d] in due course."[53] *See* Respondent's Application for Summary Relief at 28 ¶ 50 (citing *In Re Gross*, 476, Pa. 203, 382 A.2d 116 (1978); *City of Phila. v. SEPTA*, 937 A.2d 1176 (Pa. Commw. Ct. 2007); *Fraternal Order of Police v. City of Phila.*,

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52 *See* Scheduling Order dated August 17, 2011.

53 *See* Letters from C. Aichele attached to Respondent's Mot. (Ex. 37).

789 A.2d 858 (Pa. Commw. Ct. 2002)). Respondent might have a point if Petitioners had asked for an order directing her to simply ***schedule*** reexaminations, although, to be clear, she hasn't even done that. But Petitioners asked for an order directing her to ***conduct*** the reexaminations. And there is apparently nothing, absent a court order, that will guarantee that she ever does.

The case law on this point is clear. Indeed, "[o]ur courts have held consistently . . . that a case will not be dismissed as moot merely because the defendant has stopped his alleged illegal conduct voluntarily." *Cox v. City of Chester*, 76 Pa. Commw. 446, 450, 464 A.2d 613, 616 (Pa. Commw. Ct. 1983) (citations omitted). In *Cox*, this Court considered the following factors when deciding whether the cessation of challenged conduct mooted a challenge to that conduct: "(1) the good faith of the defendant's announced intention to discontinue the alleged activity, (2) the effectiveness of the discontinuance, and (3) the character of the past violation." *Id.* Under this standard, "[t]he defendant bears the heavy burden of proving that there is no reasonable expectation that the past conduct will be repeated." *Allen v. Colautti*, 53 Pa. Commw. 392, 397, 417 A.2d 1303, 1306 (Pa. Commw. Ct. 1980).

The Secretary cannot possibly satisfy that burden here. In *Cox*, this Court questioned the sincerity of the respondents' temporary discontinuance of the challenged activity, "given their steadfast position that . . . they [had] no obligation" to comply with the requests. *Cox*, 76 Pa. Commw. At 451, 464 A.2d at 616. And in *Allen*, this Court held that respondents' adoption of regulations did not moot the petitioners' claims, reasoning that "[t]he mere adoption of the regulations . . . does not ensure that they will be implemented and enforced." *Allen*, 53 Pa. Commw. At 397, 417 A.2d at 1306. Here, merely sending a letter does even less than passing regulations to ensure that the DREs will actually be reexamined. And the timing of that

decision—made after years of ignoring this Court's unanimous opinion, and a few weeks before summary judgment motions were due—casts serious doubt on its sincerity.

But there is much more than just the timing of that decision to cast doubt on its sincerity. The Secretary has said that she decided to reexamine the DREs because she made an "evaluation of the law" after "assum[ing] the position of Secretary of the Commonwealth earlier this year." Letters from C. Aichele attached to Respondent's Mot. (Ex. 37). The implication, of course, is that neither she nor her predecessor understood their obligations before that time. But even if we ignore this Court's unanimous rejection of Respondent's preliminary objection in April 2007, her own internal documents show that her predecessor knew ***as far back as 2009*** that the duty to reexamine voting machines was not discretionary. *See* Wish List 2009 at COM086959 (attached hereto as Ex. 41) ("The Secretary of the Commonwealth should have discretion as to whether or not he will reexamine a voting system, rather than being forced to do so as subsection (b) now implies."). Yet the Secretary waited years, until discovery closed, to decide to reexamine these machines. The suggestion that the Court should now take that at face value and dismiss these claims before reexaminations are even scheduled, let alone conducted, cannot be taken seriously.

The authority cited by Respondent is not to the contrary. Take, for example, *In Re Gross*, 476 Pa. 203, 382 A.2d 116 (1978). That decision articulates the unremarkable proposition that a dispute can become moot as a result of an intervening change in the facts or the law. *See id.* at 209, 382 A.2d at 119-20. In that case, the appellant sought to enjoin the administration of medicine against his will. The court found that dispute was mooted by the fact that the appellant was no longer a patient at the facility and the legislature had passed a new law that "address[ed] itself to those very rights that appellant sought to establish in the court below." *Id.* at 214, 382

A.2d at 120-22. That case is totally unlike this one, where neither the facts nor law have changed in any meaningful way.

The two other cases cited by the Commonwealth – *City of Philadelphia v. Southeastern Pennsylvania Transportation Authority* and *Fraternal Order of Police v. City of Philadelphia* – also involved factual and legal developments that were strikingly different from any alleged here. In *SEPTA*, this Court held that SEPTA's appeal of an order enjoining its elimination of paper transfers was mooted by a subsequent act of SEPTA's Board of Directors reversing its prior action. *See SEPTA*, 937 A.2d at 1181. This Court recognized that, even if SEPTA decided to eliminate transfers in the future, and the City decided to challenge the action again, "the challenge would arise under a different set of facts . . . ." *Id.* It reasoned that it could not grant the relief SEPTA was seeking because an order upholding the previous resolution would be "advisory, relating to some past event that will not recur because underlying financial, operational and procedural facts will be different." *Id.* And in *Fraternal Order of Police*, this Court affirmed the trial court's decision that a decision in an arbitration had mooted the FOP's complaint that the city had not made itself available to participate in the arbitration. *Fraternal Order of Police*, 789 A.2d at 861-62. There, the FOP actually acknowledged that its case was "technically moot," but argued that this Court should still review it because "cases like this one will likely evade review because interest arbitration proceedings tend to progress quicker than proceedings in the court system." *Id.* at 861. This Court responded that the issues would not "necessarily escape judicial review" because the FOP could have addressed its concerns by appealing the Board of Arbitration's decision. *Id.* at 862.

Unlike the superseding resolution passed in *SEPTA*, however, the Secretary has not conducted new examinations: an informal letter stating that reexaminations will be scheduled

"in due course" does nothing to change the facts alleged in Count VI, specifically that Respondent wrongfully refused to reexamine the challenged DREs. And unlike the FOP in *Fraternal Order of Police*, which acknowledged that its claim was moot but argued for review under one of the exceptions to the mootness doctrine, Petitioners' claim is not moot because the Secretary still has not reexamined a single machine, let alone all of them. Respondent's reliance on these cases is wholly misplaced.

B. Petitioners Are Entitled to Summary Judgment on Count I Because There Is No Genuine Issue of Material Fact Concerning Whether The DREs "Provide For A Permanent Physical Record of Each Vote Cast" as Required By 25 Pa. S.A. § 3031.1

The Election Code requires that every EVS used in the Commonwealth "shall provide for a permanent physical record of each vote cast." 25 Pa. Stat. Ann. § 3031.1.[54] That language is obligatory. Indeed, neither Respondent nor her would-be expert disputes that DREs must comply with it.[55] The only question, then, is whether they actually do. And if one considers each component of that requirement, the only answer to that question is "no." Indeed, DREs do not satisfy any of them, let alone all of them. We begin with the data the DREs temporarily store in electronic memory until they destroy it during the next election, and then turn to the data the DREs could conceivably (but in practice do not) store on paper after an election.

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[54] *See* 25 Pa. Stat. Ann. § 3031.1 ("As used in this article … 'ELECTRONIC VOTING SYSTEM' means a system in which one or more voting devices are used to permit the registering or recording of votes and in which such votes are computed and tabulated by automatic tabulating equipment. The system shall provide for a permanent physical record of each vote cast.").

[55] Respondent's predecessor argued in his brief in support of his preliminary objections that this language is meaningless because it appears in the definitional section of the Election Code. This Court rejected that argument, and Respondent has apparently—and rightly—abandoned it. *See, e.g.*, 1 Pa. Cons. Stat. § 1922 ("In ascertaining the intention of the General Assembly in the enactment of a statute the following presumptions, among others, may be used: … (2) That the General Assembly intends the entire statute to be effective and certain."); *Hamilton v. Unionville-Chadds Ford Sch. Dist.*, 552 Pa. 245, 249, 714 A.2d 1012, 1014 (1998) ("[U]nless an irreconcilable conflict exists, effect is to be given to all provisions" of a statute).

1. Data That Is Stored In Electronic Memory Until The Next Election

As their name suggests, "direct recording electronic" machines store data electronically. Indeed, Respondent's own expert defines DRE as "a machine that does not make use of a DOCUMENT BALLOT but records choices electronically."[56] Although Respondent and her expert half-heartedly argue that "record[ing] choices electronically" somehow satisfies the "permanent physical record" requirement,[57] they are wrong for many reasons.

First, the data that is stored electronically on DREs cannot be said to be "permanent" in any meaningful sense of the word. *See, e.g.*, Black's Law Dictionary at 1139 (6th ed. 1990) ("Permanent. Continuing or enduring in the same state ... without fundamental or marked change, not subject to fluctuation, or alteration, fixed or intended to be fixed; lasting; abiding; stable; not temporary or transient...."); Webster's Ninth New Collegiate Dictionary at 877 (1986) ("**permanent.** continuing or enduring without fundamental or marked change: STABLE.") (emphasis and typography in original). As Dr. Lopresti explained, electronic data cannot be considered "permanent" because by its very nature it is subject to alteration and change:

> Computer memory can be written or rewritten with incorrect data intentionally (as a result of software and/or hardware and/or human error) or unintentionally (as a result of a malicious attempt to alter the results of an election). Moreover, the act of writing computer memory is in principle undetectable; it leaves behind no physical evidence. . . . Since even the initial writing of a record into computer memory is accomplished through the use of software and hardware intermediaries, there is no way for a human observer to

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56 *See* Michael I. Shamos, Electronic Voting Glossary 2011 ("**direct-record electronic, direct recording electronic.** Descriptor for a machine that does not make use of a DOCUMENT BALLOT but records choices electronically.") (emphasis in original), *available at* http://euro.ecom.cmu.edu/people/faculty/mshamos/Glossary.pdf.

