

**COUNTY OF**



**ALLEGHENY**

**RICH FITZGERALD**  
COUNTY EXECUTIVE

# **2017 Municipal Primary Experience Report**

## **Contributors:**

**Gwen Abramovitz**

**John O'Brien**

**Kristin Perkoski**

**Larry Szurley**

**David Voyer**

**Mark Wolosik**

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JERRY TYSKIEWICZ, DIRECTOR

**DEPARTMENT OF ADMINISTRATIVE SERVICES – DIVISION OF ELECTIONS**  
604 COUNTY OFFICE BUILDING • 542 FORBES AVENUE • PITTSBURGH, PA 15219  
PHONE (412) 350-4500 • FAX (412) 350-5697 • [WWW.ALLEGHENYCOUNTY.US](http://WWW.ALLEGHENYCOUNTY.US)

## Overview

Of the 919,812 registered voters eligible to vote for the nomination of candidates in Allegheny County, 159,481 (17.34%), cast their vote at the past May 16, 2017 Municipal Primary. By political party affiliation, 121,018 (22.50%) registered Democratic voters and 38,463 (14.82%) registered Republican voters cast ballots. In addition, a Home Rule Charter Amendment Referendum Question appeared on the ballot in the Municipality of Mt. Lebanon. 136 (3.52%) of the eligible 3,859 non-partisan voters participated in this special election as well.

A total of 4,095 absentee ballots were issued and 157 provisional ballots were cast. Of the provisional ballots, 5 were fully counted, 40 partially counted and 112 were not counted. The majority of those not counted were due to the fact that the provisional voter was not a registered voter or was not registered in the political party in which the provisional ballot was cast.

Over 158,000 “emergency” paper ballots were supplied to this County’s 1,322 polling places in the event that at least one-half of the voting machines in a precinct were non-functional. 29 emergency ballots were used in 5 voting districts. In 2 districts, the district election boards were unable to gain entrance to the polling place in time to begin voting at 7:00 a.m. In 2 districts, the district election boards had difficulty in printing a “zero tape”. In the remaining district, the Judge of Election did not appear at the polling place.

2,135 candidates appeared on the ballot and there were over 7,000 individual nominations possible for Democratic and Republican State, County, City, Magisterial and School District offices as well as local municipal offices such as Mayor, Tax Collector, Member of Council, Commissioner, Supervisor and Judge and Inspector of Election. Over 300 distinct ballot configurations were created. 40 legal challenges to candidate nominating petitions were held in the Allegheny County Court of Common Pleas over a two-day period. 486 write-in candidates were nominated to local offices.

## Accessibility

All 1,322 polling places in this County have now been classified as “accessible” pursuant to the standards promulgated by the Secretary of the Commonwealth of Pennsylvania.

## Logic and Accuracy Testing

Extensive automated and manual Logic and Accuracy Testing (L&A) was performed. Automated L&A was performed on all 4,228 iVotronic voting machines deployed on Primary Election Day. Manual L&A was also performed for each of the approximately 300 different ballot configurations. Those parties and organizations permitted by Pennsylvania law to be present during this process were duly notified.

A “test deck” comprised of over 39,000 ballots, containing different vote totals for each candidate, was used to verify that the 5 ES&S Model 650 high-speed ballot counters would accurately count the absentee, provisional and emergency optical scan paper ballots to be used at the Primary. This test was conducted prior to the Primary as well as before final certification of the election results. In both tests, the ballot scanners produced an accurate count. The required public notice of the pre-primary test was given.

### Firmware Verification

Allegheny County employed the services of “GRP Consulting Group, LLC” to verify that the software resident on the iVotronic voting devices contain the “trusted build” version certified by the Pennsylvania Department of State. As has been the case since 2008 that this process has been employed, no instance of uncertified software has been detected. Copies of the reports prepared for the May 16, 2017 Municipal Primary are attached below.

### Network Security

Also following past practice, an independent third-party review was conducted both prior to and after the past Primary to assure that our election network was isolated and not connected to any external network. A copy of the report produced by “Solutions 4 Networks” is attached below.

### Parallel Testing

Since the November 2006 Election, Allegheny County has employed a Certified Public Accounting firm to ensure that the functionality of the iVotronic voting machine devices have not been compromised. The parallel testing performed at the May 16, 2017 Municipal Primary demonstrated that the randomly-selected voting devices recorded and counted all votes completely and correctly. A copy of the report issued by Baker Tilly is attached below.

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**GRP Consulting Group, LLC**

4915 Twin Lakes Rd

Suite 15

Boulder, Colorado 80301

tel: 303/249-0445

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**GRP Consulting Group, LLC**

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***ALLEGHENY COUNTY PRE MAY 16, 2017  
PRIMARY ELECTION  
ES&S I VOTRONICS FIRMWARE VERIFICATION  
STUDY***

**EXECUTIVE SUMMARY**

Developed for:

***ALLEGHENY COUNTY  
DIVISION OF ELECTIONS  
STATE OF PENNSYLVANIA***

Document Number GCG-AC-iVo-FRPT-000230

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## 1. INTRODUCTION: ALLEGHENY COUNTY ES&S iVOTRONICS FIRMWARE VERIFICATION STUDY

The Allegheny County, Pennsylvania Division of Elections requested GRP Consulting Group to audit and verify the firmware source code on twenty (20) ES&S iVotronic DRE voting machines before conducting the May 16, 2017 Primary Election. The devices to be audited were randomly selected from the counties 4700 devices. The purpose was to verify that the samples have in residence on the U1 designated Electronic Erasable Programmable Read Only Memory (EEPROM) chip the firmware version 9.1.4.1 and that all applied firmware versions are accurate and true to the State of Pennsylvania's Trusted Build as held in escrow by the Secretary of State's Office in Harrisburg. The study was accomplished by applying the *'Allegheny County iVotronic Firmware Verification Protocol'* and was performed on location at the Allegheny County Division of Elections warehouse; located at 901 Pennsylvania Ave., Pittsburgh, Pennsylvania. GRP Consulting Group and Allegheny County staff performed this firmware audit on February 27, 2017.

It is the finding of GRP Consulting Group that the firmware verification audit applied to the resident code on the sample population was found to be unaltered versions of the 9.1.4.1 firmware.

### 1.1 Approach

#### 1.1.1 Study's Focus

The focus of the exercise was:

1. Implementation of a fair and statically correct random selection process.
2. Deploy the verification protocol, known as the *'Allegheny County iVotronic Firmware Verification Protocol'*, to verify on twenty (20) randomly chosen ES&S iVotronics DRE voting devices that they hold in residence on the U1 designated EEPROM chip the exact, true and unaltered version of the 9.1.4.1 certified firmware source code as held in escrow at the Secretary of State's office.

#### 1.1.2 Study's Concentration

The GRP Consulting Group analyst was tasked to independently apply a repeatable and validated verification protocol to verify that the ES&S firmware version 9.1.4.1 that resides in escrow by the Secretary of State's office and is resident on the Allegheny County iVotronic Direct-Recording Entry (DRE) - touch screen voting devices – are exact, true and unaltered versions of the certified firmware source code.

#### 1.1.3 Study's Phases

GRP Consulting Group organized the project primary phases, each incorporating the flexibility to accommodate additional requirements, as they may have become known. The general strategy employed was comprised of the following aspects:

1. Setup, configure and control the verification environment and the parameters associated with each verification cycle;
2. Apply the protocol to verify that before the May 16, 2017 Primary Election the 9.1.4.1 firmware on the iVotronic DREs is the true and certified version of the firmware and has not been altered;
3. Execute twenty (20) verification cycles;
4. Conduct reviews and analyses of all verification results and anomalies obtained during the twenty (20) verification execution cycles;
5. Advise the County on possible root cause(s) of any and all anomalies; and
6. Prepare and deliver a report of the verification activities, the results of all verification executions, and conclusions and recommendations in Executive Summary and Final Report formats.

## 2. FINDINGS

GRP Consulting Group was engaged by the Allegheny Division of Elections on site at 901 Pennsylvania Ave., Pittsburgh, PA on February 27, 2017; the purpose of the engagement was to apply the 'Allegheny County iVotronic Firmware Verification Protocol' to verify the ES&S iVotronic firmware version 9.1.4.1 is resident on the Allegheny County iVotronic population.

On February 27, 2017, the GRP Consulting Group analyst completed the verification process of the firmware on twenty (20) Allegheny County iVotronics chosen at random from the population of approximately 4700 machines. It is the findings of GRP Consulting Group that the firmware version 9.1.4.1 residing on the twenty (20) randomly chosen machines, do represent the population, and furthermore, that the firmware version as resident on the U1 designated Electronic Erasable Programmable Read Only Memory (EEPROM) chip is an exact, true, and unaltered version of the NVLAP federally certified trusted build as held in archive at SysTest Labs and in escrow by the Pennsylvania Secretary of State in Harrisburg, PA.

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GRP Consulting Group, LLC  
4915 Twin Lakes Rd  
Suite 15  
Boulder, Colorado 80301  
tel: 303/249-0445

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## GRP Consulting Group, LLC

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*ALLEGHENY COUNTY PRE MAY 16, 2017  
PRIMARY ELECTION  
ES&S iVOTRONICS FIRMWARE VERIFICATION  
STUDY*

### **FINAL REPORT**

Developed for:

*ALLEGHENY COUNTY  
DIVISION OF ELECTIONS  
STATE OF PENNSYLVANIA*

Document Number GCG-AC-iVo-FRPT-000231

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## 1. INTRODUCTION: ALLEGHENY COUNTY ES&S iVOTRONICS FIRMWARE VERIFICATION STUDY

The Allegheny County, Pennsylvania Division of Elections requested GRP Consulting Group to audit and verify the firmware source code on twenty (20) ES&S iVotronic DRE voting machines before conducting the May 16, 2017 Primary Election. The devices to be audited were randomly selected from the counties 4700 devices. The purpose was to verify that the samples have in residence on the U1 designated Electronic Erasable Programmable Read Only Memory (EEPROM) chip the firmware version 9.1.4.1 and that all applied firmware versions are accurate and true to the State of Pennsylvania's Trusted Build as held in escrow by the Secretary of State's Office in Harrisburg. The study was accomplished by applying the *'Allegheny County iVotronic Firmware Verification Protocol'* process and was performed on location at the Allegheny County Division of Elections warehouse; located at 901 Pennsylvania Ave., Pittsburgh, Pennsylvania. GRP Consulting Group and Allegheny County staff performed this firmware audit on February 27, 2017.

It is the finding of GRP Consulting Group that the firmware verification audit applied to the resident code on the sample population was found to be unaltered versions of the 9.1.4.1 firmware.

### 1.1 Approach

#### 1.1.1 Study's Focus

The focus of the exercise was:

1. Implementation of a fair and random selection process.
2. Deploy the verification protocol, known as the *'Allegheny County iVotronic Firmware Verification Protocol'*, to verify on twenty (20) randomly chosen ES&S iVotronics DRE voting devices that they hold in residence on the U1 designated EEPROM chip the exact, true and unaltered version of the 9.1.4.1 certified firmware source code as held in escrow at the Secretary of State's office.

#### 1.1.2 Study's Concentration

The GRP Consulting Group has been tasked to independently apply a repeatable and validated verification protocol to verify that the ES&S firmware version 9.1.4.1 that resides

in escrow by the Secretary of State's office and is resident on the Allegheny County iVotronic Direct-Recording Entry (DRE) - touch screen voting devices – are exact, true and unaltered versions of the certified firmware source code.

### **1.1.3 Study's Phases**

GRP Consulting Group organized the project primary phases, each incorporating the flexibility to accommodate additional requirements, as they may have become known. The general strategy employed was comprised of the following aspects:

1. Setup and configure the verification environment and the parameters associated with each verification cycle;
2. Apply the protocol to verify that before the May 16, 2007 Primary Election that the 9.1.4.1 firmware on the iVotronic DREs is the true and certified version of the firmware and has not been altered;
3. Execute twenty (20) verification cycles comprised of verification on performed one (1) ADA (American Disabilities Act) compliant iVotronic and nineteen (19) non-compliant DRE units;
4. Conduct reviews and analyses of all verification results and anomalies obtained during the twenty (20) verification execution cycles;
5. Advise the County on possible root cause(s) of any and all anomalies; and
6. Prepare and deliver reports of the verification activities, the results of all verification executions, and conclusions and recommendations in Executive Summary and Final Report formats.

## **1.2 Purpose**

This document is the Allegheny County pre-May 16, 2017 Primary Election ES&S iVotronic Firmware Verification Study Final Report. This report was developed as a review of the specific technical details, the project's results, and findings.

## **1.3 Statement of Independence**

As an election validation and verification business practice, GRP Consulting Group is technically, managerially, and financially independent from all electronic voting systems vendors as specified in *IEEE 1012-2004 Annex C*.

The consultants of GRP Consulting Group shall maintain an independent decisional relationship between its clients, affiliates, or other organizations so that GRP Consulting Group's capacity to perform services objectively and without bias is not adversely affected.

GRP Consulting Group shall maintain independence in fact and in appearance. The validation and verification environment, whether on-site at GRP Consulting Group facilities or partner organizations or at a client's site, shall be organized so that staff members are not subjected to undue pressure or inducement that might influence their judgment or the results of their work.

## 1.4 References

1. iVotronic Software Verification Protocols: Allegheny County Proposals; Collin Lynch, President, VoteAllegheny; 9/28/2008
2. Firmware vs. Uploaded Firmware Chip Data Comparison Procedure; Election Systems and Software, Inc.; 1/18/2008
3. Allegheny County iVotronic Firmware Verification Protocol; Geoffrey R. Pollich, SysTest Labs, 10/14/2008

## 1.5 Systems Information

Items identified in Table 1 reflect firmware deployed at the Allegheny County Division of Elections warehouse on February 27, 2017:

**Table 1 - Matrix of Firmware**

<u>Vendor</u>	<u>System</u>	<u>Description</u>	<u>Software/ Firmware Version</u>
ES&S	iVotronic	Direct Record Entry	9.1.4.1
ES&S	iVotronic	ADA Compliant DRE	9.1.4.1

Equipment identified in Table 2 reflects iVotronic hardware selected at the Allegheny Division of Elections warehouse on February 27, 2017:

**Table 2 - Matrix of Hardware**

<u>iVotronic Serial Number</u>	<u>Microchip Manufacturer</u>	<u>Microchip Part Number</u>
*V5172773	Spansion	0449GFB G
V5180390	Spansion	0603FRC G
V5185038	Spansion	0612FBE G
V5182591	Spansion	0603FRC G
V5176914	Spansion	0603FRC G
V5177909	Spansion	0603FRC G
V5187949	Spansion	0609BRB G
V5176657	Spansion	0612EBA G
V5177905	Spansion	0603FRC G

<u>iVotronic Serial Number</u>	<u>Microchip Manufacturer</u>	<u>Microchip Part Number</u>
V5182180	Spansion	0603FRC G
V5183802	Spansion	0609BRB G
V5181824	Spansion	0612EBA G
V5177178	Spansion	0612EBA G
V5184814	Spansion	0612FBE G
V5182647	Spansion	0612EDA G
5186773	Spansion	0609BRB G
V5181881	Spansion	0612EBA G
V5184268	Spansion	0609BRB G
V5183719	Spansion	0612FBE G
V5183011	Spansion	0603FRC G

\*American Disabilities Act (ADA)

**Table 3 - Matrix of Testing Hardware**

<u>Description</u>	<u>Manufacturer</u>	<u>Model</u>
EEPROM Device Programmer	Logical Devices, Inc.	ChipMaster 6000XPu
Flash Module Programmer Adapter	Logical Devices, Inc.	Version 1
ESD Static Mat with wrist strap	N/A	N/A
#10 Tamper Proof Torx screwdriver	N/A	N/A
Small flathead screwdriver	N/A	N/A

**Table 4 - Matrix of Testing Software**

<u>Description</u>	<u>Manufacturer</u>	<u>Software Version</u>
Software- CHIPMASTER 6000 XPU for USB	Logical Devices, Inc	ChipMaster 6000Xpu for USB
WinLink2	Logical Devices, Inc	v. 01.51.00
Hex Editor	Xvi32	v. 2.5
Microsoft Visual C++, Binary Editor	Microsoft Corporation	Version 6.0
SHA_V Sha-1 and other SHA segments Hash Code Identification	Microsoft File Checksum Integrity Verifier (FCIV) <a href="http://support.microsoft.com/kb/841290">http://support.microsoft.com/kb/841290</a>	Version 2.05

## **2. ALLEGHENY COUNTY PRE MAY 16, 2017 PRIMARY ELECTION iVOTRONIC FIRMWARE VERIFICATION PROCESS; PREFORMED FEBRUARY 27, 2017**

To establish a best practice protocol and verification procedure, Geoffrey Pollich, consultant with GRP Consulting Group, reviewed and analyzed the *VoteAllegheny: iVotronic Software Verification Protocols: Allegheny County Proposals*, the *ES&S Firmware vs. Uploaded Firmware Chip Data Comparison Procedure*, and NIST Standard Lab Procedures best practices. It was from these primary sources that the ‘Allegheny County iVotronic Firmware Verification Protocol’ was established.

### **2.1 Present during the February 27, 2017 Verification Process:**

#### GRP Consulting Group:

Geoffrey Pollich – GRP Consulting Group, Principle Consultant

#### Allegheny County Division of Elections:

Mark Wolosik – Elections Division Manager

John O’Brien – Manager of Voting Machines

Elizabeth Dell – Business Analyst, Division of Computer Services

#### Election Advocacy Observers:

Michael Sullivan – VoteAllegheny

### **2.2 Sample Size Randomization Procedure**

The sample size must be carefully selected due the need to open the warranty seal over the lower left chassis screw in order to conduct the firmware verification. When this seal is broken, the DRE must be inspected and tested by ES&S. If a larger sample of machines were inspected per election, the availability of certified election machines may not satisfy the needs of individual precincts for federal, state, county, municipal and special issue elections held over the calendar year. It is also unclear if a larger sample sizes would yield a more valid result than the present sample size appropriately randomized.

Michael Sullivan of VoteAllegheny along with Division of Election employees initiated the machine selection effort by using multi-sided dice to randomize the row choice to establish 20 randomly chosen iVotronic units for testing. Mark Wolosik, Elections Division Manager, John O’Brien, Manager of Voting Machines, Elizabeth Dell, Business Analyst, Division of Computer Services, and Geoffrey Pollich of the GRP Consulting Group believed the selection was consistent with a valid random selection process and was free of any and all mathematical bias.

### 3. Allegheny County Pre May 16, 2017 Primary Election ES&S iVotronic Firmware Verification Study Results

#### 3.1 February 27, 2017 Results

**08:30 – 9:45 am GRP Consulting Group and observers arrive at the Allegheny County warehouse facility to set up the verification work area; the Observer launches their randomization process**

1. GRP Consulting Group unboxed the CHIPMASTER 6000 XPU EEPROM Programmer; the analyst setup the device to a GRP Consulting Group laptop; County Employees, and the Observer brought 20 randomly picked iVotronics into the verification work area to begin the firmware verification procedure.