57 *See* Shamos Report ¶ 46 ("Petitioners and their experts ... argue that electronic memories do not constitute permanent physical records. I do not agree. However, it is not necessary to decide the question in this case....") (Ex. 2); *see also id.* ¶ 113.

confirm that what is written is in fact an accurate record of his/her vote.

Lopresti Report at 4-5 (Ex. 11); *see also* Jones Report ¶ 30-32 (Ex. 7).

Respondent tries to create an issue of fact by arguing that "permanent" means "a period of time that makes sense in the election recordkeeping," and suggesting that electronic data can conceivably be stored on electronic media for many years. *See* Shamos Report ¶ 46 (Ex. 2); *see also* Shamos Rebuttal Report ¶ 38 (Ex. 1) (arguing that "the removable memory cartridge is not erased" if it is in fact removed and not subsequently reused). But even if we accept that self-serving, definition and reject the plain meaning of the word,[58] and even if we assume electronic data could exist for years if it were set aside and stored under ideal archival conditions,[59] there is nothing in the record to suggest that anyone actually ***does*** that. On the contrary, the record suggests that counties reuse the same "removable" memory cards over and over in each election, and in doing so destroy any data that may have been stored on them from prior elections.

Take, for example, the Secretary's own directives to counties that use DREs. In 2008, the Respondent advised as follows:

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58 *See* Shamos Dep. at 155 ("Q. So is this definition of permanent something that you have independently created? MR. BIZAR: Objection to form. A. I certainly independently created for the purposes of my expert report.") (Ex. 4).

59 Respondent is quick to dismiss security flaws she believes can only be exploited under "laboratory conditions" as opposed to "real election conditions." *See, e.g.*, Shamos Report ¶ 34 ("real election conditions") (Ex. 2); *id.* ¶ 153 ("real election"); *id.* ¶ 200 ("This exploit might be performable in a laboratory, but it can never work in any real polling place."); *id.* ¶ 201 ("the Authors have completely ignored the realities of the voting process"); *id.* ¶ 429 ("Any device can be tampered with under laboratory conditions. Petitioners have not outlined a single credible scenario under which tampering could take place undetected under actual election conditions."); *id.* ¶ 436 ("The alleged 'security problems' ... were artificially induced by experimenters under laboratory conditions and not under conditions even vaguely similar to those of an actual election."); *id.* ¶ 449 ("actual election conditions"); Shamos Rebuttal Report ¶ 23 ("these exploits were conducted under unrealistic laboratory conditions and could never be conducted in a real election") (Ex. 1); *id.* ¶ 26 ("the EVEREST experiments were conducted under laboratory conditions."). Her willingness to embrace "real election conditions" when they are helpful and ignore them when they are not is telling.

> A county board of elections may reuse memory cards for the next election if the county maintains either a printed or electronic copy of the ballot images contained in the system.... For municipal elections, the county board of elections must retain the ballot images for at least 20 days, unless ordered otherwise by a court as provided at Section 1230 of the Election Code, 25 P.S. § 3070.

Directive Concerning the Use, Implementation and Operation of Electronic Voting Systems By the County Boards of Elections dated September 3, 2008 at 5 (attached hereto as Exhibit 42), *available at* http://www.voteraction.org/files/EVS%20Directive%20Final%20090308.pdf. Even if we assume that counties complied with that directive, which is not at all a safe assumption,[60] the copies of the electronic data would be discarded after as few as ***20 days*** after municipal elections, which not even Respondent's expert has argued is "permanent."[61]

In short, the electronic data stored in DREs is temporary, not "permanent," because both in theory and in practice it is rewritten (i.e., destroyed) as soon as the next election occurs. Respondent has blessed the destruction of copies of that data a mere 20 days after a municipal election, and the destruction of the original data, such as it is, the moment the machine is reused. Such data cannot credibly (or responsibly) be called "permanent."

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60 *See, e.g.*, Marks Dep. at 112 (". . . [i]f I understand your question correctly, you are asking how we have explicit knowledge that every single county has complied with this. Again, my answer would be that the force of the statute which gives the Secretary of the Commonwealth the authority to issue these certification reports, our expectation would be that they are meeting these and that any information we received to the contrary, whether it be through the form of a complaint or had some other information we might have received, we would certainly then question the county, if it were appropriate.") (Ex. 5). *Id.* at 114 ("In other words, we don't chase them down and say -- you know, constantly remind and point to these requirements and say, you know -- and put a bright light over top of them and ask them if you are complying with these. Our expectation is that they are, and if we were to get information to the contrary, we would certainly investigate that. But we do rely on the force of the statute.").

61 Respondent's expert has argued that data that is retained for 22 months is sufficiently "permanent" because it complies the federal retention requirements in 42 U.S.C. § 1974. But even if we were to accept that (which, to be clear, Petitioners do not accept), Respondent has not argued that data that is destroyed after ***20 days*** can be considered "permanent." Shamos Rebuttal Report ¶ 41 (referring to federal "22-minth [sic] ballot retention requirement.") (Ex. 1).

Second, even if we assume for argument's sake that the data that is electronically stored in DREs is "permanent," it cannot be considered "physical" for purposes of the Election Code. *See, e.g.*, Webster's Ninth New Collegiate Dictionary at 887 (1984) ("**physical.** 1a: having material existence; perceptible esp. through the senses and subject to the laws of nature.... b: of or relating to material things...."). Although courts have struggled with the nature of electronic data in other contexts, ultimately the answer turns on what the General Assembly intended.[62] In this context, the General Assembly cannot have intended electrons – subatomic particles so small that they cannot be observed with the naked eye – to satisfy the Election Code. *See, e.g.*, Jones Report ¶ 38 ("the electrons uses to record data ... cannot be observed without the aid of complex technology such as an electron microscope or a computer.").

If the General Assembly truly intended that purely electronic data would be sufficient, it could have required that EVSs provide for a "permanent electronic record." But it did not, even though it clearly knew how to use the word "electronic" elsewhere in the Election Code when it meant to. Indeed, it used the word "electronic" in the first sentence of 25 Pa. Stat. Ann. § 3031.1. Its deliberate decision to use a different word in the very next sentence of 25 Pa. Stat. Ann. § 3031.1 makes clear that it meant for the "permanent physical record" requirement to have

[62] For example, in deciding whether software is "corporeal" for purposes of being taxable, our Supreme Court noted the different analytical approaches adopted by various courts. *See Dechert LLP v. Pennsylvania*, 606 Pa. 334, 998 A.2d 575 (Pa. 2010). The Court's decision turned not so much on the philosophical question about whether software is corporeal, but rather on whether the General Assembly intended for it to be taxable. *Id.* at 346-47, 988 A.2d at 583. Examining the legislative history and surrounding statutory language, the Court found that the General Assembly did intend for canned software to be taxable. *Id.* at 349, 998 A.2d 584-85. Respondent has not cited this line of cases in this litigation, perhaps because she understands that the legislative language and history here are so different. Or perhaps because her expert has said that software is not "tangible." *See infra*. Or perhaps because the Commonwealth was arguing as far back as 2005 that software transmitted by electronic means was not "corporeal" at all.

a different meaning.[63] *See, e.g.*, *Fonner v. Shandon, Inc.*, 555 Pa. 370, 378-79, 724 A.2d 903, 907 (Pa. 1999) ("[W]here the legislature includes specific language in one section of the statute and excludes it from another, the language should not be implied where excluded. Moreover, where a section of a statute contains a given provision, the omission of such provision from a similar section is significant to show a different legislative intent.") (citations omitted).

Moreover, adopting Respondent's reading of 25 Pa. Stat. Ann. § 3031.1 would read the "physical" requirement out of existence, as all EVSs store electronic data in one form or another. *See, e.g.*, *id.* ¶ 38 ("By this argument, all memory is physical; even the reverberating echo in a concert hall is physical....When I read 25 P.S. § 3031.1 as a specification for a computer system, I interpret the word *physical* as being intended to constrain, in some way, the kind of record created.") (emphasis in original). It is black letter law that interpretations that renders language surplusage are not favored if there is an alternate interpretation that does not. *See* 1 Pa. Cons. Stat. Ann. § 1922 ("[T]he General Assembly intends the entire statute to be effective and certain"); *see also Hamilton v. Unionville-Chadds Ford School District*, 552 Pa. 245, 249, 714 A.2d 1012, 1014 (PA. 1998) ("effect is to be given to all provisions."); *In re Sale of Real Estate by Lackawanna Cnty. Tax Claim Bureau*, 22 A.3d 308, 316 (Pa. Commw. Ct. 2011) ("Section 1922 ... prohibits courts from interpreting statutes in a way that makes words used in statutes meaningless or mere surplusage.") (internal quotations and citation omitted); *In re Septa MVFRL Interest Litig.*, 996 A.2d 1099, 1106 (Pa. Commw. Ct. 2010) ("A court should not interpret a statute so as to render statutory language as mere surplusage.").

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[63] That should come as no surprise given that the most widely used EVSs in 1980 were all punched-card systems that necessarily created an actual physical record of each vote. *See* Jones Report ¶ 40 (discussing the Votomatic, Thornber Compact Vote, VOTPAC and ELPAC) (Ex. 7).

Respondent's response to this is sleight-of-hand. Rather than argue that electronic data itself is sufficiently "physical," she argues that the data is "stored in" something that is physical. *See, e.g.*, Shamos Rebuttal Report ¶ 12 ("'[Votes'] may be written and read by software, but they are stored in physical memories.") (Ex. 1). That misses the point. A memory card or computer chip containing electronic data is physical of course, but it is not the "record of each vote cast." Indeed, it is no more a "record" of a vote than a ballot box is a record of the ballots within it. Both are merely vessels.[64] The "record" of the vote is what is "stored in" those vessels, for example the *ostraca* used by the Athenians,[65] the *ballotta* used by the Freemasons,[66] the paper ballots used before EVSs, and in our case the individual electronic data "stored in" the machine. Whether a memory card or computer chip itself is physical is irrelevant.

Indeed, Respondent's expert appears to agree that, when we limit the analysis just to the electronic data itself, it is not "physical" within the meaning of the Election Code. Specifically, in arguing that the computer software run by DREs need not be "constructed in a neat and workmanlike manner of durable material of good quality" as required by 25 Pa. Stat. Ann. § 3031.7(11), an issue not itself relevant to this Motion, he opined that § 3031.7(11) does not apply to software because it only refers "to the physical manifestation of the voting machine," whereas "[s]oftware is intangible. It is not 'of material' at all..." Shamos Report ¶ 123 (Ex. 2). But if software saved on a DRE is not "physical" or "tangible" or "of material," how can voting data

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64 During his deposition, Respondent's expert largely agreed with this analogy. *See, e.g.*, Shamos Dep. 159-64 (Ex. 4).

65 In ancient Athens, citizens would cast a vote by scratching a name on a shard of pottery called an *ostracon* and placing it in an urn or other vessel. *See, e.g.*, Douglas W. Jones, *A Brief Illustrated History of Voting*, *available at* http://www.cs.uiowa.edu/~jones/voting/pictures. The not uncommon practice of voting to expel a citizen eventually came to be called "ostracism."

66 *Ballotta* are balls placed in a ballot box, the color of which (white for yes, black for no) indicated one's vote. *See id.* Not unlike ostracism, the practice of voting to reject an applicant eventually came to be called "blackballing."

saved on a DRE be "physical" or "tangible" or "of material"? There is no way to reconcile that inconsistency. *See, e.g.*, Lopresti Report at 5 ("In DREs, software and voting records are both bit patterns stored in electronic computer memory. If software is intangible (not physical), then so is the electronic record of the vote.") (Ex. 11); Jones Report ¶ 39 ("In point of fact, software, as it exists in the memory of a computer, in flash memory, or in a disk file, is exactly as physical and exactly as tangible as any other data in that computer. To argue that there is a distinction in the physicality of the two seems extremely artificial.") (Ex. 7). Which perhaps explains why Respondent is eager to ignore it.

Finally, and critically, even if the data that is stored electronically on DREs were both "permanent" and "physical," there is no way for the Secretary (or any one else) to certify that it is a "record of each vote cast." Say what you will about paper ballots and the ability to alter them after they have been cast, the systems that incorporate paper ballots will always create an actual record of the actions as expressed by a voter. Even if they are altered after the fact, that does not change that there was at one time an actual, accurate record of the voter's actions.

The same simply cannot be said of DRE systems. Why? Because even the initial writing of data in a computer's memory is dependent on and affected by the software the computer runs, and if that software is flawed or corrupted, the initial data—and any subsequent copies of it—will not reflect the voter's interaction with the ballot interface.. And as there was never a physical ballot to fall back on, the system in such a situation would never create any actual "record" of any actual vote. *See, e.g.*, Lopresti Report at 5 ("Since even the initial writing of a record into computer memory is accomplished through the use of software and hardware intermediaries, there is no way for a human observer to confirm that what is written is in fact an accurate record of his/her vote.") (Ex. 11); Jones ¶ 34 ("The original data in the voting system is

retained in a form that is resistant to any human interpretation....") (Ex. 7); *id.* ¶ 42 (stating that voting data is "the product of complex computer software working from information retained from the time the voters cast their ballots" and discussing the "long chain of translation and copying [that] intervene[s] between the voter's act of casting a ballot and the creation of a permanent record of that act. We have no way of knowing, at each step along this chain of translation and copying, that the information conveyed correctly records each vote cast."). In short, whereas optical scan systems use voter-created records, DREs generate software-created data that is no more reliable than the software itself. And when for whatever reason the software is not reliable, there is no "record" of the vote at all.

2. <u>Data That Could In Theory Be Stored on Thermal Paper After An Election</u>

Respondent has focused not on the intangible electronic data that is temporarily stored until it is destroyed during the next election, but rather on the paper that could in theory be printed after an election. Although paper would admittedly qualify as a "physical" document,[67] there are many reasons why it still would not satisfy the rest of Section § 3031.1.

First, for the same reason the original data is not necessarily a meaningful "record of each vote cast," neither are any copies of that data, whether they be in electronic or in paper form. At best, such a printout would be an exact copy of the original data, and thus will be no more reliable—which is to say, not at all reliable—than the original data. *See* Shamos Rebuttal Report ¶ 38 ("All the copies are verified to be identical to one another....") (Ex. 1). At worst, it will be even less so. *See* Jones Report ¶ 33 ("each copy is potentially suspect.") (Ex. 7). In either case, though, the copy is no more software independent than the original, and like the

[67] Jones Report ¶ 38 ("I believe that we all will agree that the paper used for a paper record is physical, and so is the ink used to write on the paper....") (Ex. 7).

original copy there is no way to say with any confidence that it is actually a "record" of any vote cast, let alone "each" vote cast. *See, e.g.*, Lopresti Report at 5 ("[P]rinting out these ballot images at the end of the day would [not] yield the desired permanent physical record ... if the electronic ballot images were recorded incorrectly or altered during the day. Either scenario is possible if there are flaws in the original software or the software has been compromised.") (Ex. 11); Jones Report ¶ 34 ("The printed ballot-image report or cast-vote record ... is not simply a copy of the data that was retained in the memory of the voting system. The original data in the voting system is retained in a form that is resistant to any human interpretation, and the software of firmware used to print that data does considerable translation and interpretation reducing the data to textual form for human consumption.") (Ex. 1); *id.* ¶ 42 ("The ballot-image reports or cast-vote reports ... are the product of complex computer software ... [and] a long chain of translation and copying [that] intervene between the voter's act of casting a ballot and the creation of a permanent record of that act. We have no way of knowing, at each step along this chain of translation and copying, that the information conveyed correctly records each vote cast."); *see also* Shamos Rebuttal Report ¶ 6 ("it is true that if a physical record of any type is generated from inaccurate of altered data it cannot reflect the original data.") (Ex. 1).

Second, data printed on paper in the days or weeks after an election would not qualify as a "permanent" record. When asked at deposition how an election worker might accomplish that, Respondent's expert opined that they could be printed out on the same paper – generally receipt-grade, ribbon-like thermal paper – that is used to print vote totals at the end of an election.[68]

[68] An even less likely scenario is that CVR data would be removed from a DRE and printed on different paper on a different printer. Not even Dr. Shamos relies on that possibility, presumably (and correctly) because the "system" that creates the record must be certified, and any such printer will not be part of the certified "system." *See* 25 Pa. Stat. Ann. § 3031.5.

See, e.g., Shamos Dep at 147-48 (Ex. 4). But thermal paper "is notorious for not being very permanent" and can became "unreadable in a matter of weeks," which anyone who has kept a receipt in their wallet would know. Jones Report ¶ 36 (Ex. 7). This is not reasonably disputable, and was confirmed by objective independent testing. *See id.* ("The ESI study ... [in] Ohio showed a large fraction of [records printed on thermal paper] were unreadable.").

In fact, Respondent does not dispute that, at least not directly. In his original report, Respondent's expert embraced the Ohio report, using it to try to demonstrate the superiority of systems that do not create or rely on paper records. *See* Shamos Report ¶ 113 ("Petitioners' apparent belief that paper records are somehow inviolate is contradicted by the Ohio EVEREST report," which showed that "[i]nk on paper can fade. Paper can decay, especially ballot paper, which is not designed for archival use.") (Ex. 2). And in his rebuttal report, he acknowledged that "thermal paper must be kept away from direct exposure to heat in order to remain readable." Shamos Rebuttal Report ¶ 41 (Ex. 1). "However," he argued, "***if this is done***, thermal paper far exceeds the 22-minth [sic] ballot retention requirement." *Id.* (emphasis added). In other words, he would have the Court rule based on the fiction that busy election workers, without direction or even suggestion from the Secretary, are taking it upon themselves to store CVRs in climate controlled containers. Not surprisingly, there is nothing in the record suggesting that they are. So much for limiting ourselves to "actual election conditions."

Finally, putting aside how a CVR would be stored if it were printed out, there is no disputing that DREs do not print out a CVR in the normal course of their operation. On the contrary, they only do so if an election worker thinks to direct them to do so. We say "thinks" rather than "remembers" because there is nothing in the record, whether it be the certification

reports that blessed the use of the DREs,[69] or the Commonwealth's directives to the counties,[70] that would put anyone on notice that printing out a CVR is something election workers ought to do in order to comply with the Election Code. And even if there were, the parties agree that election workers will very often forget, or sometimes will not even know how, to perform even basic responsibilities they are supposed to perform.[71] In any event, there is little in the record to suggest that any election workers ever print out a CVR,[72] and nothing in the record to suggest that any DREs automatically do so in the normal course of their operation during an election. Indeed, the parties agree that they do not. *See, e.g.*, Jones Report ¶ 35 ("It is quite possible that the printing may be done days later at the county elections office, ***and may never be done at all.***") (emphasis added) (Ex. 7); Shamos Report ¶ 114 ("DRE systems are capable of producing paper copies of each ballot. Normally this is done, ***if at all***, at the close of voting.") (emphasis added) (Ex. 2).