#### **09:47 Verify firmware procedure for iVotronic DRE #1**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5172773 was selected. (*ADA Device*)
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The AMD firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

#### **09:53 Verify firmware procedure for iVotronic DRE #2**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5180390 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display

**09:58 Verify firmware procedure for iVotronic DRE #3**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5185038 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:01 Verify firmware procedure for iVotronic DRE #4**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5182591 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:09 Verify firmware procedure for iVotronic DRE #5**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5176914 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:10 Verify firmware procedure for iVotronic DRE #6**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5177909 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:14 Verify firmware procedure for iVotronic DRE #7**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5187949 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:18 Verify firmware procedure for iVotronic DRE #8**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5176657 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:21 Verify firmware procedure for iVotronic DRE #9**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5177905 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:25 Verify firmware procedure for iVotronic DRE #10**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5182180 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:27 Verify firmware procedure for iVotronic DRE #11**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5183802 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:35 Verify firmware procedure for iVotronic DRE #12**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5181824 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:38 Verify firmware procedure for iVotronic DRE #13**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5177178 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was an Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The AMD firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:41 Verify firmware procedure for iVotronic DRE #14**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5184814 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:44 Verify firmware procedure for iVotronic DRE #15**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5182647 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:47 Verify firmware procedure for iVotronic DRE #16**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->5186773 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:49 Verify firmware procedure for iVotronic DRE #17**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5181881` was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:52 Verify firmware procedure for iVotronic DRE #18**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5184268 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:55 Verify firmware procedure for iVotronic DRE #19**

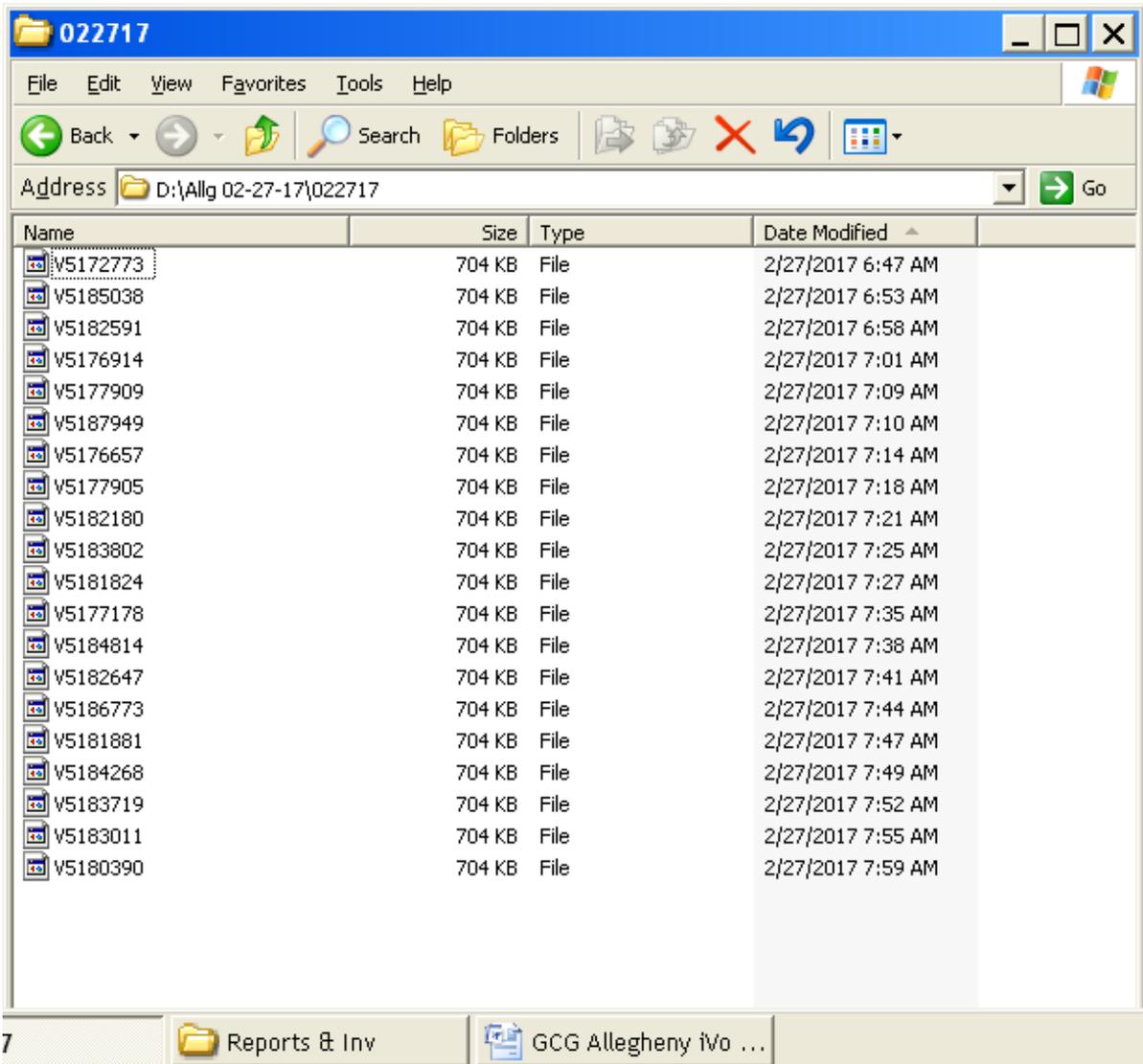
1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5183719 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .
5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

**10:59 Verify firmware procedure for iVotronic DRE #20**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V51783011 was selected.
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The Spansion firmware chip was successfully read into the PC and the hash code generated did match the trusted build hash code:  
(F6A8D4570988E2D159398503144E64D48F0CC69F) .

5. The iVotronic DRE was closed and powered by County employees to verify that the DRE was working properly with the correct firmware date, time, and version number showing on the initial display.

### 3.2 February 27, 2017 Collective Firmware Files



Mountain Time Zone

```
C:\WINDOWS\system32\cmd.exe
// File Checksum Integrity Verifier version 2.05.
//
f5259423eb42664dec7a32ba6a7cf0d85d13e752 022717\fciv.exe
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5172773
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5176657
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5176914
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5177178
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5177905
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5177909
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5180390
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5181824
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5181881
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5182180
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5182591
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5182647
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5183011
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5183719
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5183802
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5184268
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5184814
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5185038
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5186773
f6a8d4570988e2d159398503144e64d48f0cc69f 022717\U5187949
C:\>
```

## 4. FINDINGS

GRP Consulting Group was engaged by the Allegheny Division of Elections on site at 901 Pennsylvania Ave., Pittsburgh, PA on February 27, 2017; the purpose of the engagement was to apply the '*Allegheny County iVotronic Firmware Verification Protocol*' to verify the ES&S iVotronic firmware version 9.1.4.1 is resident on the Allegheny County iVotronic population.

On February 27, 2017, the GRP Consulting Group analyst completed the verification process of the firmware residing on twenty (20) Allegheny County ES&S iVotronics Direct-Recording Entry electronic voting machines chosen at random from the population of approximately 4700 iVotronic Direct-Recording Entry (DRE) electronic voting machines. It is the findings of GRP Consulting Group that the firmware version 9.1.4.1 residing on the twenty (20) randomly chosen DRE electronic voting machines, do represent the population, and furthermore; the firmware version as resident on the U1 designated Electronic Erasable Programmable Read Only Memory (EEPROM) chip is an exact, true, and unaltered version of the NVLAP federally certified trusted build as held in archive at SysTest Labs in Denver, Colorado and in escrow by the Pennsylvania Secretary of State in Harrisburg, PA.

## 5. APPENDIX A - TERMS AND ABBREVIATIONS

These terms and abbreviations will be used throughout this document:

**Table 2 - Matrix of Terms & Abbreviations**

Terms & Abbreviation	Description
Binary	The system of representing text or computer processor instructions by the use of a two digit number system. This system is composed of only the number zero, representing the off state, and the number one, representing the on state, combined in groups of 8. These groups of 8 bits can represent up to 256 different values and can correspond to a variety of different symbols, letters or instructions.
DOE	Division of Elections
DRE	Direct-Recording Entry - touch screen voting device
Firmware	Firmware is the programmable content of a hardware device, which can consist of machine language instructions for a processor or configuration settings for a fixed-function device, gate array or programmable logic device. A common feature of firmware is that it can be updated post-manufacturing, either electronically, or by replacing a storage medium such as a socketed memory chip.
Hardware	Hardware refers to the physical artifacts of a technology such as the physical components of a computer system
Hash Code	A hash function is a well-defined procedure or mathematical function for turning binary code into a relatively small integer that serves as a unique mathematical footprint.
ITA	Independent Test Authority
iVotronic	ES&S touch screen voting terminal
Protocol	Rules governing process conduct to a written instruction.
Trusted Build	Unaltered, true, and certified complied binary code.
SHA-1	Algorithm used to define the hash code value.
Software	Computer software is human interfacing computer programs, procedures and documentation that perform defined task on a computer system. The term includes application software that performs productive tasks for users, system software such as operating systems, which interface with hardware to provide the necessary services for application software.
Voting System Components	The units of equipment (server platform, DRE voting terminal, ballot scan device) when used together create a voting system.
Verification	The act of reviewing, inspecting, and/or testing to establish and document

Terms & Abbreviation	Description
	that a product, service, or system meets the regulatory, standard, or specification requirements.

---

End of Report

---

# County of Allegheny

## May 2017 Pre/**Post**-Election Air Gap Analysis of Election Tabulation Network

Research and Recommendations Provided by:



*a network infrastructure company*

Frank Calderone  
Security Practice Lead  
fcalderone@s4nets.com  
(412) 626-3132



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## **Overview**

The County of Allegheny has engaged solutions4networks to perform an “Air Gap” analysis of their elections tabulation network located in Pittsburgh, PA. solutions4networks has been tasked to verify the tabulation network is a stand-alone, isolated network and to assess the networks vulnerability to external access and/or tampering. In addition to the network, solutions4network has been asked to assess and document the general physical security of the warehouse building.

A pre-election onsite visit was made by Frank Calderone of solutions4networks on May 15, 2017. The purpose of this document is to report the results of the assessment, identify security concerns and to make recommendations for the remediation of these concerns. A post-Election onsite visit was made on May 18, 2017. This report covers both the Pre-Election assessment and the **Post-Election review**. Post-Election Review updates will be noted in **red**.

## **Site Contacts**

Elizabeth Dell

[Elizabeth.Dell@AlleghenyCounty.US](mailto:Elizabeth.Dell@AlleghenyCounty.US)

412-350-6059

Robin Gigliotti

[Robin.Gigliotti@AlleghenyCounty.US](mailto:Robin.Gigliotti@AlleghenyCounty.US)

412-350-6647

901 Pennsylvania Avenue

Pittsburgh, PA 15233

## **General Physical Security/Building Access**

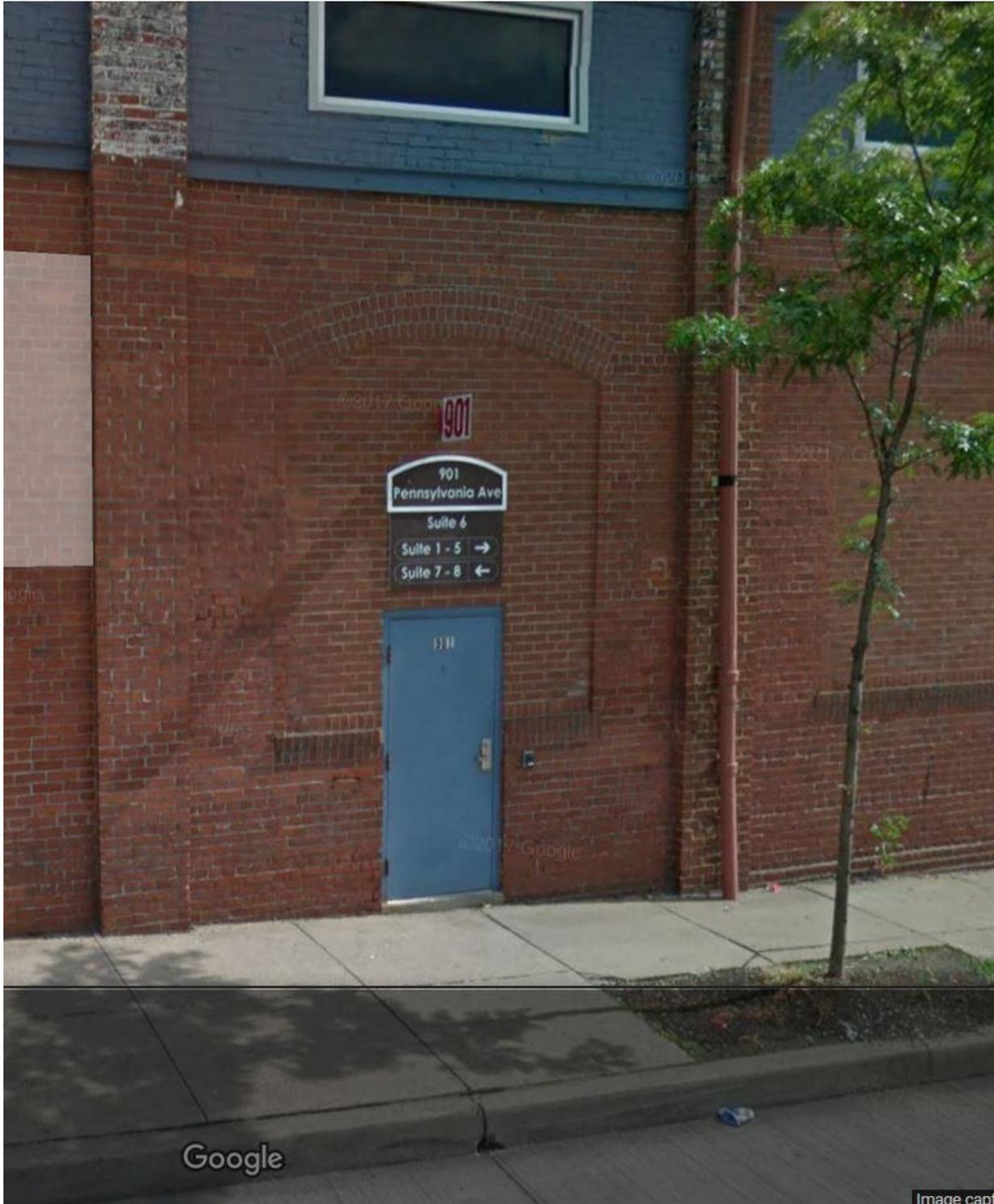
### **Physical Security/Building Access - No Issues Found**

There are several suites within the warehouse and there were no outside signs, which identified that it was County of Allegheny building space. The building phone at the main entrance also did not have any entries to dial for the County of Allegheny.

**Building Main Entrance:**



**Suite 901:**



05/15/17 - solutions4networks engineer, Frank Calderone, was met at suite 901 by Elizabeth Dell after a call was placed to her cell phone and was asked to provide a driver's license identification before access to the building was granted.



05/18/17 - solutions4networks engineer, Frank Calderone, was met at suite 901 by Elizabeth Dell after a call was placed to her cell phone and was asked to provide a driver's license identification before access to the building was granted.

Entrance from the street required badge card access or a key. The first door in the warehouse required a security code, but it was a physical, non-electronic lock.

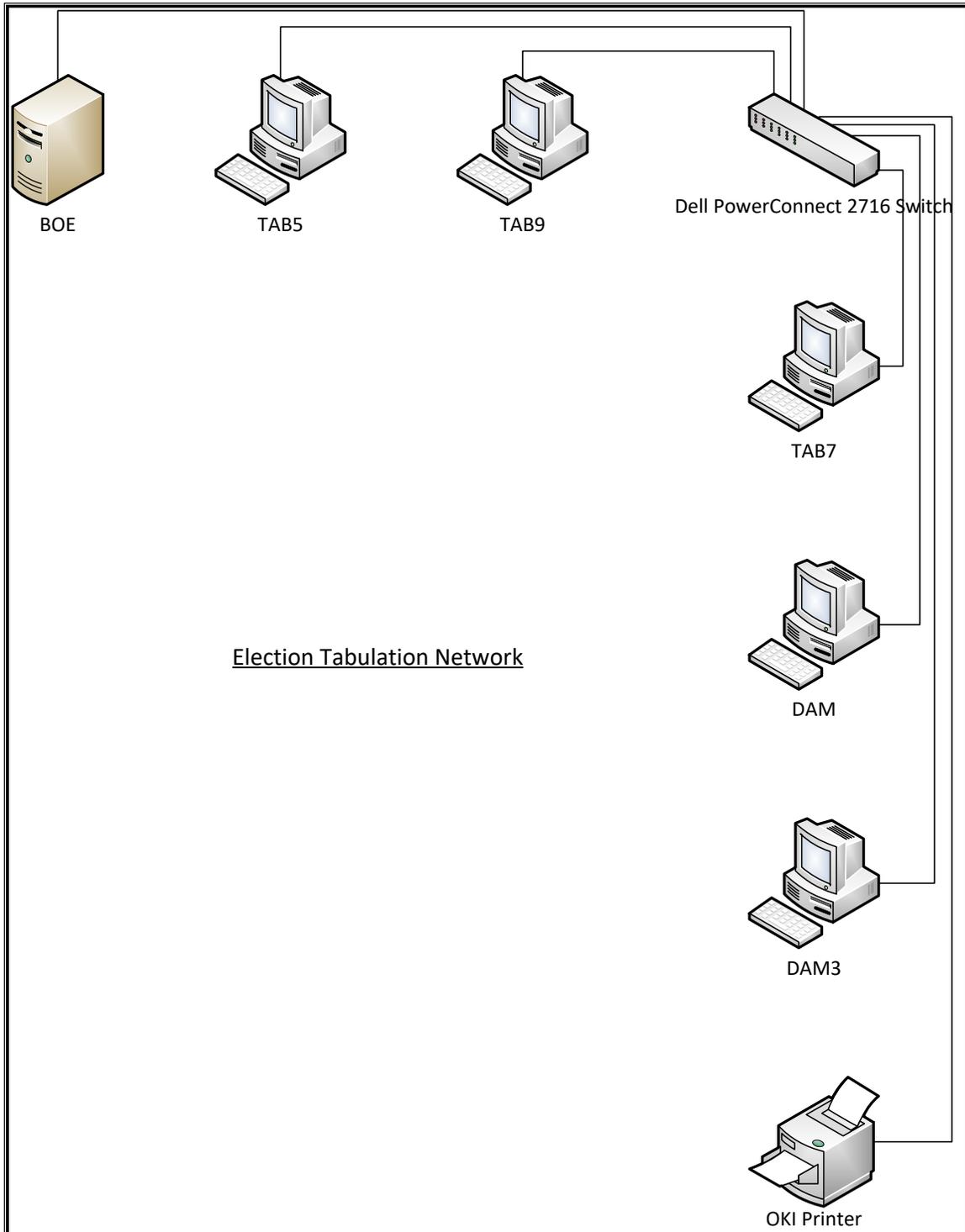
Security cameras were observed over the street entrance and inside the computer room. There is a sign in the tabulation network room that states "No Cell Phones are Permitted".

**Post-Election Review:** All items indicated above remained the same.

## Election Tabulations Network

### Network Overview

The solutions4networks engineer created the following network drawing based off the observed finding from the onsite physical inspections performed during the air gap analysis.





The Election Tabulation Network consisted of the following devices:

- 1 Dell PowerConnect 2716 Ethernet Switch
- 1 Windows Server
- 5 Client PC's
  - Two DAM (Dial Access Modem) Servers
  - 3 Windows XP Clients
- 1 Printer

### **Network Overview - Logical**

All the devices had an address from RFC1918 private network 192.168.1.0/24. The Windows Server with address 192.168.1.20 provided DHCP, DNS and WINS services. A default gateway of 192.168.1.1 was configured, but no such device was found on the network. All devices on the network could ping each other so the network was fully self-contained and each node was accessible to one another.