Knowing this, Respondent argues that the ability to produce a CVR in and of itself satisfies the Election Code, even if no one ever actually thinks to make the DREs print one out, and even if no one actually tells election workers they should think to make them print one out.

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69 *See, e.g.*, Ex 10, 12, 14-30. Indeed, Respondent argues that "there is no requirement in the Election Code that such a record need be made." Shamos Rebuttal Report ¶ 42 (Ex. 1).

70 *See, e.g.*, Marks Letter to Tioga County dated March 10, 2008 ("**Please note that neither section 1117-A of the Election Code nor the directive relating to the statistical sample requires a county board of elections to print a paper copy of the ballot images for every single voting system unit used in the county.**") (emphasis in original) (attached hereto as Ex. 43).

71 *See, e.g.*, Jones Report ¶ 52-55 (Ex. 7); Shamos Report ¶ 130 ("I agree with Dr. Jones ... that election workers often fail to follow procedures.") (Ex. 2); *id.* ¶ 349 ("A more likely explanation is that the poll workers did not know how to print the zero tape."); *id.* ¶ 417 ("I presume that Petitioners are referring to anecdotal reports to the effect that poll workers have occasionally had difficulty causing the machines to generate the reports.").

72 Shamos Dep. at 149 (Ex. 4). This is not surprising, as printing a CVR using a DRE's thermal paper would result in "miles and miles of paper." *Id.* at 148.

Here Respondent throws common sense to the wind and relies on the words "provide for" in Section 3031.1. Specifically, she argues, through her expert witness, that the Election Code:

> does not state that systems must "provide a permanent physical record" .... It says that systems must "provide for a permanent physical record." The distinction and the use of the word "for" in the definition are important. Every DRE system certified in Pennsylvania is capable of providing a paper printout of every ballot cast. The statute does not require that a county must actually use its system to produce paper records in every election, but that to be certified as an 'electronic voting system' the system must be capable of providing such records.

Shamos Report ¶ 45 (emphasis in original) (Ex. 2); *see also id.* ¶ 26 ("None of the Specified Voting Systems is 'paperless.' All are ***capable of producing*** printed paper records of all ballots cast.") (emphasis added); *see also id.* ¶¶ 114, 281.

Putting aside for the moment whether Dr. Shamos can even offer opinions such as this,[73] this particular one is legally and logically flawed in many ways. We begin with the dictionary, to which Respondent and her expert are apparently allergic.[74] "Provide for" is an example of a phrasal verb, that is, a combination of a verb and an adverb or preposition (here, a preposition) that has an understood meaning. Had Respondent or her expert consulted a dictionary before unleashing these DREs on the Commonwealth, they would learned that the primary (and in some cases only) definition of "provide for" is that one will ***actually supply*** what is needed. *See, e.g.*, Richard A. Spears, Ph.D., *McGraw-Hill's Dictionary of American Idioms and Phrasal Verbs* 520

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[73] As we explain below, he cannot. *See infra* Section III.D.

[74] Respondent's expert is apparently "not a fan of dictionary definitions." Shamos Dep. at 155 ("Being a patent attorney, I'm not a fan of dictionary definitions when applied in technical cases because I doubt that Mr. Webster had in mind voting when he wrote his definition of what permanent meant....") (Ex. 4). The words in a statute "shall be construed ... according to their common and approved usage" unless they are "technical" and have "acquired a peculiar and appropriate meaning...." 1 Pa. Cons. Stat. Ann. § 1903(c); *Commonwealth v. Gilmour Mfg. Co.*, 573 Pa. 143, 148-49, 822 A.2d 676, 679 (2003). Here, there is nothing in the record to suggest that the words "provide for" have acquired a technical, non-standard meaning such that their common meanings should be ignored.

(2005) (defining "provide for someone or something" as "to supply the needs of someone or something"); The American Heritage Dictionary of Phrasal Verbs 260 (2005) ("provide for. 1. To supply someone or something with basic necessities, as food, shelter, and clothing: *How long do you have to work every week to provide for such a large family?* 2. To take measures in preparation for something: *Our forecast provides for a 6 percent decrease in sales next year.*") (emphasis in original); Cambridge Learner's Dictionary 563 (2007) ("**provide for sb.** to give someone the things they need such as money, food or clothes. *He has a wife and two young children to provide for.*") (emphasis in original); http://idioms.thefreedictionary.com/provide+for ("**provide something for someone or something.** to supply something for someone or something. *I will provide salad for the guests. Ted provided food for his dog.*") (emphasis in original); Webster's New World Dictionary of American English 1083 (3d College Ed. 1988) ("**Pro•vide**.... 3. to furnish the means of support: usually with *for*") (emphasis in original); Webster's Third New International Dictionary of the English Language 1827 (1986) (**pro•vide**.... 1a: to take precautionary measure: make provision – used with *against* or *for* .... 3: to supply what is needed for sustenance or support ... < we'll have to ~ for him...>") (emphasis in original).

That makes sense. For example, if one attends a meeting after being told "lunch will be provided for," one would understandably be upset if at noon the host shrugged her shoulders and said she had only meant that she would be ***capable*** of buying lunch, not that she actually ***would***. Similarly, if one ratified a Constitution that was intended to "provide for the common defence,"[75] one would understandably be upset if the President took the position that the Republic was only

[75] *See* U.S. Const. Preamble ("We the People of the United States, in Order to ... provide for the common defence..., do ordain and establish this Constitution for the United States of America.").

obliged to be ***capable*** of repelling an invasion, not that it actually ***would***. So too here. The plain meaning of § 3031.1 is that, whenever a vote is cast, an EVS shall supply a permanent, physical record of it. Respondent's attempt to reject that plain meaning by replacing "provide for" with "capable of providing for" cannot stand. *See* 1 Pa. Cons. Stat. § 1903(a) ("Words and phrases shall be construed according to rules of grammar and according to their common and approved usage"); 1 Pa. Cons. Stat. § 1923(c) ("Words and phrases which may be necessary to the proper interpretation of a statute ***and which do not conflict with its obvious purpose and intent, nor in any way affect its scope and operation***, may be added in the construction thereof.") (emphasis added).

Nor is there any reason why we should subject Section 3031.1 to a different meaning. On the contrary, the legislative history of Section 3031.1 confirms that the General Assembly wanted EVSs to actually create records of votes, not just that they be able to create them. Indeed, the parties agree that the 1980 amendments to the Election Code were intended to ensure that EVSs did not suffer from the same defects as the lever machines they would be replacing, and also appear to agree that one of those defects was the fact that they did not produce a record of individual votes. *See* Jones Report ¶ 40-42 (Ex. 7). As Respondent's own expert opined in this case, "In permitting DREs, the Pennsylvania Legislature recognized a deficiency in lever machines, which did not ***produce*** individual vote records." Shamos Rebuttal Report ¶ 9 (emphasis added) (Ex. A); *see also* Shamos Report ¶ 115 ("A lever machine maintains only vote totals. It does not ***keep*** a separate record of the specific choices made by individual voters. ***At the end of the day, when the polls close, the mechanical counters on the machine show only cumulative totals***.") (emphasis added) (Ex. B). When Section 3031.1 is viewed against that backdrop, it becomes clear that the General Assembly would not have intended to require only

an ability to produce the records that would differentiate EVSs from lever machines. *See* Jones Report ¶ 28 ("Reading 25 P.S. § 3031.1 as a computer scientist accustomed to reading system specifications, I have difficulty imagining that it was intended merely to request a capability without requiring that that capability ever be used.") (Ex. 7). Otherwise, EVSs would be little better than the lever machines they replaced, and votes could be irretrievably lost if a machine failed during the course of an election.

As it happens, this is not mere conjecture. Indeed, Respondent was warned that this had happened in another state before these DREs were certified,[76] and not surprisingly it happened in Pennsylvania after these DRES were certified. As discussed more fully *supra*, Section II.D.1, during the 2005 Municipal Primary in Berks County, votes were irretrievably lost on a Danaher DRE system.

Respondent's reading of Section 3031.1, which would allow that to continue happening, is not easily attributable to legislative intent. The certification of these DREs was the intellectual equivalent of certifying machines that only tabulate votes accurately if an election worker thinks to press the "accurate" button, or machines that only prevent tampering if an election worker thinks to press the "secure" button. Voting machines should do those things during the normal course of their operation without being told to do so. Producing a record should be no different.

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[76] For example, Dr. David Eckhardt, a professor of computer science at Carnegie Mellon, warned Respondent that this had happened in North Carolina in 2004. *See* Email of David A. Eckhardt to Pennsylvania Department of State dated August 25, 2006, *available at* http://www.cs.cmu.edu/~davide/voting-machines/Plan_2006-08-25.html ("As you may be aware, in November of 2004, 4,438 votes were irretrievably lost by a Unilect Patriot DRE operated under the false presumption that electronic BIR plus a subsequent printing step provides a permanent record of each vote cast. The number of votes lost was greater than the margin of victory in the race for Secretary of Agriculture in North Carolina, with the result that the outcome of the election was in doubt for months until one candidate graciously conceded....").