**Post-Election Review:** All items indicated above remained the same.

Dell Server PE-SC1420	Dell Optiplex 790	Dell Optiplex 790	Dell Optiplex 790	Dell Precision 890	Dell Optiplex 790	Okidata Printer B6300
BOE.elections.local	TAB5.elections.local	TAB9.elections.local	TAB7.elections.local	DAM.elections.local	DAM3.elections.local	
provides DHCP, WINS, DNS Services	DHCP enabled	DHCP enabled	DHCP enabled	static	DHCP enabled/	DHCP Reserved
Win2003 SP1	Win XP Pro ver 2002 SP3	Win XP Pro ver 2002 SP3	Win XP Pro ver 2002 SP3	WinXP SP3	WinXP SP3	
Dell Server PESC1420						
intel Xeon CPU 3.20 GHZ	Intel core i5-2400 CPU 3.1 GHZ	Intel core i5-2400 CPU 3.1 GHZ	Intel core i5-2400 CPU 3.1 GHZ	Intel Xeon 5110@1.60GHZ		
3.19 GHZ 2.00 GB RAM	3.09 GHZ, 3.16 GB Ram	3.09 GHZ, 3.16 GB Ram	3.09 GHZ, 3.16 GB Ram	1.60 GHZ, 2.00 GB Ram		
2GB Ram	4 GB Ram	4 GB Ram	4 GB Ram	2 GB Ram	2 GB Ram	
IP: 192.168.1.20 (static)	IP: 192.168.1.24	IP: 192.168.1.18	IP: 192.168.1.40	IP: 192.168.1.101	IP: 192.168.1.41	IP: 192.168.1.50
netmask: 255.255.255.0	netmask: 255.255.255.0	netmask: 255.255.255.0	netmask: 255.255.255.0	netmask: 255.255.255.0	netmask: 255.255.255.0	netmask: 255.255.255.0
gateway: 192.168.1.1	gateway: 192.168.1.1 (doesn't exist)	gateway: 192.168.1.1 (doesn't exist)	gateway: 192.168.1.1 (doesn't exist)		gateway: 192.168.1.1 (doesn't exist)	
DNS: 192.168.1.20	DHCP Server: 192.168.1.20	DHCP Server: 192.168.1.20	DHCP Server: 192.168.1.20		DHCP Server: 192.168.1.20	
WINS: 192.168.1.20	DNS Server: 192.168.1.20	DNS Server: 192.168.1.20	DNS Server: 192.168.1.20	DNS Server: 192.168.1.20	DNS Server: 192.168.1.20	
	Wins Server: 192.168.1.20	Wins Server: 192.168.1.20	Wins Server: 192.168.1.20			
Conexant 56k modem						
wired keyboard	wired keyboard	wired keyboard	wired keyboard	wired keyboard	wired keyboard	
wired mouse	wired mouse	wired mouse	wired mouse	wired mouse	wired mouse	
3.5 floppy disk						
cd drive	RW/DVD	RW/DVD	RW/DVD	RW/DVD	RW/DVD	
tape drive				lomega Zip 250		
com1/com2	com1/com3	com1/com3	com1/com3	com1-10	com1/com2	
Dell PowerVault 100T DAT72						
Intel Pro 1000 MT LAN connection	Gigabit LAN connection	Gigabit LAN connection	Gigabit LAN connection	Broadcom Gigabit Controller		
Remote Desktop Enabled. Allowed users ELECTIONS\SBS Remote Operators	Remote Assistance is enabled	Remote Assistance is enabled	Remote Assistance is enabled	Remote Assistance is enabled	Remote Assistance is enabled	
	RDP disabled	RDP disabled	RDP disabled	RDP disabled	RDP disabled	
	connected to printer	connected to printer	connected to printer	connected to printer		



## **Network Overview - Physical**

Each device on the network was inspected Pre- and Post-election for physical attachments and are noted below.

### ***BOE.elections.local***

Front: 2 USB ports - empty

1 Tape Drive – empty

1 CD/RW – empty

Rear: 2 USB – empty

2 serial/com ports – empty

1 LPT port – empty

PS2 Mouse/Keyboard

VGA port to monitor

LAN connection to Dell Switch

**Post-Election Review: 1 USB connection on rear has a connection to a USB Seagate backup portable drive.**

### ***TAB5.elections.local***

Front: 4 USB ports – empty

CD/RW - empty

Rear: 3 USB ports – empty

USB Keyboard

USB Mouse

VGA Monitor

Serial/COM connection to tabulation cartridge voter device

USB cable not connected to anything

LAN connection to Dell Switch

**Post-Election Review: No Changes.**

### ***TAB9.elections.local***

Front: 4 USB ports – empty

CD/RW – empty



Rear: 3 USB – empty

USB Keyboard

USB Mouse

VGA Monitor

Serial/COM connection to flatbed voter machine

USB connection to tabulation cartridge voter device

LAN connection to Dell Switch

**Post-Election Review: Serial/Com connection to flatbed voter machine removed.**

***TAB7.elections.local***

Front: 4 USB ports – empty

CD/RW – empty

Rear: 3 USB – empty

USB Keyboard

USB Mouse

VGA Monitor

USB cable not connected to anything

LAN connection to Dell Switch

**Post-Election Review: No Changes.**

***DAM.elections.local***

Front: 2 USB – empty

CD/RW - empty

Floppy – empty

Rear: Octal Serial Cable to Modem bank

USB Keyboard

USB Mouse

VGA Monitor



LAN connection to Dell Switch

### ***DAM3.elections.local***

Front: 4 USB Ports – empty

CD/DVD – empty

Rear: 2 USB connected to 2 Digi Rapidport /4 modems

USB Keyboard

USB Mouse

VGA Monitor

LAN Connection to Dell Switch

### **Air Gap Analysis**

No issues found.

### **External Connections on Client Devices**

The only outside (external) connections found on the network were the dial-up modems on the 2 DAM servers which are part of the application and are outbound only. No other external connections were found on the network. Each server/workstation was tested and none of them had Internet access. The 7 Ethernet connections on the Dell 2716 switch were traced to valid devices. No other cables were connected to the Dell Switch and no loose cables were observed near the switch. The solutions4networks engineer asked if there was a valid login for the Dell 2716 switch but was told that no one was aware of one.

### **No Wireless Adapters or Bluetooth Capability Found on Client Devices**

Each PC was physically inspected for the presence of a wireless adapter or Bluetooth adapter and none were found.

The Windows “Device Manager” of each device was also inspected for the presence of any wireless devices.

### **No Wireless Keyboards and Mice**

The keyboards and mice all had physical wires connected to the computers.

**Post-Election Review:** All items indicated above remained the same.

### **Air Gap Network Intact - Recommendations for Improvement**

solutions4networks did not find any problems with the Election Tabulation Network, but have these recommendations to improve security of the network:



### **Client Operating Systems – Update the Clients to a supported OS.**

The client PC's were found to be running Windows XP which is no longer supported by Microsoft. These may be more vulnerable to attack if the network was ever compromised. The clients also had their internal Firewall disabled. They did have Symantec Anti-virus installed, but the definitions were out of date. If this remains a closed air gapped network this should be a viable OS.

### **Server Operating System – Update the Server Operating System.**

The server operating system is running Windows Server 2003, which is end of life July 2015. Any OS that is end of life is more vulnerable to attack if the network is ever compromised as it is no longer updated with any security patches. If this remains a closed air gapped network this should be a viable OS.

### **Remote Assistance Enabled.**

Remote Assistance is enabled on the 3 clients and 2 DAM servers. This serves no positive purpose in a closed network environment where each machine is physically accessible and should be disabled in the event the network is ever compromised.

### **Remote Desktop is Enabled.**

Remoted Desktop is enabled on the BOE server. Once again, this does not serve any positive purpose in a closed local network and should be disabled in the event the network is ever compromised.

### **Windows Update Enabled/None Selected.**

The two DAM servers are configured differently from the rest of the computers on the network. Consistency should be the norm. All other computers have Auto Updates turned off. DAM1 has nothing selected and DAM2 has Auto Updates enabled and set for 3:00AM. Since this is a closed network and the OSes that are running are end of life there isn't a need to have Windows Update enabled.

### **Lock Physical Access to the Dell PowerConnect 2716**

The Dell switch is easily accessible on the countertop. A locked cabinet would make it more difficult to connect an external cable. It is also recommended to disable any unused ports on the Dell Switch or move the unused ports to a different VLAN from the production network, but since the login is unknown a locked cabinet would suffice. Since the password is currently unknown and this is a flat network for ease of networking on the Dell switch there is the ability to reset it to unmanaged mode which would put all ports in Vlan 1.

### **Remove the Default Gateway Option**

The DHCP server is giving the clients a default gateway of 192.168.1.1 even though no device exists. Removing the default gateway completely would make it more difficult for the clients to communicate with external networks. There is some inconsistency on the network in that not all the clients are set up for DHCP. Either set them all up for DHCP or set them all up for Static. For a more secure environment it would be better to disable DHCP on the BOE server entirely and configure static IPs on all the clients that way if someone were to ever connect to the Dell switch they would never obtain a DHCP address but would have to know the network addressing to hard code their PC.

**County of Allegheny,  
Commonwealth of Pennsylvania**

Parallel Test Report  
Municipal Primary Election

May 16, 2017



**BAKER TILLY**

Candor. Insight. Results.

# County of Allegheny, Commonwealth of Pennsylvania

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Mr. William McKain, County Manager  
County of Allegheny, Commonwealth of Pennsylvania  
Office of the County Manager  
436 Grant Street  
Room 119 Courthouse  
Pittsburgh, PA 15219

To assist with your evaluation of County of Allegheny's electronic voting machines, we randomly selected an election day polling location, scripted votes for parallel testing, and tested the functionality of the Direct Recording Electronic equipment, ES&S iVotronic voting machines. The test was performed on May 16, 2017, the date of the municipal primary election. The scripting component included creating hypothetical ballots for parallel testing by mimicking voter behavior and voting patterns from data and statistics provided by County of Allegheny, Department of Elections, for Precinct 1185, Swissvale, District 3. Our engagement was performed in accordance with the consulting standards prescribed by the American Institute of Certified Public Accountants.

The results of the work performed indicate that the three voting machines tested, accurately recorded and counted the results of 156 ballots cast for the selected polling location. Our results are supported by visual evidence that the electronic voting machine recorded and maintained the vote counts properly. At the beginning of the process, we verified that the zero tape did in fact contain zero vote counts for each candidate in each race. Testing was done under video surveillance, capturing votes as they were entered into each voting machine from the scripted ballots. At the end of the election process, we compared the vote totals in the script, the Master Personalized Electronic Ballot (PEB), the Final Results Tape, and Flash Cards from the machines tested and found them to be in agreement. There were no discrepancies between the number of ballots cast, ballots cast for a particular party, votes for a particular candidate, the number of under-votes, the number of canceled votes, and the audio ballot cast for the visually impaired.

Because of its special purpose, this report is not suited for any purpose other than to assist you in your evaluation and, as such, is intended only for your internal use.

*Baker Tilly Virchow Krause, LLP*

Pittsburgh, Pennsylvania  
May 16, 2017

**COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
RECONCILIATION OF VOTE TOTALS IN SCRIPT TO FINAL RESULTS TAPE, FLASH CARDS AND MASTER PEB  
MAY 16, 2017**

PRECINCT: SWISSVALE DISTRICT 3

	Voter Terminal Data per Script				Final Results Tape	Flash Card Data (from Precinct Report)				Master PEB Data	Differences
	V5181189	V5182562	V5172537	Total		V5181189	V5182562	V5172537	Total		
Public Count	91	0	0	91	91	91	0	0	91	91	0
	0	64	0	64	64	0	64	0	64	64	0
	0	0	1	1	1	0	0	1	1	1	0
	91	64	1	156	156	91	64	1	156	156	0
Justice of the Supreme Court											
Dwayne Woodruff	81	55	1	137	137	81	55	1	137	137	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Democratic</b>	81	55	1	137	137	81	55	1	137	137	0
Sallie Mundy	10	9	0	19	19	10	9	0	19	19	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Republican</b>	10	9	0	19	19	10	9	0	19	19	0
Judge of the Superior Court											
Carolyn H. Nichols	63	42	1	106	106	63	42	1	106	106	0
Geoff Moulton	66	44	1	111	111	66	44	1	111	111	0
Maria McLaughlin	69	45	0	114	114	69	45	0	114	114	0
Debbie Kunselman	64	43	1	108	108	64	43	1	108	108	0
Bill Caye	62	46	1	109	109	62	46	1	109	109	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Democratic</b>	324	220	4	548	548	324	220	4	548	548	0
Emil Giordano	6	5	0	11	11	6	5	0	11	11	0
Craig Stedman	8	8	0	16	16	8	8	0	16	16	0
Wade A. Kagarise	10	7	0	17	17	10	7	0	17	17	0
Mary Murray	9	9	0	18	18	9	9	0	18	18	0
Paula A. Patrick	7	7	0	14	14	7	7	0	14	14	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Republican</b>	40	36	0	76	76	40	36	0	76	76	0

**COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA**  
**RECONCILIATION OF VOTE TOTALS IN SCRIPT TO FINAL RESULTS TAPE, FLASH CARDS AND MASTER PEB**  
**MAY 16, 2017**

PRECINCT: SWISSVALE DISTRICT 3

	Voter Terminal Data per Script				Final Results Tape	Flash Card Data (from Precinct Report)				Master PEB Data	Differences
	V5181189	V5182562	V5172537	Total		V5181189	V5182562	V5172537	Total		
<b>Judge of the Commonwealth Court</b>											
Timothy Barry	27	18	0	45	45	27	18	0	45	45	0
Joe Cosgrove	32	22	1	55	55	32	22	1	55	55	0
Ellen Ceisler	25	19	0	44	44	25	19	0	44	44	0
Todd Eagen	26	13	0	39	39	26	13	0	39	39	0
Irene M. Clark	23	17	1	41	41	23	17	1	41	41	0
Bryan Barbin	29	21	0	50	50	29	21	0	50	50	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Democratic</b>	<b>162</b>	<b>110</b>	<b>2</b>	<b>274</b>	<b>274</b>	<b>162</b>	<b>110</b>	<b>2</b>	<b>274</b>	<b>274</b>	<b>0</b>
<b>Paul Lalley</b>											
Paul Lalley	10	9	0	19	19	10	9	0	19	19	0
Christine Fizzano Cannon	10	9	0	19	19	10	9	0	19	19	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Republican</b>	<b>20</b>	<b>18</b>	<b>0</b>	<b>38</b>	<b>38</b>	<b>20</b>	<b>18</b>	<b>0</b>	<b>38</b>	<b>38</b>	<b>0</b>
<b>Judge of the Court of Common Pleas</b>											
Patrick Connelly	31	20	1	52	52	31	20	1	52	52	0
David Lee Spurgeon	24	17	0	41	41	24	17	0	41	41	0
Pauline Calabrese	26	18	0	44	44	26	18	0	44	44	0
Rosemary Crawford	24	19	1	44	44	24	19	1	44	44	0
Mary C. McGinley	29	21	0	50	50	29	21	0	50	50	0
Jessica Lynch	28	15	0	43	43	28	15	0	43	43	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Democratic</b>	<b>162</b>	<b>110</b>	<b>2</b>	<b>274</b>	<b>274</b>	<b>162</b>	<b>110</b>	<b>2</b>	<b>274</b>	<b>274</b>	<b>0</b>
<b>Patrick Connelly</b>											
Patrick Connelly	3	2	0	5	5	3	2	0	5	5	0
Mary C. McGinley	3	1	0	4	4	3	1	0	4	4	0
Jessica Lynch	3	2	0	5	5	3	2	0	5	5	0
Rosemary Crawford	3	4	0	7	7	3	4	0	7	7	0
David Lee Spurgeon	5	4	0	9	9	5	4	0	9	9	0
Pauline Calabrese	3	5	0	8	8	3	5	0	8	8	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Republican</b>	<b>20</b>	<b>18</b>	<b>0</b>	<b>38</b>	<b>38</b>	<b>20</b>	<b>18</b>	<b>0</b>	<b>38</b>	<b>38</b>	<b>0</b>
<b>Sheriff</b>											
Bill Mullen	37	29	0	66	66	37	29	0	66	66	0
George Satler	44	26	1	71	71	44	26	1	71	71	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Democratic</b>	<b>81</b>	<b>55</b>	<b>1</b>	<b>137</b>	<b>137</b>	<b>81</b>	<b>55</b>	<b>1</b>	<b>137</b>	<b>137</b>	<b>0</b>
<b>Write-in: (C) Charlie</b>											
Write-in: (C) Charlie	2	1	0	3	3	2	1	0	3	3	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Republican</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>0</b>

**COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA**  
**RECONCILIATION OF VOTE TOTALS IN SCRIPT TO FINAL RESULTS TAPE, FLASH CARDS AND MASTER PEB**  
**MAY 16, 2017**

PRECINCT: SWISSVALE DISTRICT 3

	Voter Terminal Data per Script				Final Results Tape	Flash Card Data (from Precinct Report)				Master PEB Data	Differences
	V5181189	V5182562	V5172537	Total		V5181189	V5182562	V5172537	Total		
<b>Member of County Council</b>											
Charles Martoni	81	55	1	137	137	81	55	1	137	137	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Democratic</b>	<b>81</b>	<b>55</b>	<b>1</b>	<b>137</b>	<b>137</b>	<b>81</b>	<b>55</b>	<b>1</b>	<b>137</b>	<b>137</b>	<b>0</b>
<b>Michael Dell</b>											
Michael Dell	10	9	0	19	19	10	9	0	19	19	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Republican</b>	<b>10</b>	<b>9</b>	<b>0</b>	<b>19</b>	<b>19</b>	<b>10</b>	<b>9</b>	<b>0</b>	<b>19</b>	<b>19</b>	<b>0</b>
<b>Magisterial District Judge</b>											
<b>Thomas P. Caulfield</b>											
Thomas P. Caulfield	81	55	1	137	137	81	55	1	137	137	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Democratic</b>	<b>81</b>	<b>55</b>	<b>1</b>	<b>137</b>	<b>137</b>	<b>81</b>	<b>55</b>	<b>1</b>	<b>137</b>	<b>137</b>	<b>0</b>
<b>Thomas P. Caulfield</b>											
Thomas P. Caulfield	10	9	0	19	19	10	9	0	19	19	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Republican</b>	<b>10</b>	<b>9</b>	<b>0</b>	<b>19</b>	<b>19</b>	<b>10</b>	<b>9</b>	<b>0</b>	<b>19</b>	<b>19</b>	<b>0</b>
<b>School Director</b>											
<b>Paige Strasbaugh</b>											
Paige Strasbaugh	46	26	0	72	72	46	26	0	72	72	0
Valerie Annese	35	29	1	65	65	35	29	1	65	65	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Democratic</b>	<b>81</b>	<b>55</b>	<b>1</b>	<b>137</b>	<b>137</b>	<b>81</b>	<b>55</b>	<b>1</b>	<b>137</b>	<b>137</b>	<b>0</b>
<b>Valerie Annese</b>											
Valerie Annese	6	6	0	12	12	6	6	0	12	12	0
Paige Strasbaugh	4	3	0	7	7	4	3	0	7	7	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Republican</b>	<b>10</b>	<b>9</b>	<b>0</b>	<b>19</b>	<b>19</b>	<b>10</b>	<b>9</b>	<b>0</b>	<b>19</b>	<b>19</b>	<b>0</b>
<b>Mayor</b>											
<b>Deneen Swartzwelder</b>											
Deneen Swartzwelder	81	55	1	137	137	81	55	1	137	137	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Democratic</b>	<b>81</b>	<b>55</b>	<b>1</b>	<b>137</b>	<b>137</b>	<b>81</b>	<b>55</b>	<b>1</b>	<b>137</b>	<b>137</b>	<b>0</b>
<b>Write-in: (D) Delta</b>											
Write-in: (D) Delta	2	1	0	3	3	2	1	0	3	3	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Republican</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>0</b>

**COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA**  
**RECONCILIATION OF VOTE TOTALS IN SCRIPT TO FINAL RESULTS TAPE, FLASH CARDS AND MASTER PEB**  
**MAY 16, 2017**

PRECINCT: SWISSVALE DISTRICT 3

	Voter Terminal Data per Script				Final Results Tape	Flash Card Data (from Precinct Report)				Master PEB Data	Differences
	V5181189	V5182562	V5172537	Total		V5181189	V5182562	V5172537	Total		
<b>Tax Collector</b>											
Thomas S. Barr, Jr.	81	55	1	137	137	81	55	1	137	137	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Democratic</b>	<b>81</b>	<b>55</b>	<b>1</b>	<b>137</b>	<b>137</b>	<b>81</b>	<b>55</b>	<b>1</b>	<b>137</b>	<b>137</b>	<b>0</b>
<b>Write-in: (E) Echo</b>											
Write-in	2	1	0	3	3	2	1	0	3	3	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Republican</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>0</b>
<b>Member of Council</b>											
Abigail Salisbury	49	35	1	85	85	49	35	1	85	85	0
Sean L. Ruppert	53	35	0	88	88	53	35	0	88	88	0
David Petrarca	59	41	1	101	101	59	41	1	101	101	0
Julie A. Grose	61	36	1	98	98	61	36	1	98	98	0
Martin F. Busch	55	42	0	97	97	55	42	0	97	97	0
Michele Kotula Stanton	47	31	1	79	79	47	31	1	79	79	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Democratic</b>	<b>324</b>	<b>220</b>	<b>4</b>	<b>548</b>	<b>548</b>	<b>324</b>	<b>220</b>	<b>4</b>	<b>548</b>	<b>548</b>	<b>0</b>
<b>Write-in: (F) Foxtrot</b>											
Write-in	2	1	0	3	3	2	1	0	3	3	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Republican</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>0</b>
<b>Judge of Election</b>											
Write-in: (A) Alpha	8	7	0	15	15	8	7	0	15	15	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Democratic</b>	<b>8</b>	<b>7</b>	<b>0</b>	<b>15</b>	<b>15</b>	<b>8</b>	<b>7</b>	<b>0</b>	<b>15</b>	<b>15</b>	<b>0</b>
<b>Write-in: (G) Golf</b>											
Write-in	2	1	0	3	3	2	1	0	3	3	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Republican</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>0</b>
<b>Inspector of Election</b>											
Write-in: (B) Bravo	9	7	0	16	16	9	7	0	16	16	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Democratic</b>	<b>9</b>	<b>7</b>	<b>0</b>	<b>16</b>	<b>16</b>	<b>9</b>	<b>7</b>	<b>0</b>	<b>16</b>	<b>16</b>	<b>0</b>
<b>Write-in: (H) Hotel</b>											
Write-in	2	1	0	3	3	2	1	0	3	3	0
Write-in	0	0	0	0	0	0	0	0	0	0	0
<b>Total Republican</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>0</b>

## **Exhibit A**

The parallel testing work performed was as follows:

### **Control and Security Procedures**

1. We randomly selected a precinct.
2. We selected three ES&S iVotronic voting machines with "tamper-evident" seals from the County of Allegheny warehouse. We test-voted on each of the ES&S iVotronic voting machines.
3. We created a script for parallel testing to mimic voter behavior and voting patterns for the polling location randomly selected.
4. We obtained and secured the Master Personalized Electronic Ballot (PEB) and two Supervisor PEBs. The Master PEB is used to open voting machines and to print the zero tape (a "zero-vote" count tape from the ES&S iVotronic voting machines) before electronic balloting starts, and the Supervisor PEB is used to activate an ES&S iVotronic voting machine for each voter. Each PEB was secured in a locked file in our office prior to election day to prevent access and tampering.
5. We set up parallel test equipment where all actions could be visibly recorded by video surveillance. One video camera was set up to document the votes cast on each of the ES&S iVotronic voting machines selected.
6. We conducted the parallel test in a low traffic area to avoid interruptions.

### **Casting Votes**

1. Ballots were scripted to ensure that "voter turnout" in the mock election closely approximated the projected voter turnout for the randomly selected polling location.
2. The video camera was focused on the ES&S iVotronic voting machine screen in a manner that votes could be seen as they were entered.
3. Actual voting was conducted as follows:
  - First team member: Called out each vote as marked on the ballot script.
  - Second team member: As each vote was called, entered the vote in the ES&S iVotronic voting machine.
  - Second team member: Called back the votes cast as they appeared on the summary screen(s) on the ES&S iVotronic voting machine.
  - First team member: As the second team member called back the votes, verified that the vote was cast as it was read, and made a notation on the script.

The terminals closed at 8:00 PM. The final results tape was printed and the flash card from each voting machine was removed. Video camera tapes were marked according to the applicable voting machine and the time votes were entered into the voting machine selected for testing.

Terminal S/N: V5172537->  
PEB S/N PS223792-\_ (FMW 1.07)  
Software Version 9.1.4.1  
Created 02/01/06 8:50  
Copyright ES&S, Inc. 1993-2005  
All Rights Reserved  
Diagnostic check completed: OK  
iVotronic I

2017 Municipal Primary  
SWISSVALE DIST 3  
POLLING LOCATION ZERO TAPE

Public Count Statistics

Total Ballots Cast: 0  
Total Ballots Counted: 0

Number of Terminals Opened: 3

Individual Voter Terminal Data

S/N V5181189

Public Count: 0  
Protective Count: 3805

OPENED 07:05:21 05/16/2017

NOT CLOSED

S/N V5182562

Public Count: 0  
Protective Count: 4377

OPENED 07:07:39 05/16/2017

NOT CLOSED

S/N V5172537

Public Count: 0  
Protective Count: 3510

OPENED 07:11:03 05/16/2017

NOT CLOSED

\*\*\*\*\*

PRECINCT: SWISSVALE DIST 3

Public Count: 0

Party Counts

Democratic 0

Republican 0

Ballot Style Counts

DEM - Ballot Style #1185 0

REP - Ballot Style #1185 0

DEM - JUSTICE OF THE SUPREME COURT

(Vote for 1) Total: 0

DEM-Dwayne Woodruff 0

>Write-ins in above contest: 0

UnderVotes For Above contest: 0

DEM - JUDGE OF THE SUPERIOR COURT

(Vote for 4) Total: 0

DEM-Carolyn H. Nichols 0

DEM-Geoff Moulton 0

DEM-Maria McLaughlin 0

DEM-Debbie Kunselman 0

DEM-Bill Caye 0

>Write-ins in above contest: 0

UnderVotes For Above contest: 0

DEM - JUDGE OF THE COMMONWEALTH COURT		
(Vote for 2)	Total:	0
DEM-Timothy Barry		0
DEM-Joe Cosgrove		0
DEM-Ellen Ceisler		0
DEM-Todd Eagen		0
DEM-Irene M. Clark		0
DEM-Bryan Barbin		0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
DEM - JUDGE OF THE COURT OF COMMON PLEAS		
(Vote for 2)	Total:	0
DEM-Patrick Connelly		0
DEM-David Lee Spurgeon		0
DEM-Pauline Calabrese		0
DEM-Rosemary Crawford		0
DEM-Mary C. McGinley		0
DEM-Jessica Lynch		0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
DEM - COUNTY SHERIFF		
(Vote for 1)	Total:	0
DEM-Bill Mullen		0
DEM-George Satler		0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
DEM - CNTCLO8 Member of County Council 4		
(Vote for 1)	Total:	0
DEM-Charles Martoni		0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
DEM - MAG0208 MAGISTERIAL DISTRICT JUDGE		
(Vote for 1)	Total:	0
DEM-Thomas P. Caulfield		0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
DEM - SCH0076 SCHOOL DIRECTOR 4		
(Vote for 1)	Total:	0
DEM-Paige Strasbaugh		0
DEM-Valerie Annese		0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
DEM - MUN210 MAYOR		
(Vote for 1)	Total:	0
DEM-Deneen Swartzwelder		0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0

DEM - MUN210 TAX COLLECTOR  
(Vote for 1) Total: 0  
DEM-Thomas S. Barr, Jr. 0

>Write-ins in above contest: 0  
UnderVotes For Above contest: 0

DEM - MUN210 MEMBER OF COUNCIL4  
(Vote for 4) Total: 0  
DEM-Abigail Salisbury 0  
DEM-Sean L. Ruppert 0  
DEM-David Petrarca 0  
DEM-Julie A. Grose 0  
DEM-Martin F. Busch 0  
DEM-Michele Kotula Stanton 0

>Write-ins in above contest: 0  
UnderVotes For Above contest: 0

DEM - E0DJ0E DEM Judge of Election  
(Vote for 1) Total: 0

>Write-ins in above contest: 0  
UnderVotes For Above contest: 0

DEM - E0DI0E DEM WI Inspector of Electio  
(Vote for 1) Total: 0

>Write-ins in above contest: 0  
UnderVotes For Above contest: 0

REP - JUSTICE OF THE SUPREME COURT  
(Vote for 1) Total: 0  
REP-Sallie Mundy 0

>Write-ins in above contest: 0  
UnderVotes For Above contest: 0

REP - JUDGE OF THE SUPERIOR COURT  
(Vote for 4) Total: 0  
REP-Emil Giordano 0  
REP-Craig Stedman 0  
REP-Wade A. Kagarise 0  
REP-Mary Murray 0  
REP-Paula A. Patrick 0

>Write-ins in above contest: 0  
UnderVotes For Above contest: 0

REP - JUDGE OF THE COMMONWEALTH COURT  
(Vote for 2) Total: 0  
REP-Paul Lalley 0  
REP-Christine Fizzano Cannon 0

>Write-ins in above contest: 0  
UnderVotes For Above contest: 0

REP - JUDGE OF THE COURT OF COMMON PLEAS		
(Vote for 2)	Total:	0
REP-Patrick Connelly		0
REP-Mary C. McGinley		0
REP-Jessica Lynch		0
REP-Rosemary Crawford		0
REP-David Lee Spurgeon		0
REP-Pauline Calabrese		0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
REP - COUNTY SHERIFF		
(Vote for 1)	Total:	0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
REP - CNTCL08 Member of County Council 4		
(Vote for 1)	Total:	0
REP-Michael Dell		0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
REP - MAG0208 MAGISTERIAL DISTRICT JUDGE		
(Vote for 1)	Total:	0
REP-Thomas P. Caulfield		0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
REP - SCH0076 SCHOOL DIRECTOR 4		
(Vote for 1)	Total:	0
REP-Valerie Annese		0
REP-Paige Strasbaugh		0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
REP - MUN210 MAYOR		
(Vote for 1)	Total:	0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
REP - MUN210 TAX COLLECTOR		
(Vote for 1)	Total:	0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
REP - MUN210 MEMBER OF COUNCIL4		
(Vote for 4)	Total:	0
>Write-ins in above contest:		0
UnderVotes For Above contest:		0

REP - E0RJ0E Judge of Election  
(Vote for 1) Total: 0

>Write-ins in above contest: 0  
UnderVotes For Above contest: 0

REP - E0RI0E Inspector of Elections  
(Vote for 1) Total: 0

>Write-ins in above contest: 0  
UnderVotes For Above contest: 0

Time/Date: 07:15:00 05/16/2017

Signature: 

Signature: 

Signature: 

Signature: 

COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
 ELECTION, TUESDAY, MAY 16, 2017  
 SUMMARY OF SCRIPTS

REPUBLICAN		Justice of the Supreme Court (Vote for One)		Judge of the Superior Court (Vote for not more than Four)						Judge of the Commonwealth Court (Vote for not more than Two)		
Public Count #	Mundy	Write-In	Giordano	Stedman	Kagarise	Murray	Patrick	Write-In	Lalley	Cannon	Write-in	
Machine 1 0003559	10	10	0	6	8	10	9	7	0	10	10	0
Machine 2 0003558	9	9	0	5	8	7	9	7	0	9	9	0
<b>Total</b>	<b>19</b>	<b>19</b>	<b>0</b>	<b>11</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>14</b>	<b>0</b>	<b>19</b>	<b>19</b>	<b>0</b>

DEMOCRAT		Justice of the Supreme Court (Vote for One)		Judge of the Superior Court (Vote for not more than Four)						Judge of the Commonwealth Court (Vote for not more than Two)						
Public Count #	Woodruff	Write-In	Nichols	Moulton	McLaughlin	Kunselman	Caye	Write-In	Barry	Cosgrove	Ceisler	Eagen	Clark	Barbin	Write-in	
Machine 1 0003559	81	81	0	63	66	69	64	62	0	27	32	25	26	23	29	0
Machine 2 0003558	55	55	0	42	44	45	43	46	0	18	22	19	13	17	21	0
Machine 3 0003557	1	1	0	1	1	0	1	1	0	0	1	0	0	1	0	0
<b>Total</b>	<b>137</b>	<b>137</b>	<b>0</b>	<b>106</b>	<b>111</b>	<b>114</b>	<b>108</b>	<b>109</b>	<b>0</b>	<b>45</b>	<b>55</b>	<b>44</b>	<b>39</b>	<b>41</b>	<b>50</b>	<b>0</b>

COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
ELECTION, TUESDAY, MAY 16, 2017  
SUMMARY OF SCRIPTS

REPUBLICAN		Judge of the Court of Common Pleas (Vote for not more than Two)							Sheriff (Vote for One)		Member of County Council (Vote for One)		Magisterial District Judge (Vote for One)		School Director (Vote for One)		
	Public Count #	Connelly	McGinley	Lynch	Crawford	Spurgeon	Calabrese	Write-in	(C) Charlie	Write-in	Dell	Write-in	Caulfield	Write-in	Annese	Strasbaugh	Write-in
Machine 1 0003559	10	3	3	3	3	5	3	0	2	0	10	0	10	0	6	4	0
Machine 2 0003558	9	2	1	2	4	4	5	0	1	0	9	0	9	0	6	3	0
<b>Total</b>	<b>19</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>7</b>	<b>9</b>	<b>8</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>19</b>	<b>0</b>	<b>19</b>	<b>0</b>	<b>12</b>	<b>7</b>	<b>0</b>

DEMOCRAT		Judge of the Court of Common Pleas (Vote for not more than Two)							Sheriff (Vote for One)			Member of County Council (Vote for One)		Magisterial District Judge (Vote for One)		School Director (Vote for One)		
	Public Count #	Connelly	Spurgeon	Calabrese	Crawford	McGinley	Lynch	Write-in	Mullen	Satler	Write-in	Martoni	Write-in	Caulfield	Write-in	Strasbaugh	Annese	Write-in
Machine 1 0003559	81	31	24	26	24	29	28	0	37	44	0	81	0	81	0	46	35	0
Machine 2 0003558	55	20	17	18	19	21	15	0	29	26	0	55	0	55	0	26	29	0
Machine 3 0003557	1	1	0	0	1	0	0	0	0	1	0	1	0	1	0	0	1	0
<b>Total</b>	<b>137</b>	<b>52</b>	<b>41</b>	<b>44</b>	<b>44</b>	<b>50</b>	<b>43</b>	<b>0</b>	<b>66</b>	<b>71</b>	<b>0</b>	<b>137</b>	<b>0</b>	<b>137</b>	<b>0</b>	<b>72</b>	<b>65</b>	<b>0</b>

COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
ELECTION, TUESDAY, MAY 16, 2017  
SUMMARY OF SCRIPTS

REPUBLICAN		Mayor (Vote for One)		Tax Collector (Vote for One)		Member of Council (Vote for One)		Judge of Election (Vote for One)		Inspector of Election (Vote for One)	
Public Count #	(D) Delta	Write-in	(E) Echo	Write-in	(F) Foxtrot	Write-in	(G) Golf	Write-in	(H) Hotel	Write-in	
Machine 1 0003559	10	2	0	2	0	2	0	2	0	2	0
Machine 2 0003558	9	1	0	1	0	1	0	1	0	1	0
<b>Total</b>	<b>19</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>0</b>

DEMOCRAT		Mayor (Vote for One)		Tax Collector (Vote for One)		Member of Council (Vote for not more than Four)						Judge of Election (Vote for One)		Inspector of Election (Vote for One)		
Public Count #	Swartzwelder	Write-In	Barr, Jr.	Write-in	Salisbury	Ruppert	Petrarca	Grose	Busch	Stanton	Write-In	(A) Alpha	Write-in	(B) Bravo	Write-in	
Machine 1 0003559	81	81	0	81	0	49	53	59	61	55	47	0	8	0	9	0
Machine 2 0003558	55	55	0	55	0	35	35	41	36	42	31	0	7	0	7	0
Machine 3 0003557	1	1	0	1	0	1	0	1	1	0	1	0	0	0	0	0
<b>Total</b>	<b>137</b>	<b>137</b>	<b>0</b>	<b>137</b>	<b>0</b>	<b>85</b>	<b>88</b>	<b>101</b>	<b>98</b>	<b>97</b>	<b>79</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>16</b>	<b>0</b>

COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
ELECTION, TUESDAY, MAY 16, 2017  
VOTER SIMULATION PROJECT SCRIPT