C. Petitioners Are Entitled To Summary Judgment on Count IV Because There Is No Genuine Issue of Material Fact Concerning Whether the DREs Allow A "Statistical Recount ... Using Manual, Mechanical Or Electronic Devices Of A Type Different Than Those Used For The Specific Election" As Required By 25 Pa. S.A. § 3031.17

The lack of a permanent physical record of each vote cast also prevents the six DREs from allowing counties to conduct the Election Code's mandatory statistical recount using "devices of a type different than those used in the specific election." The intent of the statistical recount provision is to require the counties to verify the electronic results by comparing the electronic record to the "permanent physical record" of every vote cast. However, because DREs lack a permanent physical record, the only "records" of the voter's selections are the data stored in the electronic memory. It is impossible to conduct the statistical recount using "manual, mechanical or electronic devices of a type different than those used for the specific election" because no separate record of the voter's choices exists to compare to the records created on Election Day. No one, not even the Secretary, has any way of knowing whether the data stored electronically represents the voter's actual choices. Thus, requesting a regurgitation of election data after the fact from the same software that created it is not using a "device" of a "type" different than used in the election. More importantly, such a process does nothing to instill confidence in the election outcome or to verify the results. Consequently, use of DRE voting systems without a permanent physical record of every vote cast frustrates the purpose and intent of this section of the Election Code to check the accuracy of the election outcome.

1. The General Assembly Intended Section 1117-A to Require the Counties to Corroborate the Election Results By Using the Permanent Physical Record

The parties do not dispute that, in 1980, at the time the General Assembly enacted the EVS section of the Election Code, 25 P.S. § 3031 et. seq., the predominant system in Pennsylvania was lever machines. Shamos Report ¶ 115 ("lever machines, . . . were the

predominant system used in Pennsylvania prior to 1980, when the first electronic voting statute was passed. At that time, the only methods used were paper ballots in small jurisdictions and lever machines in large ones.") (Ex. 2). Dr. Shamos recognizes that lever machines were deficient because they failed to retain a record of individual voter choices. *Id.* The most prevalent type of electronic voting system in 1980 was the punch card system in which voters made their selections by punching ballot cards and the cards were later counted by an electronic counter or mechanical card reader. Jones Report ¶¶ 40, 59 (Ex. 7).

As demonstrated more fully below, the fundamental intent of Section 1117-A, namely, to check whether the electronic voting system correctly captured and counted voter intent, is impossible because there is nothing against which to compare the electronic data. In contrast, punch card ballots that are read by a card reader and voter-marked paper ballots that are optically scanned both easily comply with Section 1117-A's mandatory requirements. By design, both punch card systems and optical scan systems incorporate a "permanent physical record" of every vote cast in the paper ballots marked by the voters. Jones Report ¶ 59 (Ex. 7); Lopresti Report at 6 (Ex. 11).[77] After an election, the counties can easily review these records, manually count them and compare the results to the electronic results.[78] Given the history of the introduction of EVSs

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[77] Dr. Shamos spends considerable effort in his lengthy reports attempting to discredit the use of paper ballots because paper ballots can fall victim to all sorts of election chicanery. *See, e.g,* Shamos Report, 103-108 (Ex. 2). First, alteration of paper ballots is *noticeable*. Second, robust chain of custody procedures for ballots and election materials, the same procedures that are used in many areas in which preservation of evidence is critical, would address his concerns. More importantly, the same chain of custody procedures would be absolutely necessary to safeguard electronic media used in electronic voting systems, especially since alteration of electronic media is *undetectable. See* Lopresti Report, at 3 (Ex. 11). Finally, it is ludicrous to believe that unscrupulous persons would not attempt to manipulate elections using electronic voting systems.

[78] Punch card ballots could also be counted by an electro-magnetic card sorter. *See, e.g.*, Jones Report ¶ 59 (Ex. 7).

in Pennsylvania, Jones Report ¶ 40, the drafters of Section 1117-A likely contemplated a record comparable to punch card ballots that could serve as a check on the electronic tally of votes.

2. The Plain Meaning of the Statistical Recount Section Requires That EVSs Allow Counties to be Able to Corroborate the Election Results

Section 1117-A of the Pennsylvania Election Code, 25 Pa. Stat. Ann. § 3031.17, provides as follows:

> The county board of elections, as part of the computation and canvass of returns, shall conduct a statistical recount of a random sample of ballots after each election using manual, mechanical or electronic devices of a type different than those used for the specific election. The sample shall include at least two (2) per centum of the votes cast or two thousand (2,000) votes whichever is the lesser.

The Supreme Court has noted that "the polestar of statutory construction is to determine the intent of the General Assembly." *In re Canvass of Absentee Ballots of Nov. 4, 2003 Gen. Election,* 577 Pa. 231, 242, 843 A.2d 1223, 1230 (2004). "[T]he object of all interpretation and construction of statutes is to ascertain and effectuate the intention of the General Assembly" and "[w]hen the words of a statute are clear and free from all ambiguity, the letter of it is not to be disregarded under the pretext of pursuing its spirit." 1 Pa. Cons. Stat. § 1921(b). *See also In re James,* 596 Pa. 442, 447, 944 A.2d 69, 72 (2008). "Generally speaking, the best indication of legislative intent is the plain language of a statute." *Commonwealth v. Gilmour Mfg. Co.,* 573 Pa. 143, 148, 822 A.2d 676, 679 (2003). Furthermore, in construing statutory language, "[w]ords and phrases shall be construed according to rules of grammar and according to their common and approved usage . . .." *Id.* at 148-49, 822 A.2d at 679 (quoting 1 Pa. Cons. Stat. § 1903).

Section 1117-A is mandatory: "The County Board of Elections . . . ***shall conduct*** a statistical recount...." (emphasis added). The word "shall" carries an imperative or mandatory meaning. *In re Canvass of Absentee Ballots,* 577 Pa. At 244, 843 A.2d at 1231; *Oberneder v.*

Link Computer Corp., 548 Pa. 201, 204-05, 696 A.2d 148, 150 (1997). Thus, a county board of elections runs afoul of this requirement if the certified voting system it uses renders compliance with the statute impossible.

The plain language of the statute compels the counties to recount only a portion of the ballots, not to undertake a complete recount of all ballots and all races. The words "statistical"[79] and "random sample" are terms used in the field of statistics to indicate a study of a subset of original data. Sampling of a larger population, in this case the votes cast on ballots in an election, allows the tester to draw conclusions about the larger population.[80] The "random sample" in statistics means that every member of the population has a known, nonzero probability of being selected, thus resulting in a *representative* sample.[81] Giving effect to the plain meaning of the words reveals that the statute was intended to require the counties to check the accuracy of the election results produced by the electronic voting system. That is why only a subset of the whole is required: if the sample is correct, then it is fair to assume that the entire result is correct. Conversely, if the sample is incorrect, then further investigation, including potentially a complete recount may be required. This language demonstrates the legislative intent to require the counties to *check the accuracy* of the election results.

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79 The Merriam-Webster online dictionary defines "statistics" as " 1. a branch of mathematics dealing with the collection, analysis, interpretation, and presentation of masses of numerical data; or 2. a collection of quantitative data." "Statistical" means "of, relating to, based on, or employing the principles of statistics." *available at* http://www.merriam-webster.com/dictionary/.

80 Petitioners do not address whether the size of the sample will yield statistically significant results in a given election. Petitioners assert only that DREs cannot comply with this section of the Election Code.

81 The Bureau of Justice Assistance's Center for Program Evaluation and Performance Measurement in the U.S. Department of Justice defines "Statistical Sample" as "a group of cases selected from a population by a random process in which every member of the population has a known, nonzero probability of being selected." *See* http://www.ojp.usdoj.gov/BJA/evaluation/glossary/glossary_s.htm .

Another term for this kind of verification is an audit, or an independent review of the election records. Dr. Jones, an expert on election laws around the country, agrees that Section 1117-A is a "post-election audit requirement" and notes that it is patterned after a similar statute in California first enacted in 1965. Jones Report ¶ 47 (Ex. 7). His review of audit requirements in 25 states reveals that election audits generally involve an "independent count of the records of individual votes cast[.]" *Id.* ¶ 48. Thus, in order to perform this mandatory verification, it is necessary to have captured the voter's intention, that is, the record of the voter's choices on the original ballot, separately and distinctly from the software that wrote the selections onto electronic memory and then counted the electronic memory. When, as in the case with the six DRE systems, the county elections board has no record of the voter's intent, it is impossible to verify whether the DRE captured it correctly, and therefore impossible to determine whether the computer counted correctly.[82]

Dr. Shamos also recognizes the dual components of accuracy. Shamos Report ¶ 78 ("The term 'accurate' must be understood correctly. It has two different definitions. The first is that a system is accurate if it captures voter intent correctly. That is, the actions taken by the voter result in her choices being recorded with fidelity and later tabulated precisely.") (Ex. 2). Not surprisingly, he also agrees that checking for accuracy necessarily requires an independent record of voter intent. *Id.* ¶ 78 ("This form of accuracy is very difficult to measure because there

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[82] Although the word "audit" does not appear in this section, audit provisions in other parts of the Election Code have also been held to contemplate more than just checking for mathematical correctness. *See In re Audit of Campaign Expenses, Statements, Election Reports, Affidavits Required to be Filed with Northampton Cnty. Election Bd.*, 747 A.2d 1262, 1267 (Pa. Commw. Ct. 2000) (construing § 1636(b) of the Election Code governing audits of campaign contributions returns to not only require a determination that the returns are mathematically correct but also to determine the legality of the contributions.)

must be some independent way of learning the voter's intent aside from the voter's interaction with the system. Only then can intent be compared with what was actually captured.").