Public Count #	Justice of the Supreme Court (Vote for One)		Judge of the Superior Court (Vote for not more than Four)					Judge of the Commonwealth Court (Vote for not more than Two)						Judge of the Court of Common Pleas (Vote for not more than Two)						Sheriff (Vote for One)						
	Woodruff	Write-In	Nichols	Moulton	McLaughlin	Kunselman	Caye	Write-In	Barry	Cosgrove	Ceiser	Eagen	Clark	Barbin	Write-in	Connelly	Spurgeon	Calabrese	Crawford	McGinley	Lynch	Write-in	Mullen	Satler	Write-in	
	1	1		1	1	1	1	1		1		1	1	1			1		1	1	1		1		1	
2	1		1	1	1	1	1			1	1	1	1				1		1	1	1		1		1	
3	1		1	1	1	1	1			1	1	1	1			1		1	1	1	1		1		1	
4	1		1	1	1	1	1			1	1	1	1			1		1	1	1	1		1		1	
5	1		1	1	1	1	1			1	1	1	1			1		1	1	1	1		1		1	
6	1		1	1	1	1	1		1		1	1	1			1		1	1	1	1		1		1	
7	1		1	1	1	1	1			1	1	1	1			1		1	1	1	1		1		1	
8	1		1	1	1	1	1			1	1	1	1			1		1	1	1	1		1		1	
9	1		1	1	1	1	1		1		1	1	1			1		1	1	1	1		1		1	
10	1		1	1	1	1	1			1	1	1	1			1		1	1	1	1		1		1	
11	1		1	1	1	1	1		1		1	1	1			1		1	1	1	1		1		1	
12	1		1	1	1	1	1			1	1	1	1			1		1	1	1	1		1		1	
13	1		1	1	1	1	1		1		1	1	1			1		1	1	1	1		1		1	
14	1		1	1	1	1	1			1	1	1	1			1		1	1	1	1		1		1	
15	1		1	1	1	1	1			1	1	1	1			1		1	1	1	1		1		1	
16	1		1	1	1	1	1		1		1	1	1			1		1	1	1	1		1		1	
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19	1		1	1	1	1	1		1		1	1	1			1		1	1	1	1		1		1	
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28	1		1	1	1	1	1		1		1	1	1			1		1	1	1	1		1		1	
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33	1		1	1	1	1	1		1		1	1	1			1		1	1	1	1		1		1	
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61	1		1	1	1	1	1			1	1	1	1			1		1	1	1	1		1		1	
62	1		1	1	1	1	1		1		1	1	1			1		1	1	1	1		1		1	
63	1		1	1	1	1	1		1		1	1	1			1		1	1	1	1		1		1	
64	1		1	1	1	1	1		1		1	1	1			1		1	1	1	1		1		1	
65	1		1	1	1	1	1			1	1	1	1			1		1	1	1	1		1		1	
<b>Subtotal</b>	<b>65</b>	<b>0</b>	<b>52</b>	<b>52</b>	<b>55</b>	<b>52</b>	<b>49</b>	<b>0</b>	<b>23</b>	<b>22</b>	<b>20</b>	<b>22</b>	<b>18</b>	<b>25</b>	<b>0</b>	<b>24</b>	<b>18</b>	<b>22</b>	<b>20</b>	<b>21</b>	<b>25</b>	<b>0</b>	<b>29</b>	<b>36</b>	<b>0</b>	

Public Count #	Member of County Council (Vote for One)		Magisterial District Judge (Vote for One)		School Director (Vote for One)			Mayor (Vote for One)		Tax Collector (Vote for One)			Member of Council (Vote for not more than Four)						Judge of Election (Vote for One)		Inspector of Election (Vote for One)			
	Martoni	Write-in	Caulfield	Write-in	Strasbaugh	Annese	Write-in	Swartzwelder	Write-In	Barr, Jr.	Write-in	Salisbury	Ruppert	Petrarca	Grose	Busch	Stanton	Write-In	(A) Alpha	Write-in	(B) Bravo	Write-in		
1	1																							
2	1																							
3	1																							
4	1																							
5	1																							
6	1																							
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60	1																							
61	1																							
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63	1																							
64	1																							
65	1																							
Subtotal	65	0	65	0	38	27	0	65	0	65	0	40	43	44	49	45	39	0	6	0	6	0		

Machine #0003559  
DEM

COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
ELECTION, TUESDAY, MAY 16, 2017  
VOTER SIMULATION PROJECT SCRIPT

Public Count #	Justice of the Supreme Court (Vote for One)		Judge of the Superior Court (Vote for not more than Four)					Judge of the Commonwealth Court (Vote for not more than Two)						Judge of the Court of Common Pleas (Vote for not more than Two)						Sheriff (Vote for One)					
	Woodruff	Write-In	Nichols	Moulton	McLaughlin	Kunselman	Caye	Write-In	Barry	Cosgrove	Ceiser	Eagen	Clark	Barbin	Write-in	Connelly	Spurgeon	Calabrese	Crawford	McGinley	Lynch	Write-in	Mullen	Satler	Write-in
	66	1		1		1		1		1								1		1		1			
67	1		1	1	1		1	1		1	1		1			1	1	1		1					1
68	1		1	1	1		1	1	1				1			1	1			1					1
69	1		1	1	1		1	1		1			1			1				1					1
70	1		1	1	1		1	1			1	1				1				1					1
71	1		1	1	1		1	1					1			1				1					1
72	1		1	1	1		1	1		1			1			1				1					1
73	1		1	1	1		1	1		1	1					1				1					1
74	1		1	1	1		1	1		1			1			1				1					1
75	1		1	1	1		1	1			1	1				1				1					1
76	1		1	1	1		1	1		1	1					1				1					1
77	1		1	1	1		1	1		1			1			1				1					1
78	1		1	1	1		1	1		1			1			1				1					1
79	1		1	1	1		1	1		1	1					1				1					1
80	1		1	1	1		1	1		1			1			1				1					1
81	1		1	1	1		1	1		1			1			1				1					1
<b>Subtotal</b>	<b>16</b>	<b>0</b>	<b>11</b>	<b>14</b>	<b>14</b>	<b>12</b>	<b>13</b>	<b>0</b>	<b>4</b>	<b>10</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>4</b>	<b>0</b>	<b>7</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>8</b>	<b>3</b>	<b>0</b>	<b>8</b>	<b>8</b>	<b>0</b>

Machine #0003559  
DEM

Public Count #	Member of County Council (Vote for One)		Magisterial District Judge (Vote for One)		School Director (Vote for One)			Mayor (Vote for One)		Tax Collector (Vote for One)		Member of Council (Vote for not more than Four)						Judge of Election (Vote for One)		Inspector of Election (Vote for One)			
	Martoni	Write-in	Caulfield	Write-in	Strasbaugh	Annese	Write-in	Swartzwelder	Write-In	Barr, Jr.	Write-in	Salisbury	Ruppert	Petrarca	Grose	Busch	Stanton	Write-In	(A) Alpha	Write-in	(B) Bravo	Write-in	
66	1		1			1			1		1	1	1	1	1	1			1			1	
67	1		1			1			1		1	1	1	1	1	1	1			1			1
68	1		1			1			1		1	1	1	1	1	1	1					1	1
69	1		1			1			1		1	1	1	1	1	1	1					1	1
70	1		1			1			1		1	1	1	1	1	1	1					1	1
71	1		1			1			1		1	1	1	1	1	1	1					1	1
72	1		1			1			1		1	1	1	1	1	1	1					1	1
73	1		1			1			1		1	1	1	1	1	1	1					1	1
74	1		1			1			1		1	1	1	1	1	1	1					1	1
75	1		1			1			1		1	1	1	1	1	1	1					1	1
76	1		1			1			1		1	1	1	1	1	1	1					1	1
77	1		1			1			1		1	1	1	1	1	1	1					1	1
78	1		1			1			1		1	1	1	1	1	1	1					1	1
79	1		1			1			1		1	1	1	1	1	1	1					1	1
80	1		1			1			1		1	1	1	1	1	1	1					1	1
81	1		1			1			1		1	1	1	1	1	1	1					1	1
Subtotal	16	0	16	0	8	8	0	16	0	16	0	9	10	15	12	10	8	0	2	0	3	0	

Machine #0003559  
 REP

COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
 ELECTION, TUESDAY, MAY 16, 2017  
 VOTER SIMULATION PROJECT SCRIPT

Public Count #	Justice of the Supreme Court (Vote for One)		Judge of the Superior Court (Vote for not more than Four)					Judge of the Commonwealth Court (Vote for not more than Two)			Judge of the Court of Common Pleas (Vote for not more than Two)						Sheriff (Vote for One)			
	Mundy	Write-In	Giordano	Stedman	Kagarise	Murray	Patrick	Write-In	Lalley	Cannon	Write-in	Connelly	McGinley	Lynch	Crawford	Spurgeon	Calabrese	Write-in	(C) Charlie	Write-in
82	1		1	1	1		1		1	1		1		1					1	
83	1		1	1	1	1			1	1				1		1				1
84	1		1		1	1	1		1	1		1					1			
85	1		1		1	1	1		1	1				1		1				
86	1		1	1	1	1			1	1		1			1					
87	1			1	1	1	1		1	1						1	1			
88	1			1	1	1	1		1	1				1		1				
89	1		1	1	1	1			1	1		1			1					
90	1			1	1	1	1		1	1			1				1			
91	1			1	1	1	1		1	1			1		1					
Subtotal	10	0	6	8	10	9	7	0	10	10	0	3	3	3	3	5	3	0	2	0



Machine #0003558  
 REP

COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
 ELECTION, TUESDAY, MAY 16, 2017  
 VOTER SIMULATION PROJECT SCRIPT

Public Count #	Justice of the Supreme Court (Vote for One)		Judge of the Superior Court (Vote for not more than Four)					Judge of the Commonwealth Court (Vote for not more than Two)			Judge of the Court of Common Pleas (Vote for not more than Two)						Sheriff (Vote for One)			
	Mundy	Write-In	Giordano	Stedman	Kagarise	Murray	Patrick	Write-In	Lalley	Cannon	Write-in	Connelly	McGinley	Lynch	Crawford	Spurgeon	Calabrese	Write-in	(C) Charlie	Write-in
1	1		1	1		1	1		1	1					1		1			1
2	1			1	1	1	1		1	1		1		1						
3	1			1	1	1	1	1	1	1		1				1				
4	1		1	1	1	1	1		1	1				1			1			
5	1			1	1	1	1	1	1	1						1		1		
6	1			1	1	1	1	1	1	1				1				1		
7	1		1	1	1	1	1		1	1				1		1				
8	1		1	1	1	1	1	1	1	1				1		1		1		
9	1		1		1	1	1		1	1			1		1					
<b>Subtotal</b>	<b>9</b>	<b>0</b>	<b>5</b>	<b>8</b>	<b>7</b>	<b>9</b>	<b>7</b>	<b>0</b>	<b>9</b>	<b>9</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>0</b>



Machine #0003558  
DEM

COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
ELECTION, TUESDAY, MAY 16, 2017  
VOTER SIMULATION PROJECT SCRIPT

Public Count #	Justice of the Supreme Court (Vote for One)		Judge of the Superior Court (Vote for not more than Four)					Judge of the Commonwealth Court (Vote for not more than Two)						Judge of the Court of Common Pleas (Vote for not more than Two)					Sheriff (Vote for One)						
	Woodruff	Write-In	Nichols	Moulton	McLaughlin	Kunselman	Caye	Write-In	Barry	Cosgrove	Ceiser	Eagen	Clark	Barbin	Write-in	Connelly	Spurgeon	Calabrese	Crawford	McGinley	Lynch	Write-in	Mullen	Satler	Write-in
10	1		1		1		1																		
11	1		1	1	1	1	1			1	1	1	1	1		1		1		1	1		1		1
12	1		1	1	1	1	1			1		1								1			1		1
13	1		1		1	1	1	1			1		1			1		1		1			1		1
14	1		1	1	1	1	1	1		1		1				1		1		1			1		1
15	1		1	1	1	1	1	1			1		1			1		1		1			1		1
16	1		1		1	1	1	1			1	1	1	1		1	1	1	1	1			1		1
17	1		1	1	1	1	1	1		1		1				1		1		1			1		1
18	1		1	1	1	1	1	1			1		1			1		1		1			1		1
19	1		1		1	1	1	1			1		1			1		1		1			1		1
20	1		1	1	1	1	1	1		1		1				1		1		1			1		1
21	1		1	1	1	1	1	1			1		1			1		1		1			1		1
22	1		1	1	1	1	1	1		1		1				1	1	1	1	1			1		1
23	1		1		1	1	1	1			1		1			1		1		1			1		1
24	1		1	1	1	1	1	1			1		1			1		1		1			1		1
25	1		1		1	1	1	1		1		1				1		1		1			1		1
26	1		1	1	1	1	1	1		1		1				1		1		1			1		1
27	1		1		1	1	1	1			1		1			1		1		1			1		1
28	1		1	1	1	1	1	1		1		1				1		1		1			1		1
29	1		1	1	1	1	1	1			1		1			1		1		1			1		1
30	1		1	1	1	1	1	1			1		1			1		1		1			1		1
31	1		1	1	1	1	1	1			1		1			1		1		1			1		1
32	1		1	1	1	1	1	1		1		1				1		1		1			1		1
33	1		1	1	1	1	1	1			1	1	1	1		1		1		1			1		1
34	1		1		1	1	1	1			1		1			1		1		1			1		1
35	1		1	1	1	1	1	1		1		1				1		1		1			1		1
36	1		1	1	1	1	1	1			1		1			1		1		1			1		1
37	1		1		1	1	1	1			1		1			1	1	1	1	1			1		1
38	1		1	1	1	1	1	1		1		1				1		1		1			1		1
39	1		1	1	1	1	1	1			1		1			1		1		1			1		1
40	1		1	1	1	1	1	1			1		1			1		1		1			1		1
41	1		1	1	1	1	1	1		1		1				1		1		1			1		1
42	1		1	1	1	1	1	1			1		1			1		1		1			1		1
43	1		1		1	1	1	1			1		1			1		1		1			1		1
44	1		1	1	1	1	1	1		1		1				1		1		1			1		1
45	1		1	1	1	1	1	1			1		1			1		1		1			1		1
46	1		1	1	1	1	1	1			1	1	1	1		1		1		1			1		1
47	1		1		1	1	1	1			1		1			1	1	1	1	1			1		1
48	1		1	1	1	1	1	1		1		1				1		1		1			1		1
49	1		1	1	1	1	1	1			1	1	1	1		1		1		1			1		1
50	1		1	1	1	1	1	1			1		1			1		1		1			1		1
51	1		1	1	1	1	1	1		1		1				1		1		1			1		1
52	1		1	1	1	1	1	1			1		1			1	1	1	1	1			1		1
53	1		1	1	1	1	1	1			1		1			1		1		1			1		1
54	1		1	1	1	1	1	1		1		1				1		1		1			1		1
55	1		1	1	1	1	1	1			1		1			1		1		1			1		1
56	1		1	1	1	1	1	1			1		1			1		1		1			1		1
57	1		1	1	1	1	1	1			1		1			1		1		1			1		1
58	1		1	1	1	1	1	1			1		1			1		1		1			1		1
59	1		1	1	1	1	1	1		1		1				1		1		1			1		1
60	1		1	1	1	1	1	1			1		1			1		1		1			1		1
61	1		1	1	1	1	1	1			1	1	1	1		1		1		1			1		1
62	1		1	1	1	1	1	1			1		1			1		1		1			1		1
63	1		1	1	1	1	1	1			1		1			1		1		1			1		1
64	1		1	1	1	1	1	1			1		1			1		1		1			1		1
<b>Subtotal</b>	<b>55</b>	<b>0</b>	<b>42</b>	<b>44</b>	<b>45</b>	<b>43</b>	<b>46</b>	<b>0</b>	<b>18</b>	<b>22</b>	<b>19</b>	<b>13</b>	<b>17</b>	<b>21</b>	<b>0</b>	<b>20</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>21</b>	<b>15</b>	<b>0</b>	<b>29</b>	<b>26</b>	<b>0</b>

Machine #0003558  
DEM

Public Count #	Member of County Council (Vote for One)		Magisterial District Judge (Vote for One)		School Director (Vote for One)			Mayor (Vote for One)		Tax Collector (Vote for One)		Member of Council (Vote for not more than Four)							Judge of Election (Vote for One)		Inspector of Election (Vote for One)		
	Martoni	Write-in	Caulfield	Write-in	Strasbaugh	Annese	Write-in	Swartzwelder	Write-In	Barr, Jr.	Write-in	Salisbury	Ruppert	Petrarca	Grose	Busch	Stanton	Write-In	(A) Alpha	Write-in	(B) Bravo	Write-in	
10	1		1					1				1											
11	1		1		1			1				1	1	1	1								
12	1		1			1		1				1	1	1	1		1						
13	1		1		1			1				1		1	1	1							
14	1		1		1			1				1	1	1	1	1	1						
15	1		1		1			1				1	1	1	1	1							
16	1		1			1		1				1	1	1	1		1			1		1	
17	1		1			1		1				1	1	1	1		1			1		1	
18	1		1			1		1				1	1	1	1	1				1		1	
19	1		1		1			1				1		1	1	1							
20	1		1		1			1				1	1	1	1	1	1						
21	1		1			1		1				1	1	1	1	1	1						
22	1		1		1			1				1	1	1	1	1							
23	1		1			1		1				1	1	1	1	1							
24	1		1		1			1				1	1	1	1	1	1						
25	1		1		1			1				1		1	1	1							
26	1		1			1		1				1	1	1	1	1	1			1		1	
27	1		1		1			1				1		1	1	1	1			1		1	
28	1		1			1		1				1	1	1	1	1	1						1
29	1		1			1		1				1	1	1	1	1	1						
30	1		1		1			1				1	1	1	1	1	1						
31	1		1		1			1				1	1	1	1	1	1						
32	1		1		1			1				1	1	1	1	1	1						
33	1		1			1		1				1	1	1	1	1	1						
34	1		1		1			1				1	1	1	1	1	1						
35	1		1		1			1				1	1	1	1	1	1						
36	1		1		1			1				1	1	1	1	1	1						
37	1		1			1		1				1	1	1	1	1	1						
38	1		1			1		1				1	1	1	1	1	1						
39	1		1		1			1				1	1	1	1	1	1						
40	1		1		1			1				1	1	1	1	1	1						
41	1		1		1			1				1	1	1	1	1	1						
42	1		1			1		1				1	1	1	1	1	1						
43	1		1		1			1				1	1	1	1	1	1						
44	1		1			1		1				1	1	1	1	1	1						
45	1		1			1		1				1	1	1	1	1	1			1		1	
46	1		1			1		1				1	1	1	1	1	1			1		1	
47	1		1		1			1				1	1	1	1	1	1						1
48	1		1		1			1				1	1	1	1	1	1						
49	1		1			1		1				1	1	1	1	1	1						
50	1		1		1			1				1	1	1	1	1	1						
51	1		1		1			1				1	1	1	1	1	1						
52	1		1		1			1				1	1	1	1	1	1						
53	1		1			1		1				1	1	1	1	1	1						
54	1		1			1		1				1	1	1	1	1	1						
55	1		1			1		1				1	1	1	1	1	1						
56	1		1			1		1				1	1	1	1	1	1						
57	1		1		1			1				1	1	1	1	1	1						
58	1		1			1		1				1	1	1	1	1	1			1		1	
59	1		1		1			1				1	1	1	1	1	1						
60	1		1		1			1				1	1	1	1	1	1						
61	1		1		1			1				1	1	1	1	1	1						
62	1		1		1			1				1	1	1	1	1	1						
63	1		1		1			1				1	1	1	1	1	1						
64	1		1			1		1				1	1	1	1	1	1						
<b>Subtotal</b>	<b>55</b>	<b>0</b>	<b>55</b>	<b>0</b>	<b>26</b>	<b>29</b>	<b>0</b>	<b>55</b>	<b>0</b>	<b>55</b>	<b>0</b>	<b>35</b>	<b>35</b>	<b>41</b>	<b>36</b>	<b>42</b>	<b>31</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>0</b>	

Machine #0003557  
DEM

COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
ELECTION, TUESDAY, MAY 16, 2017  
VOTER SIMULATION PROJECT SCRIPT

Public Count #	Justice of the Supreme Court (Vote for One)		Judge of the Superior Court (Vote for not more than Four)					Judge of the Commonwealth Court (Vote for not more than Two)							Judge of the Court of Common Pleas (Vote for not more than Two)					Sheriff (Vote for One)					
	Woodruff	Write-In	Nichols	Moulton	McLaughlin	Kunselman	Caye	Write-In	Barry	Cosgrove	Ceisler	Eagen	Clark	Barbin	Write-in	Connelly	Spurgeon	Calabrese	Crawford	McGinley	Lynch	Write-in	Mullen	Satler	Write-in
Subtotal	1	0	1	1	0	1	1	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	1	0

Machine #0003557  
DEM

Public Count #	Member of County Council (Vote for One)		Magisterial District Judge (Vote for One)		School Director (Vote for One)			Mayor (Vote for One)		Tax Collector (Vote for One)		Member of Council (Vote for not more than Four)						Judge of Election (Vote for One)		Inspector of Election (Vote for One)		
	Martoni	Write-in	Caulfield	Write-in	Strasbaugh	Annese	Write-in	Swartzwelder	Write-In	Barr, Jr.	Write-in	Salisbury	Ruppert	Petrarca	Grose	Busch	Stanton	Write-In	(A) Alpha	Write-in	(B) Bravo	Write-in
Subtotal	1	0	1	0	0	1	0	1	0	1	0	1	0	1	1	0	1	0	0	0	0	0

Terminal S/N: V5172537->  
PEB S/N PS223792- (FMW 1.07)  
Software Version 9.1.4.1  
Created 02/01/06 8:50  
Copyright ES&S, Inc. 1993-2005  
All Rights Reserved  
Diagnostic check completed: OK  
iVotronic I

2017 Municipal Primary  
SWISSVALE DIST 3  
POLLING LOCATION RESULTS

Public Count Statistics

Total Ballots Cast: 156  
Total Ballots Counted: 156

Number of Terminals Opened: 3

Individual Voter Terminal Data

S/N V5181189  
Public Count: 91  
Protective Count: 3896  
OPENED 07:05:21 05/16/2017  
CLOSED 20:04:08 05/16/2017  
Terminal Ballots Counted: 91

S/N V5182562  
Public Count: 64  
Protective Count: 4441  
OPENED 07:07:39 05/16/2017  
CLOSED 20:06:55 05/16/2017  
Terminal Ballots Counted: 64

S/N V5172537  
Public Count: 1  
Protective Count: 3511  
OPENED 07:11:03 05/16/2017  
CLOSED 20:10:38 05/16/2017  
Terminal Ballots Counted: 1

\*\*\*\*\*

PRECINCT: SWISSVALE DIST 3

Public Count: 156

Party Counts

Democratic 137  
Republican 19

Ballot Style Counts

DEM - Ballot Style #1185 137  
REP - Ballot Style #1185 19

DEM - JUSTICE OF THE SUPREME COURT		
(Vote for 1)	Total:	137
DEM-Dwayne Woodruff		137
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
DEM - JUDGE OF THE SUPERIOR COURT		
(Vote for 4)	Total:	548
DEM-Carolyn H. Nichols		106
DEM-Geoff Moulton		111
DEM-Maria McLaughlin		114
DEM-Debbie Kunselman		108
DEM-Bill Caye		109
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
DEM - JUDGE OF THE COMMONWEALTH COURT		
(Vote for 2)	Total:	274
DEM-Timothy Barry		45
DEM-Joe Cosgrove		55
DEM-Ellen Ceisler		44
DEM-Todd Eagen		39
DEM-Irene M. Clark		41
DEM-Bryan Barbin		50
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
DEM - JUDGE OF THE COURT OF COMMON PLEAS		
(Vote for 2)	Total:	274
DEM-Patrick Connelly		52
DEM-David Lee Spurgeon		41
DEM-Pauline Calabrese		44
DEM-Rosemary Crawford		44
DEM-Mary C. McGinley		50
DEM-Jessica Lynch		43
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
DEM - COUNTY SHERIFF		
(Vote for 1)	Total:	137
DEM-Bill Mullen		66
DEM-George Satler		71
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
DEM - CNTCL08 Member of County Council 4		
(Vote for 1)	Total:	137
DEM-Charles Martoni		137
>Write-ins in above contest:		0
UnderVotes For Above contest:		0



DEM - EODIOE DEM WI Inspector of Electio  
(Vote for 1) Total: 16

>B  
>B

>Write-ins in above contest: 16  
UnderVotes For Above contest: 121

REP - JUSTICE OF THE SUPREME COURT  
(Vote for 1) Total: 19  
REP-Sallie Mundy 19

>Write-ins in above contest: 0  
UnderVotes For Above contest: 0

REP - JUDGE OF THE SUPERIOR COURT  
(Vote for 4) Total: 76  
REP-Emil Giordano 11  
REP-Craig Stedman 16  
REP-Wade A. Kagarise 17  
REP-Mary Murray 18  
REP-Paula A. Patrick 14

>Write-ins in above contest: 0  
UnderVotes For Above contest: 0

REP - JUDGE OF THE COMMONWEALTH COURT  
(Vote for 2) Total: 38  
REP-Paul Lalley 19  
REP-Christine Fizzano Cannon 19

>Write-ins in above contest: 0  
UnderVotes For Above contest: 0

REP - JUDGE OF THE COURT OF COMMON PLEAS  
(Vote for 2) Total: 38  
REP-Patrick Connelly 5  
REP-Mary C. McGinley 4  
REP-Jessica Lynch 5  
REP-Rosemary Crawford 7  
REP-David Lee Spurgeon 9  
REP-Pauline Calabrese 8

>Write-ins in above contest: 0  
UnderVotes For Above contest: 0

REP - COUNTY SHERIFF		
(Vote for 1)	Total:	3
>C		
>C		
>C		
>Write-ins in above contest:		3
UnderVotes For Above contest:		16
REP - CNTCL08 Member of County Council 4		
(Vote for 1)	Total:	19
REP-Michael Dell		19
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
REP - MAG0208 MAGISTERIAL DISTRICT JUDGE		
(Vote for 1)	Total:	19
REP-Thomas P. Caulfield		19
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
REP - SCH0076 SCHOOL DIRECTOR 4		
(Vote for 1)	Total:	19
REP-Valerie Annese		12
REP-Paige Strasbaugh		7
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
REP - MUN210 MAYOR		
(Vote for 1)	Total:	3
>D		
>D		
>D		
>Write-ins in above contest:		3
UnderVotes For Above contest:		16
REP - MUN210 TAX COLLECTOR		
(Vote for 1)	Total:	3
>E		
>E		
>E		
>Write-ins in above contest:		3
UnderVotes For Above contest:		16
REP - MUN210 MEMBER OF COUNCIL4		
(Vote for 4)	Total:	3
>F		
>F		
>F		
>Write-ins in above contest:		3
UnderVotes For Above contest:		73

REP - E0RJ0E Judge of Election  
(Vote for 1) Total: 3

>G

>G

>G

>Write-ins in above contest: 3  
UnderVotes For Above contest: 16

REP - E0RI0E Inspector of Elections  
(Vote for 1) Total: 3

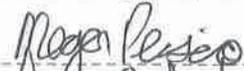
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>Write-ins in above contest: 3  
UnderVotes For Above contest: 16

Time/Date: 20:15:13 05/16/2017

Signature:  \_\_\_\_\_

Signature:  \_\_\_\_\_

Signature:  \_\_\_\_\_

Signature:  \_\_\_\_\_

9951 EL30-1  
 PRECINCT REPORT ALLEGHENY COUNTY, PA  
 RUN DATE: 06/12/17 2017 PRIMARY ELECTION  
 RUN TIME: 10:11 AM MAY 16, 2017  
 STATISTICS

1185 SWISSVALE DIST 3

	VOTES	PERCENT
REGISTERED VOTERS - TOTAL . . . . .	0	
REGISTERED VOTERS - DEMOCRATIC . . . . .	0	
REGISTERED VOTERS - REPUBLICAN . . . . .	0	
BALLOTS CAST - TOTAL . . . . .	156	
BALLOTS CAST - DEMOCRATIC . . . . .	137	87.82
BALLOTS CAST - REPUBLICAN . . . . .	19	12.18
***** (Democratic) *****		
Justice of the Supreme Court		
Vote for 1		
Dwayne Woodruff . . . . .	137	100.00
WRITE-IN. . . . .	0	
Judge of the Superior Court		
Vote for 4		
Carolyn H. Nichols . . . . .	106	19.34
Geoff Moulton . . . . .	111	20.26
Maria McLaughlin . . . . .	114	20.80
Debbie Kunselman . . . . .	108	19.71
Bill Caye . . . . .	109	19.89
WRITE-IN. . . . .	0	
Judge of the Commonwealth Court		
Vote for 2		
Timothy Barry . . . . .	45	16.42
Joe Cosgrove . . . . .	55	20.07
Ellen Ceisler . . . . .	44	16.06
Todd Eagen . . . . .	39	14.23
Irene M. Clark. . . . .	41	14.96
Bryan Barbin . . . . .	50	18.25
WRITE-IN. . . . .	0	
Judge of the Court of Common Pleas		
Vote for 2		
Patrick Connelly . . . . .	52	18.98
David Lee Spurgeon . . . . .	41	14.96
Pauline Calabrese. . . . .	44	16.06
Rosemary Crawford. . . . .	44	16.06
Mary C. McGinley . . . . .	50	18.25
Jessica Lynch . . . . .	43	15.69
WRITE-IN. . . . .	0	
Sheriff		
Vote for 1		
Bill Mullen. . . . .	66	48.18
George Satler . . . . .	71	51.82
WRITE-IN. . . . .	0	

9951 EL30-1

Vote for 1  
 Charles Martoni . . . . . 137 100.00  
 WRITE-IN. . . . . 0

Magisterial District Judge 05-02-08  
 Vote for 1  
 Thomas P. Caulfield . . . . . 137 100.00  
 WRITE-IN. . . . . 0

School Director WOODLAND HILLS REGION 2  
 Vote for 1  
 Paige Strasbaugh . . . . . 72 52.55  
 Valerie Annese. . . . . 65 47.45  
 WRITE-IN. . . . . 0

Mayor SWISSVALE  
 Vote for 1  
 Deneen Swartzwelder . . . . . 137 100.00  
 WRITE-IN. . . . . 0

Tax Collector SWISSVALE  
 Vote for 1  
 Thomas S. Barr, Jr. . . . . 137 100.00  
 WRITE-IN. . . . . 0

Member of Council SWISSVALE  
 Vote for 4  
 Abigail Salisbury. . . . . 85 15.51  
 Sean L. Ruppert . . . . . 88 16.06  
 David Petrarca. . . . . 101 18.43  
 Julie A. Grose. . . . . 98 17.88  
 Martin F. Busch . . . . . 97 17.70  
 Michele Kotula Stanton . . . . . 79 14.42  
 WRITE-IN. . . . . 0

Judge of Election JUDGE OF ELECTION DEM  
 Vote for 1  
 WRITE-IN. . . . . 15 100.00

Inspector of Election INSPECTOR OF ELECTION DEM  
 Vote for 1  
 WRITE-IN. . . . . 16 100.00

\*\*\*\*\* (Republican) \*\*\*\*\*

Justice of the Supreme Court  
 Vote for 1  
 Sallie Mundy . . . . . 19 100.00  
 WRITE-IN. . . . . 0

Judge of the Superior Court  
 Vote for 4  
 Emil Giordano . . . . . 11 14.47  
 Craig Stedman . . . . . 16 21.05  
 Wade A. Kagari se . . . . . 17 22.37  
 Mary Murray. . . . . 18 23.68

	9951 EL30-1		
Paula A. Patrick . . . . .		14	18.42
WRITE-IN. . . . .		0	
Judge of the Commonwealth Court			
Vote for 2			
Paul Lalley. . . . .		19	50.00
Christine Fizzano Cannon . . . . .		19	50.00
WRITE-IN. . . . .		0	
Judge of the Court of Common Pleas			
Vote for 2			
Patrick Connelly . . . . .		5	13.16
Mary C. McGinley . . . . .		4	10.53
Jessica Lynch . . . . .		5	13.16
Rosemary Crawford. . . . .		7	18.42
David Lee Spurgeon . . . . .		9	23.68
Pauline Calabrese. . . . .		8	21.05
WRITE-IN. . . . .		0	
Sheriff			
Vote for 1			
WRITE-IN. . . . .		3	100.00
Member of County Council DISTRICT 8			
Vote for 1			
Michael Dell . . . . .		19	100.00
WRITE-IN. . . . .		0	
Magisterial District Judge 05-02-08			
Vote for 1			
Thomas P. Caulfield . . . . .		19	100.00
WRITE-IN. . . . .		0	
School Director WOODLAND HILLS REGION 2			
Vote for 1			
Valerie Annese. . . . .		12	63.16
Paige Strasbaugh . . . . .		7	36.84
WRITE-IN. . . . .		0	
Mayor SWISSVALE			
Vote for 1			
WRITE-IN. . . . .		3	100.00
Tax Collector SWISSVALE			
Vote for 1			
WRITE-IN. . . . .		3	100.00
Member of Council SWISSVALE			
Vote for 4			
WRITE-IN. . . . .		3	100.00
Judge of Election JUDGE OF ELECTION REP			
Vote for 1			
WRITE-IN. . . . .		3	100.00

9951 EL30-1

Inspector of Elections INSPECTOR OF ELECTION REP		
Vote for 1		
WRITE-IN. . . . .	3	100.00

PREC REPORT-GROUP DETAIL

9001 EL30A-1  
 ALLEGHENY COUNTY, PA  
 2017 PRIMARY ELECTION  
 MAY 16, 2017  
 STATISTICS

RUN DATE: 06/12/17 10:23 AM

1185 SWISSVALE DIST 3

	TOTAL VOTES	%	5172537	5181189	5182562
REGISTERED VOTERS - TOTAL . . . . .	0				
REGISTERED VOTERS - DEMOCRATIC . . . . .	0				
REGISTERED VOTERS - REPUBLICAN . . . . .	0				
BALLOTS CAST - TOTAL . . . . .	156		1	91	64
BALLOTS CAST - DEMOCRATIC . . . . .	137	87.82	1	81	55
BALLOTS CAST - REPUBLICAN . . . . .	19	12.18	0	10	9

\*\*\*\*\* (Democratic) \*\*\*\*\*

Justice of the Supreme Court

Vote for 1

Dwayne Woodruff . . . . .	137	100.00	1	81	55
WRITE-IN . . . . .	0		0	0	0

Judge of the Superior Court

Vote for 4

Carolyn H. Nichols . . . . .	106	19.34	1	63	42
Geoff Moulton . . . . .	111	20.26	1	66	44
Maria McLaughlin . . . . .	114	20.80	0	69	45
Debbie Kunselman . . . . .	108	19.71	1	64	43
Bill Caye . . . . .	109	19.89	1	62	46
WRITE-IN . . . . .	0		0	0	0

Judge of the Commonwealth Court

Vote for 2

Timothy Barry . . . . .	45	16.42	0	27	18
Joe Cosgrove . . . . .	55	20.07	1	32	22
Ellen Ceisler . . . . .	44	16.06	0	25	19
Todd Eagen . . . . .	39	14.23	0	26	13
Irene M. Clark . . . . .	41	14.96	1	23	17
Bryan Barbin . . . . .	50	18.25	0	29	21
WRITE-IN . . . . .	0		0	0	0

Judge of the Court of Common Pleas

Vote for 2

Patrick Connelly . . . . .	52	18.98	1	31	20
David Lee Spurgeon . . . . .	41	14.96	0	24	17

	9001	EL30A-1			
Pauline Calabrese . . . . .	44	16.06	0	26	18
Rosemary Crawford . . . . .	44	16.06	1	24	19
Mary C. McGinley . . . . .	50	18.25	0	29	21
Jessica Lynch . . . . .	43	15.69	0	28	15
WRITE-IN . . . . .	0		0	0	0
Sheriff					
Vote for 1					
Bill Mullen . . . . .	66	48.18	0	37	29
George Satler . . . . .	71	51.82	1	44	26
WRITE-IN . . . . .	0		0	0	0
Member of County Council DISTRICT 8					
Vote for 1					
Charles Martoni . . . . .	137	100.00	1	81	55
WRITE-IN . . . . .	0		0	0	0
Magisterial District Judge 05-02-08					
Vote for 1					
Thomas P. Caulfield . . . . .	137	100.00	1	81	55
WRITE-IN . . . . .	0		0	0	0
School Director WOODLAND HILLS REGION 2					
Vote for 1					
Paige Strasbaugh . . . . .	72	52.55	0	46	26
Valerie Annese . . . . .	65	47.45	1	35	29
WRITE-IN . . . . .	0		0	0	0
Mayor SWISSVALE					
Vote for 1					
Deneen Swartzwelder . . . . .	137	100.00	1	81	55
WRITE-IN . . . . .	0		0	0	0
Tax Collector SWISSVALE					
Vote for 1					
Thomas S. Barr, Jr. . . . .	137	100.00	1	81	55
WRITE-IN . . . . .	0		0	0	0
Member of Council SWISSVALE					
Vote for 4					
Abigail Salisbury . . . . .	85	15.51	1	49	35
Sean L. Ruppert . . . . .	88	16.06	0	53	35

	9001	EL30A-1			
David Petrarca . . . . .	101	18.43	1	59	41
Julie A. Grose . . . . .	98	17.88	1	61	36
Martin F. Busch . . . . .	97	17.70	0	55	42
Michele Kotula Stanton . . . . .	79	14.42	1	47	31
WRITE-IN. . . . .	0		0	0	0

Judge of Election JUDGE OF ELECTION DEM					
Vote for 1					
WRITE-IN. . . . .	15	100.00	0	8	7

Inspector of Election INSPECTOR OF ELECTION DEM					
Vote for 1					
WRITE-IN. . . . .	16	100.00	0	9	7

\*\*\*\*\* (Republican) \*\*\*\*\*

Justice of the Supreme Court					
Vote for 1					
Sallie Mundy . . . . .	19	100.00	0	10	9
WRITE-IN. . . . .	0		0	0	0

Judge of the Superior Court					
Vote for 4					
Emil Giordano . . . . .	11	14.47	0	6	5
Craig Stedman . . . . .	16	21.05	0	8	8
Wade A. Kagari se . . . . .	17	22.37	0	10	7
Mary Murray. . . . .	18	23.68	0	9	9
Paula A. Patrick . . . . .	14	18.42	0	7	7
WRITE-IN. . . . .	0		0	0	0

Judge of the Commonwealth Court					
Vote for 2					
Paul Lalley. . . . .	19	50.00	0	10	9
Christine Fizzano Cannon . . . . .	19	50.00	0	10	9
WRITE-IN. . . . .	0		0	0	0

Judge of the Court of Common Pleas					
Vote for 2					
Patrick Connelly . . . . .	5	13.16	0	3	2
Mary C. McGinley . . . . .	4	10.53	0	3	1
Jessica Lynch . . . . .	5	13.16	0	3	2
Rosemary Crawford. . . . .	7	18.42	0	3	4
David Lee Spurgeon . . . . .	9	23.68	0	5	4

Pauline Calabrese. . . . .	9001	EL30A-1				
WRITE-IN. . . . .	8	21.05	0	3	5	
	0		0	0	0	
Sheriff						
Vote for 1						
WRITE-IN. . . . .	3	100.00	0	2	1	
Member of County Council DISTRICT 8						
Vote for 1						
Michael Dell . . . . .	19	100.00	0	10	9	
WRITE-IN. . . . .	0		0	0	0	
Magisterial District Judge 05-02-08						
Vote for 1						
Thomas P. Caulfield . . . . .	19	100.00	0	10	9	
WRITE-IN. . . . .	0		0	0	0	
School Director WOODLAND HILLS REGION 2						
Vote for 1						
Valerie Annese. . . . .	12	63.16	0	6	6	
Paige Strasbaugh . . . . .	7	36.84	0	4	3	
WRITE-IN. . . . .	0		0	0	0	
Mayor SWISSVALE						
Vote for 1						
WRITE-IN. . . . .	3	100.00	0	2	1	
Tax Collector SWISSVALE						
Vote for 1						
WRITE-IN. . . . .	3	100.00	0	2	1	
Member of Council SWISSVALE						
Vote for 4						
WRITE-IN. . . . .	3	100.00	0	2	1	
Judge of Election JUDGE OF ELECTION REP						
Vote for 1						
WRITE-IN. . . . .	3	100.00	0	2	1	
Inspector of Elections INSPECTOR OF ELECTION REP						