The inability of DREs, by design, to capture a software independent record of voter intent perhaps can be explained through analogy. If, for example, an optical scan ballot system were designed to shred all ballots after the voter had marked them and fed them into the scanner, the record of the voter's original intent is destroyed. Committing the paper ballot to electronic memory and then shredding it is just like electronically storing the touchscreen vote and returning the screen display to blank for the next voter. In both examples, the record of the voter's intent no longer exists and all parties are compelled to trust that the computers captured the voter's intent correctly and that no error, bug or malicious code interfered with that capture. Subsequently, even if one were to print the contents of the electronic memory, the ability to compare that content to the software independent record of the voter's intent is irretrievably lost.

Despite his common sense recognition that accuracy must include a way to determine whether the electronic voting system has correctly captured the voters' intention, Dr. Shamos has opined, without support, that the purpose of Section 1117-A is simply to add up the election tally to determine if the computer added the votes correctly. *See* Shamos Report ¶ 51 (Ex. 2); Shamos Rebuttal Report ¶18 (Ex. 1). This position is erroneously based on a narrow interpretation of the word "recount," an interpretation specifically rejected by Pennsylvania courts. Although the Election Code does not define the term "recount," other provisions of the Election Code relate to recounts. A petition for a recount pursuant to Section 1701 of the Election Code may allege fraud or error either "(A) in the computation of votes cast; (B) in the marking of the ballots; or (C) otherwise in connection with the ballots." 25 Pa. Stat. Ann. § 3261. The recount board does not merely re-compute the election tallies; rather, it is charged with deciding, among other

things, whether the ballots should be counted given the intent of the voter as demonstrated by the markings of the ballot. *In re Petition to Open Ballot Box*, 43 Pa. D. & C. 535, 543 (Ct. Com. Pl., Beaver Cnty. 1941) (recount contemplates the power to pass upon the validity of a ballot from its condition and markings and is not confined to correction of errors as to computation only). *Cf. In re Recount of Ballots for the Nov. 4, 2003 Gen. Election,* 857 A.2d 737, 742 (Pa. Commw. Ct. 2004) (upholding trial court's determination that markings on ballot prevented the court from counting it as a legal vote) (Pellegrini, J.).

Thus, both concepts of vote capture and mathematical accuracy are encompassed in the use of the word "recount." The lack of a permanent physical record of voter intent prevents counties from checking the accuracy of the electronic results. Moreover, as demonstrated below, DREs utterly fail to satisfy yet another requirement of Section 1117-A, that they conduct the recount using "devices of type different than used in the specific election." DREs, by design, only permit the counties to request the same information, using the same software and potentially hardware, that the DRE used to electronically record information on Election Day.

3. By Design, the DREs Are Unable to be Recounted Using Manual, Mechanical or Electronic Devices of a Type Different than Used in the Specific Election

The clear and unequivocal language of Section 1117-A demonstrates that the Pennsylvania General Assembly intended that it require counties to verify the electronic tally by "using manual, mechanical or electronic devices of a type different than those used in the specific election." 25 Pa. Stat. Ann. § 3031.17. The requirement for a method different than the actual election underscores the intent of checking or verifying the election result through some other, independent means. On the undisputed facts of this case, the normal operation of the six DREs at issue does not permit the counties to conduct a recount using different means.

All of the DRE machines record vote data after the voter has entered her choices through a specific user interface. Three of the systems, the iVotronic, the Dominion (formerly Diebold) TSx and the Dominion (formerly Sequoia) Edge II have a touchscreen interface. The voter scrolls through several screens and makes choices by touching the screen. The Hart Intercivic eSlate also presents candidate choices via multiple screens, but the voter uses a wheel to highlight his choice and then presses an enter button when his choice is highlighted. The Danaher and Dominion (formerly Sequoia) Advantage AVC present the voter with the entire ballot (called "full face") and the voter makes selections by pressing buttons on the face of the machine next to her choices. *See supra.*

The voter's selections are saved to various forms of computer memory that differ depending on the specific voting system *See* Lopresti Report at 3-4 (Ex. 7). The initial creation of the electronic record of the voter's choices is accomplished through the use of hardware and software. *Id.* at 5. Consequently, because no record of the voter's intention, separate and distinct from the computer software exists, it is impossible "for a human observer to confirm that what is written is in fact an accurate record of his/her vote." *Id.* at 5. Moreover, it is impossible to generate any record of election results, electronic or paper, without using the same software that collected data and wrote it to memory in the first instance. *Id.*

The contention that DREs are capable of complying with the mandatory statistical recount using devices of a type different than the actual election is meritless. Each suggested manner of complying with Section 1117-A relies on the so-called "ballot image retention" or BIR capability of the DRE. First, the ballot image retention is neither an "image" nor a "ballot." The misleading nomenclature simply refers to the electronic information that the voting system collected at the time of the voter's interface with the system. Jones Report ¶ 56 (Ex. 7). The

BIR is not a digital image, screenshot or other replication of any "ballot" that the DRE presented to the voter. As Dr. Jones explains, "nothing resembling the original ballot, that is, the ballot seen by the voter, is retained as a 'record of each vote cast.'" *Id.* Thus, the electronic record, having passed through at least two types of computer memory, may or may not be an accurate capture of the voter intent. *See* Lopresti Report at 5 (Ex. 11); Jones Report. ¶¶ 33-34, 42 (Ex. 7).

Second, none of the methods that Dr. Shamos suggests for retabulating the cast vote records comply with the requirement that the recount be conducted using devices of a type different than that used in the actual election. No matter whether the cast vote data is retrieved in electronic form and inserted into a different computer or whether the cast vote data is printed out on paper and counted by hand, both methods require the DRE to retrieve the cast vote data using exactly the same software and hardware that collected and saved the data on Election Day. "Ballot images are stored in the same forms of computer memory as all other election data, under control of the same hardware/software components." Lopresti Report at 6 (Ex. 11). "The printing of ballot images previously stored in computer memory . . . are no more than a convenient, human-intelligible reproduction of the electronic record." *Id. See also* Jones Report ¶ 61 (opining that printing and displaying the contents of electronic memory on the computer does not satisfy the device "of a type different" requirement) (Ex. 7); *Id.* ¶ 63 (using the same software to re-tabulate the results does not satisfy device "of a type different" requirement.)

No matter how many tortuous readings of the Election Code Dr. Shamos concocts, two fundamental, undisputed facts remain: (1) the lack of a permanent physical record of every vote cast prevents a check on the *accuracy* of the electronic results because there is no independent record of voter intent; and (2) retrieving CVRs using the same software and/or hardware that was

used in the specific election, not matter how one purports to "recount" them, cannot possibly satisfy the obligatory use of "devices of a type different" to conduct the recount.

This Court should avoid a construction of the Election Code that frustrates a clear legislative intent to detect and correct fraud and errors in the election process. *In re Luzerne Cnty. Return Bd.*, 447 Pa. 418, 420, 290 A.2d 108, 109 (1972). At the same time, the Court must also construe the Election Code to protect the voters' right to elect the candidate of their choice. *In re Nomination Petition of Driscoll*, 577 Pa. 501, 508, 847 A.2d 44, 49 (2004). In Section 1117-A, the General Assembly was rightly concerned about potential errors associated with electronic voting and intended to require the counties to check for accuracy. DRE voting systems, by design, do not permit this vital check and therefore cannot be recounted either to verify that the results are accurate or to protect the voter's right to elect the candidate of her choice. "[T]he policy of the liberal reading of the Election Code cannot be distorted to emasculate those requirements necessary to assure the probity of the process." *In re Nomination Petition of Cianfrani*, 467 Pa. 491, 494, 359 A.2d 383, 384 (1976) (recognizing that the ability of parties to object to nomination papers is an important check on the nomination process).

D. Petitioners Are Entitled To Summary Judgment on Counts IX and X Because There Is No Genuine Issue of Material Fact Concerning Whether Respondent Denied Them The Equal Protection and the Uniform Application of the Law As Required By Article I, Section 26 and Article VII, Section 6 of the Pennsylvania Constitution

The Pennsylvania Constitution provides that the Commonwealth shall not "deny to any person the enjoyment of any civil right, nor discriminate against any person in the exercise of any civil right," and that "[a]ll laws regulating the holding of elections by the citizens . . . shall be uniform throughout the State." Pa. Const. art. I § 26; art. VII § 6. By certifying some EVSs that satisfy the Pennsylvania Election Code and some that do not, the Secretary has violated both of those provisions.

To be sure, the mere fact that different voters use different voting systems does not in and of itself rise to the level of a constitutional violation, and Petitioners have never argued otherwise. But the fact that some voters use voting systems that comply with the Election Code and some voters must use systems that violate the Election Code in fundamental ways does rise to the level of a constitutional violation, and Respondent has never credibly argued otherwise. Nor can she; the right to vote is of bedrock significance, and burdens on that fundamental right trigger the strictest scrutiny. *See, e.g.*, *Williams v. Rhodes*, 393 U.S. 23, 30 (1968) ("the right of qualified voters . . . to cast their votes effectively. . . . rank[s] among our most precious freedoms"); *see also In re Nomination Papers of Nader*, 580 Pa. 22, 46, 858 A.2d 1167, 1181 (2004) (noting that the "right to vote" is "fundamental"); *In re Canvass of Absentee Ballots,* 577 Pa. at 239, 843 A.2d at 1228 (describing right to vote as a "treasured prerogative of citizenship.").