		9001 EL30A-1			
Vote for 1					
WRITE-IN. . . . .	3	100.00	0	2	1

2017 Primary  
Ballot Quantity Spreadsheet

<b>Pseudo</b>	<b>Municipality</b>	<b>Ward</b>	<b>Dist.</b>	<b>Dem. Reg.</b>	<b>Rep. Reg.</b>	<b>Total Reg.</b>
1	ALEPPO	0	1	523	693	1376
2	ASPINWALL	0	1	441	280	865
3	ASPINWALL	0	2	279	210	595
4	ASPINWALL	0	3	442	281	856
5	AVALON	1	0	658	262	1106
6	AVALON	2	1	416	171	701
7	AVALON	2	2	257	147	473
8	AVALON	3	1	189	90	333
9	AVALON	3	2	280	140	488
10	AVALON	3	3	277	127	481
11	BALDWIN BR	0	1	368	147	573
12	BALDWIN BR	0	2	625	255	1009
13	BALDWIN BR	0	3	503	205	798
14	BALDWIN BR	0	4	467	204	756
15	BALDWIN BR	0	5	481	209	782
16	BALDWIN BR	0	6	425	237	753
17	BALDWIN BR	0	7	453	249	800
18	BALDWIN BR	0	8	403	204	702
19	BALDWIN BR	0	9	431	226	742
20	BALDWIN BR	0	10	639	204	1026
21	BALDWIN BR	0	11	690	245	1101
22	BALDWIN BR	0	12	421	127	614
23	BALDWIN BR	0	13	420	181	672
24	BALDWIN BR	0	14	344	175	585
25	BALDWIN BR	0	15	517	186	777
26	BALDWIN BR	0	16	553	212	874
27	BALDWIN BR	0	17	420	195	684
28	BALDWIN BR	0	18	563	249	922
29	BALDWIN TP	0	1	413	260	769
30	BALDWIN TP	0	2	415	202	705
31	BELL ACRES	0	1	419	526	1138
32	BELLEVUE	1	1	606	245	1025
33	BELLEVUE	1	2	580	228	953
34	BELLEVUE	2	1	685	248	1135
35	BELLEVUE	2	2	548	268	978
36	BELLEVUE	3	1	552	278	1017
37	BELLEVUE	3	2	489	270	919
38	BEN AVON	0	1	254	152	472
39	BEN AVON	0	2	473	334	955
40	BEN AVON HT	0	1	116	163	318
41	BETHEL PARK	1	1	390	354	866
42	BETHEL PARK	1	2	445	256	811
43	BETHEL PARK	1	3	408	303	809
44	BETHEL PARK	2	1	299	374	737
45	BETHEL PARK	2	2	359	434	907

2017 Primary  
Ballot Quantity Spreadsheet

46	BETHEL PARK	2	3	516	445	1115
47	BETHEL PARK	3	1	330	367	791
48	BETHEL PARK	3	2	373	441	924
49	BETHEL PARK	3	3	428	501	1069
50	BETHEL PARK	4	1	603	546	1305
51	BETHEL PARK	4	2	405	311	795
52	BETHEL PARK	4	3	374	383	873
53	BETHEL PARK	5	1	293	219	602
54	BETHEL PARK	5	2	328	212	644
55	BETHEL PARK	5	3	655	612	1470
56	BETHEL PARK	6	1	553	573	1283
57	BETHEL PARK	6	2	456	374	966
58	BETHEL PARK	6	3	300	370	767
59	BETHEL PARK	7	1	493	501	1143
60	BETHEL PARK	7	2	426	443	966
61	BETHEL PARK	7	3	338	299	751
62	BETHEL PARK	8	1	247	209	507
63	BETHEL PARK	8	2	305	187	549
64	BETHEL PARK	8	3	557	510	1224
65	BETHEL PARK	8	4	199	189	458
66	BETHEL PARK	9	1	223	279	562
67	BETHEL PARK	9	2	297	318	698
68	BETHEL PARK	9	3	510	671	1361
69	BLAWNOX	0	1	626	256	1043
70	BRACKENRIDGE	1	0	296	117	488
71	BRACKENRIDGE	2	0	457	222	784
72	BRACKENRIDGE	3	0	347	224	666
73	BRADDOCK	1	0	475	28	559
74	BRADDOCK	2	0	497	31	584
75	BRADDOCK	3	0	391	27	468
76	BRADDOCK HL	0	1	608	127	812
77	BRADDOCK HL	0	2	401	79	534
78	BRADFORDWOOD	0	1	346	521	1024
79	BRENTWOOD	0	1	290	196	549
80	BRENTWOOD	0	2	408	226	751
81	BRENTWOOD	0	3	350	157	583
82	BRENTWOOD	0	4	469	195	781
83	BRENTWOOD	0	5	425	173	721
84	BRENTWOOD	0	6	393	189	704
85	BRENTWOOD	0	7	409	224	758
86	BRENTWOOD	0	8	396	236	719
87	BRENTWOOD	0	9	336	176	584
88	BRENTWOOD	0	10	297	172	556
89	BRIDGEVILLE	0	1	444	260	791
90	BRIDGEVILLE	0	2	487	250	868
91	BRIDGEVILLE	0	3	428	317	857
92	BRIDGEVILLE	0	4	502	339	962

2017 Primary  
Ballot Quantity Spreadsheet

93	CARNEGIE	1	1	283	145	520
94	CARNEGIE	1	2	622	363	1187
95	CARNEGIE	1	3	505	217	813
96	CARNEGIE	1	4	248	69	378
97	CARNEGIE	2	1	383	168	660
98	CARNEGIE	2	2	311	122	511
99	CARNEGIE	2	3	287	144	489
100	CARNEGIE	2	4	575	223	957
101	CASL SHANNON	0	1	568	290	1038
102	CASL SHANNON	0	2	469	251	858
103	CASL SHANNON	0	3	438	232	795
104	CASL SHANNON	0	4	360	186	646
105	CASL SHANNON	0	5	382	154	621
106	CASL SHANNON	0	6	382	191	646
107	CASL SHANNON	0	7	450	224	771
108	CASL SHANNON	0	8	317	173	565
109	CHALFANT	0	1	379	140	590
110	CHESWICK	0	1	335	207	618
111	CHESWICK	0	2	355	217	634
112	CHURCHILL	0	1	416	196	672
113	CHURCHILL	0	2	405	185	685
114	CHURCHILL	0	3	341	224	640
115	CHURCHILL	0	4	344	257	679
116	CLAIRTON	1	1	286	51	388
117	CLAIRTON	1	2	298	64	412
118	CLAIRTON	1	3	232	73	346
119	CLAIRTON	2	1	124	3	133
120	CLAIRTON	2	2	312	15	351
121	CLAIRTON	2	3	392	33	472
122	CLAIRTON	3	1	329	75	446
123	CLAIRTON	3	2	317	54	395
124	CLAIRTON	3	3	319	50	425
125	CLAIRTON	4	1	354	22	401
126	CLAIRTON	4	2	333	27	391
127	CLAIRTON	4	3	287	100	437
128	COLLIER	0	1	484	510	1132
129	COLLIER	0	2	602	488	1239
130	COLLIER	0	3	640	384	1149
131	COLLIER	0	4	384	290	770
132	COLLIER	0	5	253	557	949
133	COLLIER	0	6	568	363	1088
134	CORAOPOLIS	1	1	319	90	464
135	CORAOPOLIS	1	2	313	124	500
136	CORAOPOLIS	2	0	550	161	810
137	CORAOPOLIS	3	1	358	175	608
138	CORAOPOLIS	3	2	334	209	622
139	CORAOPOLIS	4	1	254	127	443

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140	CORAOPOLIS	4	2	323	126	517
141	CRAFTON	1	1	518	248	890
142	CRAFTON	1	2	353	154	616
143	CRAFTON	2	1	352	180	608
144	CRAFTON	2	2	500	167	792
145	CRAFTON	3	1	507	308	960
146	CRAFTON	3	2	316	174	580
147	CRESCENT	1	0	531	431	1121
148	CRESCENT	2	0	319	258	673
149	DORMONT	0	1	441	213	766
150	DORMONT	0	2	287	169	538
151	DORMONT	0	3	540	221	946
152	DORMONT	0	4	390	173	649
153	DORMONT	0	5	625	264	1075
154	DORMONT	0	6	295	151	531
155	DORMONT	0	7	330	108	520
156	DORMONT	0	8	228	122	414
157	DORMONT	0	9	301	128	533
158	DORMONT	0	10	372	153	610
159	DRAVOSBURG	0	1	344	157	565
160	DRAVOSBURG	0	2	208	125	376
161	DRAVOSBURG	0	3	188	56	269
162	DUQUESNE	1	1	360	68	472
163	DUQUESNE	1	2	418	42	529
164	DUQUESNE	1	3	254	22	323
165	DUQUESNE	1	4	181	22	226
166	DUQUESNE	2	1	334	27	405
167	DUQUESNE	2	2	356	35	425
168	DUQUESNE	2	3	377	50	472
169	DUQUESNE	3	1	222	12	249
170	DUQUESNE	3	2	144	13	181
171	DUQUESNE	3	3	456	60	566
172	EAST DEER	1	0	193	87	319
173	EAST DEER	2	0	322	173	599
174	E MCKEESPORT	0	1	262	113	412
175	E MCKEESPORT	0	2	349	99	519
176	E MCKEESPORT	0	3	301	131	499
177	E PITTSBURGH	1	0	287	33	357
178	E PITTSBURGH	2	0	319	35	402
179	E PITTSBURGH	3	0	402	52	514
180	EDGEWOOD	0	1	688	176	1017
181	EDGEWOOD	0	2	605	209	950
182	EDGEWOOD	0	3	583	145	872
183	EDGEWORTH	0	1	217	362	706
184	EDGEWORTH	0	2	266	374	743
185	ELIZABETH BR	0	1	473	339	922
186	ELIZABETH TP	1	1	322	215	573

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187	ELIZABETH TP	1	2	445	385	915
188	ELIZABETH TP	2	0	613	551	1273
189	ELIZABETH TP	3	0	692	487	1320
190	ELIZABETH TP	4	1	463	362	910
191	ELIZABETH TP	4	2	233	193	460
192	ELIZABETH TP	5	1	204	185	441
193	ELIZABETH TP	5	2	447	295	832
194	ELIZABETH TP	6	1	296	260	604
195	ELIZABETH TP	6	2	378	288	737
196	ELIZABETH TP	7	0	725	406	1243
197	EMSWORTH	0	1	406	260	781
198	EMSWORTH	0	2	516	283	964
199	ETNA	1	0	513	200	850
200	ETNA	2	0	424	162	711
201	ETNA	3	0	409	198	710
202	FAWN	0	1	267	210	542
203	FAWN	0	2	423	385	904
204	FINDLAY	0	1	502	450	1088
205	FINDLAY	0	2	780	706	1708
206	FINDLAY	0	3	575	472	1215
207	FOREST HILLS	0	1	367	182	626
208	FOREST HILLS	0	2	394	164	625
209	FOREST HILLS	0	3	345	202	629
210	FOREST HILLS	0	4	475	157	715
211	FOREST HILLS	0	5	406	201	694
212	FOREST HILLS	0	6	344	152	557
213	FOREST HILLS	0	7	504	159	773
214	FOREST HILLS	0	8	421	210	713
215	FORWARD	0	1	181	142	364
216	FORWARD	0	2	506	285	885
217	FORWARD	0	3	231	121	391
218	FORWARD	0	4	258	145	458
219	FOX CHAPEL	0	1	332	357	795
220	FOX CHAPEL	0	2	385	454	1002
221	FOX CHAPEL	0	3	277	357	736
222	FOX CHAPEL	0	4	477	519	1193
223	FOX CHAPEL	0	5	302	456	892
224	FRANKLIN PK	1	1	399	583	1171
225	FRANKLIN PK	1	2	390	568	1212
226	FRANKLIN PK	1	3	464	648	1326
227	FRANKLIN PK	2	1	357	456	1029
228	FRANKLIN PK	2	2	415	634	1243
229	FRANKLIN PK	2	3	470	626	1329
230	FRANKLIN PK	3	1	424	631	1280
231	FRANKLIN PK	3	2	286	371	782
232	FRANKLIN PK	3	3	410	633	1216
233	FRAZER	0	1	362	323	758

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234	GLASSPORT	0	1	365	153	569
235	GLASSPORT	0	2	247	82	387
236	GLASSPORT	0	3	402	88	548
237	GLASSPORT	0	4	149	56	236
238	GLASSPORT	0	5	317	132	498
239	GLASSPORT	0	6	319	101	450
240	GLENFIELD	0	1	65	63	149
241	GREENTREE	0	1	419	279	790
242	GREENTREE	0	2	524	411	1075
243	GREENTREE	0	3	477	362	967
244	GREENTREE	0	4	454	261	842
245	HAMPTON	0	1	465	570	1198
246	HAMPTON	0	2	470	569	1198
247	HAMPTON	0	3	492	641	1322
248	HAMPTON	0	4	302	237	621
249	HAMPTON	0	5	320	280	704
250	HAMPTON	0	6	250	343	653
251	HAMPTON	0	7	425	685	1296
252	HAMPTON	0	8	375	438	935
253	HAMPTON	0	9	539	558	1257
254	HAMPTON	0	10	617	652	1475
255	HAMPTON	0	11	696	783	1669
256	HAMPTON	0	12	343	377	847
257	HAMPTON	0	13	341	320	771
258	HARMAR	0	1	609	539	1281
259	HARMAR	0	2	477	188	744
260	HARMAR	0	3	229	98	361
261	HARRISON	1	1	156	103	291
262	HARRISON	1	2	263	258	579
263	HARRISON	1	3	308	245	651
264	HARRISON	2	1	192	87	320
265	HARRISON	2	2	369	129	610
266	HARRISON	3	1	550	371	1017
267	HARRISON	3	2	337	206	620
268	HARRISON	4	1	356	229	678
269	HARRISON	4	2	314	188	574
270	HARRISON	5	1	324	107	512
271	HARRISON	5	2	424	283	814
272	HAYSVILLE	0	1	19	29	57
273	HEIDELBERG	0	1	506	234	848
274	HOMESTEAD	1	1	471	56	601
275	HOMESTEAD	1	2	327	13	375
276	HOMESTEAD	2	1	369	29	450
277	HOMESTEAD	2	2	294	13	327
278	HOMESTEAD	3	1	440	40	538
279	HOMESTEAD	3	2	284	15	327
280	INDIANA	0	1	403	427	956

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281	INDIANA	0	2	365	385	895
282	INDIANA	0	3	575	448	1220
283	INDIANA	0	4	479	454	1097
284	INDIANA	0	5	422	380	926
285	INGRAM	0	1	477	203	804
286	INGRAM	0	2	393	163	633
287	INGRAM	0	3	554	246	903
288	JEFFERSON HL	0	1	689	677	1544
289	JEFFERSON HL	0	2	471	287	846
290	JEFFERSON HL	0	3	311	255	636
291	JEFFERSON HL	0	4	365	235	691
292	JEFFERSON HL	0	5	848	921	2029
293	JEFFERSON HL	0	6	470	400	962
294	JEFFERSON HL	0	7	169	158	369
295	JEFFERSON HL	0	8	513	456	1088
296	KENNEDY	0	1	1022	379	1529
297	KENNEDY	0	2	566	220	856
298	KENNEDY	0	3	693	234	1011
299	KENNEDY	0	4	343	65	437
300	KENNEDY	0	5	850	346	1334
301	KENNEDY	0	6	549	198	826
302	KENNEDY	0	7	358	135	528
303	KILBUCK	0	1	246	271	585
304	LEET	0	1	202	134	393
305	LEET	0	2	275	380	749
306	LEETSDALE	0	1	496	268	872
307	LIBERTY	0	1	536	279	919
308	LIBERTY	0	2	478	243	787
309	LINCOLN	0	1	382	251	696
310	MARSHALL	0	1	284	461	882
311	MARSHALL	0	2	291	609	1086
312	MARSHALL	0	3	253	408	797
313	MARSHALL	0	4	371	497	1062
314	MARSHALL	0	5	466	645	1358
315	MARSHALL	0	6	302	490	982
316	MCCANDLESS	1	1	324	616	1096
317	MCCANDLESS	1	2	433	346	928
318	MCCANDLESS	1	3	481	531	1245
319	MCCANDLESS	2	1	545	614	1404
320	MCCANDLESS	2	2	310	439	857
321	MCCANDLESS	2	3	343	379	868
322	MCCANDLESS	3	1	409	404	947
323	MCCANDLESS	3	2	432	489	1075
324	MCCANDLESS	3	3	398	489	1030
325	MCCANDLESS	4	1	628	683	1511
326	MCCANDLESS	4	2	418	376	914
327	MCCANDLESS	4	3	259	380	728

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328	MCCANDLESS	5	1	314	401	820
329	MCCANDLESS	5	2	527	613	1330
330	MCCANDLESS	5	3	415	375	941
331	MCCANDLESS	6	1	211	208	480
332	MCCANDLESS	6	2	424	446	1013
333	MCCANDLESS	6	3	655	848	1771
334	MCCANDLESS	7	1	635	688	1573
335	MCCANDLESS	7	2	398	442	978
336	MCCANDLESS	7	3	206	248	512
337	MCDONALD	0	5	106	77	208
338	MCKEESPORT	1	0	13	2	16
339	MCKEESPORT	2	0	208	25	266
340	MCKEESPORT	3	1	251	16	297
341	MCKEESPORT	3	2	110	6	129
342	MCKEESPORT	4	0	258	19	324
343	MCKEESPORT	5	0	418	52	529
344	MCKEESPORT	6	1	321	36	405
345	MCKEESPORT	6	2	258	23	323
346	MCKEESPORT	7	1	434	46	508
347	MCKEESPORT	7	2	269	11	297
348	MCKEESPORT	7	3	282	39	351
349	MCKEESPORT	7	4	373	37	466
350	MCKEESPORT	7	5	438	58	548
351	MCKEESPORT	7	6	393	58	495
352	MCKEESPORT	7	7	336	26	384
353	MCKEESPORT	8	1	223	55	317
354	MCKEESPORT	8	2	375	95	517
355	MCKEESPORT	8	3	456	67	568
356	MCKEESPORT	8	4	299	121	462
357	MCKEESPORT	8	5	459	35	556
358	MCKEESPORT	8	6	139	64	235
359	MCKEESPORT	9	1	335	90	476
360	MCKEESPORT	9	2	430	99	600
361	MCKEESPORT	9	3	315	67	416
362	MCKEESPORT	10	1	239	58	341
363	MCKEESPORT	10	2	215	60	317
364	MCKEESPORT	11	1	349	76	460
365	MCKEESPORT	11	2	291	87	426
366	MCKEESPORT	11	3	213	38	264
367	MCKEESPORT	12	1	227	62	318
368	MCKEESPORT	12	2	248	98	367
369	MCKEESPORT	12	3	404	141	580
370	MCKEES ROCKS	1	1	224	11	267
371	MCKEES ROCKS	1	2	447	65	575
372	MCKEES ROCKS	2	1	546	73	707
373	MCKEES ROCKS	2	2	487	85	666
374	MCKEES ROCKS	3	1	534	130	762