The fact that DRE systems do not create a record or allow a recount of votes, *see supra*, is not a technical violation of state law. Rather, it goes to the very essence of the right to vote. That the rights of Pennsylvania voters have been subjected to disparate treatment violates their rights to equal protection under and uniform application of the law. *See, e.g.*, *Bush v. Gore*, 531 U.S. 98, 104-05 (2000) (per curiam) (interpreting Equal Protection Clause of the Fourteenth Amendment to the United States Constitution and holding that, "[h]aving once granted the right to vote on equal terms, the State may not, by later arbitrary and disparate treatment, value one person's vote over that of another."). Indeed, this Court has already found that the Election Code

violations that were asserted in the Petition—and which are now established by the record—would be enough to state a claim for violation of the equal protection and uniformity clauses.[83]

Pennsylvanians cannot be confident of the results of elections when voters in counties that use DREs that do note ensure that their votes are accurately captured and recorded and do not allow a meaningful statistical-recount of their votes. In short, DREs make it impossible to know whether the winner of the election actually received the majority of the votes cast. The use in some counties of voting machines that substantially fail to comply with the Election Code thus deprives *all* Pennsylvania citizens, including Petitioners, of the equal-protection and uniformity-of-election rights guaranteed by the Pennsylvania Constitution. *See generally Winston v. Moore*, 244 Pa. 447, 457, 91 A. 520, 523 (1914) (stating that "elections are free and equal within the meaning of the Constitution . . . when each voter under the law has the right to cast his ballot and have it *honestly counted*" (emphasis added)); *id.* at 454, 91 A. at 522 ("[E]lections shall be made equal . . . by laws which shall arrange all the qualified electors into suitable districts . . . and make their votes *equally potent* in the election" (emphasis added)).

E. The Statutory Interpretations Offered By the Secretary Are Not Binding And The Opinions Offered By Her Purported Expert Are Not Admissible

Perhaps realizing that her arguments do not stand on their own merit, the Secretary has enlisted her expert to offer various and sundry opinions about what the Election Code means, and

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83 *See* Opinion dated April 12, 2007, at 20 ("Article VII, Section 6 does not permit DREs that ... provide no means for vote verification or vote audit."); *id.* at 20 n.13 ("Electors' equal protection claim is based on the disparate effect of the Secretary's certification process.... Electors allege that, unlike any other voting system, the challenged DREs have no meaningful recount of audit mechanisms when they malfunction."); *id.* at 22 ("Electors allege that the Secretary's DRE certifications have deprived Electors of their uniformity rights because the certifications allow some counties to use DREs that lack effective mechanisms for election audits, while other counties use voting systems that have effective mechanisms for election audits.... [A]s indicated above, Article VII, Section 6 does not permit the use of DREs that are not reliable or secure and provide no means for vote verification or vote audit.").

has suggested that her interpretation of the Election Code is entitled to deference from this Court. We take each in turn.

1. "Expert" Opinions About The Election Code Are Inadmissible

As noted above, the Secretary's arguments depend in large part on the opinions of her purported expert, Dr. Shamos. Putting aside whether he is qualified to offer opinions as to the operation of EVSs, and whether those opinions should be given any weight, his many opinions regarding the ***Election Code itself*** are clearly improper even if he does have the "intimate familiarity with the Election Code" he purports to have. Shamos Report ¶ 97 (Ex. 2); *see also id.* ¶ 113.

Pennsylvania Rule of Evidence 702 allows an expert witness to offer an opinion if it would "assist the trier of fact to understand the evidence or to determine a fact in issue. . . ." Pa.R.E. 702. Because the purpose of the testimony is to assist the trier of fact, it follows that the nature of the testimony should be limited to the facts. That is especially true where would-be experts offer opinions on purely legal matters, which is exactly what Dr. Shamos does when he offers his musings about what the Election Code does and does not mean:

- "The distinction and the use of the word 'for' in the definition are important. Every DRE system certified in Pennsylvania is capable of providing a paper printout of every ballot cast. The statute does not require that a county must actually use its system to produce paper records in every election, but that to be certified as an 'electronic voting system' the system must be capable of providing such records." Shamos Report dated July 11, 2011 ¶ 45 (emphasis in original) (Ex. 2).
- "'Permanent' means that a record will not spontaneously erode. 'Permanent' does not mean forever, but for a period of time that makes sense in the election recordkeeping." *Id.* ¶ 46.
- "Petitioners have not demonstrated that any of the Specified Voting Systems fail to conform to the Election Code." *Id.* ¶ 29.

- "HAVA, the Election Code and the Pennsylvania Constitution do not require a voter-verified paper audit trail...." *Id.* ¶ 37.
- "[T]he Pennsylvania Election code contains no audit requirement...." *Id.* ¶ 93.
- "Detailed review of software is not within the province of the Secretary under the Election Code. That task ... it [sic] relegated to federal qualified laboratories.... That is what the Election Code provides." Shamos Rebuttal Report ¶ 31 (Ex. 1).
- "Dr. Jones is unable to point to any provision of the Election Code or Pennsylvania law requiring each election district to print out a paper record of every ballot image. No such provision exists." *Id.* ¶ 36.
- "[T]here is no requirement in the Election Code that such a record need be made." *Id.* ¶ 42.

This is an unabashed attempt to usurp the role of the Court. The law is clear – and has been for over a hundred years – that purported experts should not offer testimony of this sort. *See, e.g.*, *Browne v. Commw.*, Dep't of Transp., 843 A.2d 429, 433-34 (Pa. Commw. Ct. 2004) (Colins, J.) ("[W]hether a party has violated an ordinance is a question of law, and thus, legal opinion testimony is not admissible. A witness may testify as to the action he or she took with regard to an ordinance, in order to develop a factual basis to assist the court or jury in determining whether an ordinance applies and whether a party complied with the terms of the ordinance, but the witness may not ordinarily testify as to whether he believes a party's actions constitute a violation of the ordinance.") (footnote omitted); *Kosey v. City of Wash. Police Pension Bd.*, 73 Pa. Commw. 564, 568, 459 A.2d 432, 434 (1983) (Barbieri, J.) ("[I]t is clear, in our view, that the issue Mr. Hess wished to speak to was one of law, and since issues of law are for the court to decide, we believe the chancellor properly excluded Mr. Hess' testimony."); *Commonw. Liquor Control Bd. v. Ronnie's Lounge, Inc.*, 34 Pa. Commw. 213, 218, 383 A.2d 544, 546 (1978) (Crumlish, J.) ("We have no hesitancy in deciding that this question calls for a legal conclusion which, of course, is within the province of the trial court."); *Commonwealth v. Mellet*, 27 Pa. Super. 41, 45 (Pa. Super. Ct. 1905) (affirming decision excluding testimony

because responding to question posed to chemist "involved for its complete answer a construction of the statute which it was not within the province of the witness to give. Therefore the court was clearly right in sustaining the objection to it.").[84]

Dr. Shamos may be accustomed to having the Secretary take his ruminations as gospel, but he cannot reasonably expect the Court to do so as well. Nor can the Secretary or her counsel. They are all lawyers and they should all know better than to waste this Court's time by offering (and waste the tax payers' money by buying) purely legal opinions that are patently inadmissible. Those opinions are not entitled to consideration by, let alone deference from, this Court.

2. <u>The Secretary's Opinions About the Election Code Are Owed No Deference</u>

Next, the Secretary suggests that her reading of the Election Code is entitled to deference and should not be rejected unless it is "clearly erroneous." Respondent's Application for Summary Relief dated Aug. 8, 2011, at 7 ¶ 13 (citing *St. Elizabeth's Child Care Ctr. v. Dep't of Pub. Welfare*, 600 Pa. 131, 137, 963 A.2d 1274, 1277 (2009) and *Kuznik v. Westmoreland Cnty. Bd. Of Comm'rs*, 588 Pa. 95, 138-42, 902 A.2d 476, 502-03 (2006)). She is wrong.

First, deference to an agency's statutory interpretation is, like any other interpretive tool, only appropriate when interpretation is necessary. Put differently, if a statute is neither vague nor ambiguous, courts should not defer to an agency's interpretation. *See* 1 Pa. Con. Stat. Ann. § 1921(b) ("When the words of a statute are clear and free from all ambiguity, the letter of it is not to be disregarded under the pretext of pursing its spirit."); *see also Seeton v. Pa. Game Comm'n*, 594 Pa. 563, 578, 937 A.2d 1028, 1037 (2007); *Tritt v. Cortes*, 578 Pa. 317, 321, 851 A.2d 903,

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[84] *See also, e.g., Berckeley Inv. Grp., Ltd. v. Colkitt*, 455 F.3d 195, 217 (3d Cir. 2006); *United States v. Leo*, 941 F.2d 181, 196 (3d Cir. 1991); *FedEx Ground Package Sys., Inc. v. Applications Int'l Corp.*, 695 F. Supp. 2d 216, 221 (W.D. Pa. 2010); *Haberern v. Kaupp Vascular Surgeons Ltd.*, 812 F. Supp. 1376, 1378 (E.D. Pa. 1992).

905 (2004) ("[T]he plain language of a statute is the foremost indication of legislative intent.") (citing *Commonwealth v. Gilmour Mfg. Co.*, 573 Pa. 143, 148-49, 822 A.2d 676, 679 (2003). Here, there is nothing particularly vague or ambiguous about the words "provide for," "permanent," "physical" or "record." Nor is there anything imprecise about the terms "manual, mechanical or electronic devices" or "of a type different than those used for the specific election." It follows that deferring to the Secretary's reading is unnecessary and unwarranted.

Second, even if this Court considers 25 Pa. Stat. Ann. § 3031.1 and 25 Pa. Stat. Ann. § 3031.17 to be vague or ambiguous, deference to an agency's interpretation of a statute is only one of eight – and, indeed, the eighth of eight – enumerated factors that a court *may* consider in ascertaining legislative intent. *See* 1 Pa. Cons. Stat. Ann. § 1921(c)(8). The Court can also consider factors such as "the occasion and necessity for the statute" and "the consequences of a particular interpretation" on the parties and the public, as well as any other unenumerated consideration, and can attribute less weight – and, indeed, no weight at all – to the Secretary's "interpretation." *See* 1 Pa. Cons. Stat. Ann. §§ 1921(c)(1), (6). That is especially true here, where the occasion of the 1980 Election Code amendments (which were passed to ensure that the EVSs that replaced lever machines would create a permanent physical record of each vote) and the consequences of the Secretary's reading (which would allow EVSs that do not create a permanent physical record of any vote, let alone every vote, in the normal course of their operation) overwhelmingly weigh in favor of Petitioner's position. The Secretary's suggestion that this Court is obliged to adopt her interpretation of a statute unless it is "clearly erroneous" is itself clearly erroneous. *See, e.g., Pa. Human Relations Comm'n v. Uniontown Area Sch. Dist.*, 455 Pa. 52, 78, 313 A.2d 156, 169 (Pa. 1973) (noting that courts disregard interpretations that are "unwise or violative of legislative intent").

If Respondent truly believes it is advisable to use EVSs that produce no record and allow no recount of votes, then she is free to lobby the General Assembly to amend the Election Code. She has not. Why? Because no responsible legislator who cares about the elective franchise (or the possibility of reelection, for that matter) would ever lend their support to such an amendment. The Secretary's attempt to achieve the same result under the rubric of "deference" to her "interpretations" of the Election Code is as wrongheaded as it is wrong.

V. <u>CONCLUSION</u>

Thomas Jefferson wrote that "[t]he elective franchise, if guarded as the ark of our safety, will peaceably dissipate all combinations to subvert a Constitution, dictated by the wisdom, and resting on the will of the people. That will is the only legitimate foundation of any government, and to protect its free expression should be our first object."[85] It is in that spirit that Petitioners have prosecuted this case for years. Respondent, on the other hand, "would rather focus [her] attention and resources on issues that more clearly advance the welfare of Pennsylvanians."[86] This is perhaps on the advice of her industry-affiliated consultant, who would have her dismiss Petitioners as tinfoil hat wearing conspiracy theorists.[87] That is unfortunate.

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[85] Thomas Jefferson, Letter to Benjamin Waring, Esq., dated March 23, 1801, Thomas Jefferson Papers at Library of Congress, available at http://memory.loc.gov/master/mss/mtj/mtjl/023/0300/0380.jpg; *see also* Lyndon B. Johnson, Message to Congress dated March 16, 1965, Text of President's Message to Congress on Voting, available at http://www.nytimes.com/books/98/04/12/specials/johnson-voting.html?_r=2 ("In our system, the first right and most vital of all our rights is the right to vote.... It is from the exercise of this right that the guarantee of all our other rights flows. Unless the right to vote be secure and undenied, all other rights are insecure and subject to denial for all our citizens. The challenge to this right is a challenge to America itself. We must meet this challenge as decisively as we would meet a challenge mounted against our land from enemies abroad.").

[86] Respondent's Opp'n to Petitioners' Mot. for Temp. Stay dated August 5, 2011, at 6.

[87] *See, e.g.*, Dan Thanh Dang, Baltimore Sun *Election Paranoia Surfaces – Conspiracy Theorists Call Results Rigged*, November 5, 2004 (quoting Dr. Shamos) ("If you laugh at those

(Continued)

Respondent and her consultant have spilt much ink during the course of this litigation debating the relative security, accuracy, and efficacy of DRE and optical scan systems, arguing that, while both are imperfect, the former are better than the latter. *See, e.g.*, Respondent's Brief in Support of Preliminary Objections at 3 n.2 ("No election system is perfect and no machine built by man is infallible. Voting machine malfunction has been, and probably always will be, a potential problem in every election.") (citations omitted). That misses the point entirely. Petitioners' point is not that optical scan systems are perfect and DREs are not. Rather, Petitioners' point is that optical scan systems are compliant with the Election Code and DREs are not. Whether one is 'better' than the other for some other reason is a matter of opinion,[88] and is ultimately beside the point. This Court has said as much. *See, e.g.*, Opinion dated April 12, 2007, at 20 n.13 ("The Secretary also asserts that no voting system is perfect and that the possibility of malfunction does not constitute an equal protection violation. However, Electors allege that, unlike any other voting system, the challenged DREs have no meaningful recount or audit mechanisms....").

We are approaching what will likely be hotly-contested election in which Pennsylvania will likely be a battleground state. And if we allow DREs to be used in that election, the events

(Continued)

who believe aliens live among us, then you really ought to howl at those who believe there is massive tampering with voting machines. There is no evidence of it.").

[88] To be sure, Petitioners have their own opinion about that. The creation of and reliance on a physical record not only makes it possible to conduct a recount, but also makes it impractical, if not impossible, to conduct a large-scale fraud. The same cannot be said of DREs. *See, e.g.*, Aviel D. Rubin, Ph.D., *Brave New Ballot: The Battle to Safeguard Democracy in the Age of Electronic Voting* 2005 (2006) (explaining "wholesale fraud verses retail fraud. With the stakes so high, we have to assume that clever and resourceful people will attempt to subvert the process. It has happened too many time before, and will happen again. It isn't feasible to stuff ballot boxes across the entire country, or even in several adjacent polling places. But when computers running exactly the same software are used in ever-larger geographical areas, a bug in the code, whether inadvertent or placed there intentionally, could corrupt the entire outcome of an election, especially when the margins of victory are as narrow as they have been in recent years.").

of 2000 could pale in comparison to the events of 2012. For the great irony of this case is that the lesson of 2000 has been turned on its head. To Respondent, the problem in 2000 was the need for the messy and costly recount of the "now famous dimpled and hanging chads," and the solution to that problem is using DREs that "prevent the need for such mind-reading."[89] But the solution is not to use systems that "prevent" recounts (i.e., DREs), but to use systems that make them easier (i.e., optical scan systems). In other words, the lesson of 2000 was not that recounts are messy or costly. After all, neither the messiness nor costliness of recounts should come as a surprise to anyone, and both are the price we must be prepared to pay if we care about the integrity of our elections. Rather, the lesson was that recounts, no matter how messy or costly, are absolutely necessary. And it is no exaggeration to say that conducting meaningful recounts is absolutely impossible with DREs.

In short, if the indelible image of 2000 was a Florida election worker squinting at a chad, the indelible image of 2012 could well be a Pennsylvania election worker shrugging at a DRE. But that need not happen. Optical scan systems that produce a record and allow a recount of votes have already been certified by the Secretary, are already being used in many counties, and could be purchased and deployed by the remaining counties long before the 2012 election. Although not perfect, those optical scan systems would afford Petitioners and the public at large some quantum of confidence that their votes can be counted as intended, and can be recounted to determine whether they were. The DREs as used in Pennsylvania can do neither of those things, and no amount of whistling past the graveyard will ever make it otherwise.

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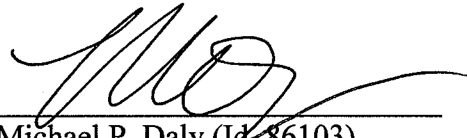
[89] Respondent's Brief in Support of Preliminary Objections at 21.

DATED: September 15, 2011



Michael P. Daly (Id. 86103)
Meredith N. Reinhardt (Id. 93504)
Katie L. Bailey (Id. 308748)
DRINKER BIDDLE & REATH LLP
One Logan Square, Suite 2000
Philadelphia, PA 19103-6996
Tel. 215-988-2700

Marian K. Schneider
Attorney-at-Law
295 E. Swedesford Road, #348
Wayne, PA 19087
Tel. 610-644-1925

Michael Churchill
Benjamin David Geffen
Public Interest Law Center of
Philadelphia
125 S. 9th Street, Suite 700
Philadelphia PA 19107
Tel. 215-627-7100

John C. Bonifaz
Voter Action
48 N. Pleasant St., Suite 304
Amherst, MA 01002
Tel. 413-253-2700

CERTIFICATE OF SERVICE

I, Meredith N. Reinhardt, hereby certify that on September 15, 2011, I caused a true and correct copy of the foregoing document to be served via email and first class mail, postage prepaid, on the following:

Steven E. Bizar
Richard M. Simins
Robert J. Fitzgerald
Buchanan Ingersoll & Rooney PC
Two Liberty Place, 50 S. 16th St.
Philadelphia, PA 19102-2555

Steven V. Turner
Chief Counsel, Department of State
Kathleen M. Kotula
Assistant Counsel, Department of State
Office of General Counsel
301 North Office Building
Harrisburg, PA 17120

Attorneys for Respondent

Dated: September 15, 2011

Meredith N. Reinhardt