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375	MCKEES ROCKS	3	2	437	70	585
376	MCKEES ROCKS	3	3	411	78	551
377	MILLVALE	0	1	354	110	565
378	MILLVALE	0	2	246	104	425
379	MILLVALE	0	3	289	95	455
380	MILLVALE	0	4	263	106	438
381	MILLVALE	0	5	391	110	574
382	MONROEVILLE	1	1	427	166	692
383	MONROEVILLE	1	2	319	249	643
384	MONROEVILLE	1	3	449	298	852
385	MONROEVILLE	1	4	595	184	913
386	MONROEVILLE	2	1	482	321	899
387	MONROEVILLE	2	2	484	364	975
388	MONROEVILLE	2	3	507	415	1071
389	MONROEVILLE	3	1	565	487	1197
390	MONROEVILLE	3	2	328	249	659
391	MONROEVILLE	3	3	513	348	990
392	MONROEVILLE	3	4	176	183	416
393	MONROEVILLE	4	1	338	239	674
394	MONROEVILLE	4	2	507	393	1061
395	MONROEVILLE	4	3	524	312	963
396	MONROEVILLE	5	1	348	185	608
397	MONROEVILLE	5	2	533	227	897
398	MONROEVILLE	5	3	469	302	873
399	MONROEVILLE	5	4	343	176	651
400	MONROEVILLE	6	1	480	256	814
401	MONROEVILLE	6	2	461	231	798
402	MONROEVILLE	6	3	643	277	1092
403	MONROEVILLE	6	4	236	92	368
404	MONROEVILLE	7	1	844	350	1349
405	MONROEVILLE	7	2	532	191	827
406	MONROEVILLE	7	3	354	199	622
407	MOON	0	1	665	496	1463
408	MOON	0	2	733	811	1784
409	MOON	0	3	746	451	1417
410	MOON	0	4	337	303	760
411	MOON	0	5	955	1055	2377
412	MOON	0	6	912	949	2176
413	MOON	0	7	776	515	1538
414	MOON	0	8	506	359	975
415	MOON	0	9	788	837	1910
416	MOON	0	10	349	286	766
417	MOON	0	11	535	617	1333
418	MOON	0	12	450	415	991
419	MOON	0	13	301	318	715
420	MT LEBANON	1	1	295	398	818
421	MT LEBANON	1	2	390	179	682

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422	MT LEBANON	1	3	332	224	651
423	MT LEBANON	1	4	363	268	780
424	MT LEBANON	1	5	302	220	603
425	MT LEBANON	1	6	465	469	1081
426	MT LEBANON	1	7	448	215	778
427	MT LEBANON	2	1	443	369	948
428	MT LEBANON	2	2	313	211	611
429	MT LEBANON	2	3	349	259	708
430	MT LEBANON	2	4	269	199	539
431	MT LEBANON	2	5	307	204	586
432	MT LEBANON	2	6	286	197	562
433	MT LEBANON	2	7	325	216	620
434	MT LEBANON	2	8	497	385	992
435	MT LEBANON	3	1	307	263	645
436	MT LEBANON	3	2	421	305	857
437	MT LEBANON	3	3	271	323	679
438	MT LEBANON	3	4	343	290	753
439	MT LEBANON	3	5	334	273	704
440	MT LEBANON	3	6	223	152	447
441	MT LEBANON	3	7	374	353	828
442	MT LEBANON	3	8	155	129	324
443	MT LEBANON	4	1	382	262	781
444	MT LEBANON	4	2	457	282	871
445	MT LEBANON	4	3	374	258	733
446	MT LEBANON	4	4	324	254	671
447	MT LEBANON	4	5	281	241	607
448	MT LEBANON	4	6	333	221	664
449	MT LEBANON	4	7	418	279	803
450	MT LEBANON	5	1	346	184	632
451	MT LEBANON	5	2	267	115	458
452	MT LEBANON	5	3	318	192	612
453	MT LEBANON	5	4	274	203	566
454	MT LEBANON	5	5	341	209	627
455	MT LEBANON	5	6	244	150	465
456	MT LEBANON	5	7	402	264	782
457	MT LEBANON	5	8	560	284	1018
458	MT OLIVER	0	1	535	77	730
459	MT OLIVER	0	2	598	78	776
460	MT OLIVER	0	3	351	61	493
461	MT OLIVER	0	4	234	40	326
462	MUNHALL	0	1	290	113	491
463	MUNHALL	0	2	354	64	488
464	MUNHALL	0	3	411	49	530
465	MUNHALL	0	4	313	69	435
466	MUNHALL	0	5	504	159	730
467	MUNHALL	0	6	477	145	710
468	MUNHALL	0	7	800	247	1158

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469	MUNHALL	0	8	399	162	614
470	MUNHALL	0	9	482	136	696
471	MUNHALL	0	10	367	105	525
472	MUNHALL	0	11	589	272	942
473	MUNHALL	0	12	388	136	582
474	NEVILLE	1	0	165	78	283
475	NEVILLE	2	0	131	59	227
476	NEVILLE	3	0	171	75	274
477	N BRADDOCK	1	1	167	31	215
478	N BRADDOCK	1	2	381	56	511
479	N BRADDOCK	1	3	419	77	570
480	N BRADDOCK	2	1	367	39	447
481	N BRADDOCK	2	2	491	51	609
482	N BRADDOCK	3	1	314	20	371
483	N BRADDOCK	3	2	447	33	541
484	N FAYETTE	0	1	931	840	2027
485	N FAYETTE	0	2	1044	864	2282
486	N FAYETTE	0	3	1143	939	2427
487	N FAYETTE	0	4	525	377	1076
488	N FAYETTE	0	5	1013	1036	2374
489	N VERSAILLES	1	1	416	178	670
490	N VERSAILLES	1	2	407	207	676
491	N VERSAILLES	2	1	403	175	642
492	N VERSAILLES	2	2	145	44	205
493	N VERSAILLES	3	1	310	142	502
494	N VERSAILLES	3	2	379	172	619
495	N VERSAILLES	4	1	300	114	469
496	N VERSAILLES	4	2	253	116	406
497	N VERSAILLES	5	1	376	91	555
498	N VERSAILLES	5	2	282	95	427
499	N VERSAILLES	6	1	395	181	637
500	N VERSAILLES	6	2	317	157	539
501	N VERSAILLES	7	0	571	80	709
502	OAKDALE	0	1	331	173	584
503	OAKDALE	0	2	256	135	431
504	OAKMONT	0	1	428	358	921
505	OAKMONT	0	2	428	531	1068
506	OAKMONT	0	3	393	261	748
507	OAKMONT	0	4	435	330	874
508	OAKMONT	0	5	345	265	725
509	OAKMONT	0	6	530	351	1039
510	OHARA	1	1	477	402	1038
511	OHARA	1	2	336	206	637
512	OHARA	2	1	313	201	594
513	OHARA	2	2	428	356	902
514	OHARA	3	1	337	247	672
515	OHARA	3	2	329	182	574

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516	OHARA	4	1	289	199	542
517	OHARA	4	2	435	220	769
518	OHARA	5	1	346	278	735
519	OHARA	5	2	447	283	864
520	OHIO	0	1	452	719	1360
521	OHIO	0	2	626	641	1455
522	OHIO	0	3	740	738	1770
523	GLEN OSBORNE	0	1	179	192	441
524	PENN HILLS	1	1	677	34	761
525	PENN HILLS	1	2	652	47	751
526	PENN HILLS	1	3	485	17	545
527	PENN HILLS	1	4	311	14	352
528	PENN HILLS	1	5	225	7	259
529	PENN HILLS	2	1	685	44	804
530	PENN HILLS	2	2	638	46	755
531	PENN HILLS	2	3	685	107	887
532	PENN HILLS	2	4	460	90	604
533	PENN HILLS	3	1	443	245	794
534	PENN HILLS	3	2	373	83	507
535	PENN HILLS	3	3	460	112	641
536	PENN HILLS	3	4	597	129	805
537	PENN HILLS	3	5	341	78	471
538	PENN HILLS	3	6	299	113	451
539	PENN HILLS	4	1	369	120	552
540	PENN HILLS	4	2	538	142	743
541	PENN HILLS	4	3	492	172	761
542	PENN HILLS	4	4	397	113	590
543	PENN HILLS	4	5	408	119	595
544	PENN HILLS	5	1	512	142	726
545	PENN HILLS	5	2	415	117	615
546	PENN HILLS	5	3	423	195	686
547	PENN HILLS	5	4	384	175	622
548	PENN HILLS	5	5	303	139	504
549	PENN HILLS	5	6	445	206	746
550	PENN HILLS	6	1	331	150	570
551	PENN HILLS	6	2	453	130	654
552	PENN HILLS	6	3	380	120	541
553	PENN HILLS	6	4	476	52	591
554	PENN HILLS	6	5	420	103	580
555	PENN HILLS	6	6	409	124	592
556	PENN HILLS	7	1	493	110	678
557	PENN HILLS	7	2	414	162	654
558	PENN HILLS	7	3	599	186	891
559	PENN HILLS	7	4	393	153	609
560	PENN HILLS	7	5	421	181	678
561	PENN HILLS	7	6	509	179	770
562	PENN HILLS	7	7	448	196	735

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Ballot Quantity Spreadsheet

563	PENN HILLS	8	1	371	196	633
564	PENN HILLS	8	2	306	174	543
565	PENN HILLS	8	3	290	182	543
566	PENN HILLS	8	4	357	199	625
567	PENN HILLS	8	5	564	269	946
568	PENN HILLS	8	6	256	157	464
569	PENN HILLS	9	1	271	180	508
570	PENN HILLS	9	2	302	185	543
571	PENN HILLS	9	3	450	237	791
572	PENN HILLS	9	4	330	185	606
573	PENN HILLS	9	5	269	25	327
574	PINE	0	1	322	690	1215
575	PINE	0	2	421	980	1700
576	PINE	0	3	164	223	445
577	PINE	0	4	376	618	1206
578	PINE	0	5	479	860	1645
579	PINE	0	6	129	326	555
580	PINE	0	7	511	677	1420
581	PINE	0	8	302	623	1099
582	PITCAIRN	0	1	598	228	950
583	PITCAIRN	0	2	342	106	521
584	PITCAIRN	0	3	428	166	663
585	PITTSBURGH	1	1	2086	845	3926
586	PITTSBURGH	1	2	488	74	669
587	PITTSBURGH	2	1	1056	484	1914
588	PITTSBURGH	2	2	449	270	944
589	PITTSBURGH	3	1	241	6	260
590	PITTSBURGH	3	2	612	31	687
591	PITTSBURGH	3	3	317	12	363
592	PITTSBURGH	3	4	377	85	572
593	PITTSBURGH	3	5	388	20	456
594	PITTSBURGH	4	1	249	31	330
595	PITTSBURGH	4	2	604	83	836
596	PITTSBURGH	4	3	335	11	376
597	PITTSBURGH	4	4	220	9	255
598	PITTSBURGH	4	5	651	230	1193
599	PITTSBURGH	4	6	554	111	840
600	PITTSBURGH	4	7	1754	636	3237
601	PITTSBURGH	4	8	2421	1040	4770
602	PITTSBURGH	4	9	462	100	657
603	PITTSBURGH	4	10	367	87	610
604	PITTSBURGH	4	11	416	74	559
605	PITTSBURGH	4	12	431	89	673
606	PITTSBURGH	4	13	615	109	915
607	PITTSBURGH	4	14	1081	309	1757
608	PITTSBURGH	4	15	688	179	1116
609	PITTSBURGH	4	16	937	279	1585

2017 Primary  
Ballot Quantity Spreadsheet

610	PITTSBURGH	4	17	489	68	670
611	PITTSBURGH	4	18	391	59	519
612	PITTSBURGH	4	19	204	32	299
613	PITTSBURGH	5	1	230	5	261
614	PITTSBURGH	5	2	317	12	350
615	PITTSBURGH	5	3	146	3	159
616	PITTSBURGH	5	4	282	8	310
617	PITTSBURGH	5	5	214	8	239
618	PITTSBURGH	5	6	501	25	577
619	PITTSBURGH	5	7	408	8	453
620	PITTSBURGH	5	8	383	22	447
621	PITTSBURGH	5	9	779	137	1134
622	PITTSBURGH	5	10	399	18	463
623	PITTSBURGH	5	11	336	8	385
624	PITTSBURGH	5	12	381	17	435
625	PITTSBURGH	5	13	251	10	276
626	PITTSBURGH	5	14	251	4	270
627	PITTSBURGH	5	15	219	6	243
628	PITTSBURGH	5	16	160	3	184
629	PITTSBURGH	5	17	219	13	261
630	PITTSBURGH	5	18	41	4	53
631	PITTSBURGH	6	1	611	111	868
632	PITTSBURGH	6	2	445	70	634
633	PITTSBURGH	6	3	566	80	782
634	PITTSBURGH	6	4	435	71	581
635	PITTSBURGH	6	5	358	40	470
636	PITTSBURGH	7	1	448	79	680
637	PITTSBURGH	7	2	617	208	1026
638	PITTSBURGH	7	3	512	110	776
639	PITTSBURGH	7	4	671	176	1110
640	PITTSBURGH	7	5	434	125	738
641	PITTSBURGH	7	6	417	135	684
642	PITTSBURGH	7	7	525	107	759
643	PITTSBURGH	7	8	455	119	735
644	PITTSBURGH	7	9	512	127	801
645	PITTSBURGH	7	10	656	185	1044
646	PITTSBURGH	7	11	688	181	1097
647	PITTSBURGH	7	12	557	164	924
648	PITTSBURGH	7	13	337	72	547
649	PITTSBURGH	7	14	294	86	474
650	PITTSBURGH	8	1	256	51	365
651	PITTSBURGH	8	2	477	70	646
652	PITTSBURGH	8	3	579	106	866
653	PITTSBURGH	8	4	489	118	771
654	PITTSBURGH	8	5	411	76	595
655	PITTSBURGH	8	6	307	48	426
656	PITTSBURGH	8	7	578	80	808

2017 Primary  
Ballot Quantity Spreadsheet

657	PITTSBURGH	8	8	458	89	636
658	PITTSBURGH	8	9	485	81	736
659	PITTSBURGH	8	10	480	73	660
660	PITTSBURGH	8	11	451	76	630
661	PITTSBURGH	8	12	480	51	645
662	PITTSBURGH	8	13	496	36	613
663	PITTSBURGH	9	1	341	61	492
664	PITTSBURGH	9	2	455	74	619
665	PITTSBURGH	9	3	436	74	603
666	PITTSBURGH	9	4	441	73	609
667	PITTSBURGH	9	5	521	71	699
668	PITTSBURGH	9	6	437	71	572
669	PITTSBURGH	9	7	348	37	449
670	PITTSBURGH	9	8	533	65	717
671	PITTSBURGH	9	9	460	75	666
672	PITTSBURGH	10	1	388	52	535
673	PITTSBURGH	10	2	462	73	623
674	PITTSBURGH	10	3	503	72	684
675	PITTSBURGH	10	4	447	44	545
676	PITTSBURGH	10	5	399	56	505
677	PITTSBURGH	10	6	386	65	514
678	PITTSBURGH	10	7	411	104	596
679	PITTSBURGH	10	8	423	105	588
680	PITTSBURGH	10	9	391	82	546
681	PITTSBURGH	10	10	464	72	595
682	PITTSBURGH	10	11	442	85	613
683	PITTSBURGH	10	12	480	34	558
684	PITTSBURGH	10	13	456	31	533
685	PITTSBURGH	10	14	453	42	540
686	PITTSBURGH	10	15	319	21	363
687	PITTSBURGH	10	16	305	20	347
688	PITTSBURGH	10	17	462	31	543
689	PITTSBURGH	10	18	459	20	552
690	PITTSBURGH	10	19	409	25	488
691	PITTSBURGH	11	1	455	55	608
692	PITTSBURGH	11	2	498	21	591
693	PITTSBURGH	11	3	418	19	467
694	PITTSBURGH	11	4	470	24	559
695	PITTSBURGH	11	5	472	32	583
696	PITTSBURGH	11	6	712	62	896
697	PITTSBURGH	11	7	470	90	656
698	PITTSBURGH	11	8	437	79	603
699	PITTSBURGH	11	9	513	55	645
700	PITTSBURGH	11	10	445	63	585
701	PITTSBURGH	11	11	512	75	693
702	PITTSBURGH	11	12	534	49	669
703	PITTSBURGH	11	13	531	49	671

2017 Primary  
Ballot Quantity Spreadsheet

704	PITTSBURGH	11	14	516	23	600
705	PITTSBURGH	11	15	249	8	286
706	PITTSBURGH	11	16	463	51	609
707	PITTSBURGH	11	17	565	28	671
708	PITTSBURGH	11	18	446	61	579
709	PITTSBURGH	12	1	177	19	234
710	PITTSBURGH	12	2	304	11	343
711	PITTSBURGH	12	3	127	6	149
712	PITTSBURGH	12	4	314	8	350
713	PITTSBURGH	12	5	145	7	173
714	PITTSBURGH	12	6	214	6	248
715	PITTSBURGH	12	7	271	8	310
716	PITTSBURGH	12	8	204	6	224
717	PITTSBURGH	12	9	320	6	338
718	PITTSBURGH	12	10	411	8	453
719	PITTSBURGH	12	11	419	12	466
720	PITTSBURGH	12	12	596	47	750
721	PITTSBURGH	12	13	383	15	436
722	PITTSBURGH	12	14	322	9	364
723	PITTSBURGH	12	15	518	13	573
724	PITTSBURGH	12	16	354	13	398
725	PITTSBURGH	13	1	266	8	308
726	PITTSBURGH	13	2	376	7	410
727	PITTSBURGH	13	3	304	13	343
728	PITTSBURGH	13	4	275	12	312
729	PITTSBURGH	13	5	307	11	348
730	PITTSBURGH	13	6	341	5	372
731	PITTSBURGH	13	7	348	13	400
732	PITTSBURGH	13	8	223	11	259
733	PITTSBURGH	13	9	278	10	320
734	PITTSBURGH	13	10	198	8	224
735	PITTSBURGH	13	11	384	9	442
736	PITTSBURGH	13	12	391	12	436
737	PITTSBURGH	13	13	267	8	308
738	PITTSBURGH	13	14	238	13	285
739	PITTSBURGH	13	15	297	12	339
740	PITTSBURGH	13	16	314	12	354
741	PITTSBURGH	13	17	749	34	891
742	PITTSBURGH	13	18	197	7	230
743	PITTSBURGH	13	19	441	12	482
744	PITTSBURGH	14	1	465	83	715
745	PITTSBURGH	14	2	892	159	1487
746	PITTSBURGH	14	3	628	113	882
747	PITTSBURGH	14	4	569	68	758
748	PITTSBURGH	14	5	580	105	808
749	PITTSBURGH	14	6	488	122	747
750	PITTSBURGH	14	7	2125	329	3722

2017 Primary  
Ballot Quantity Spreadsheet

751	PITTSBURGH	14	8	526	93	770
752	PITTSBURGH	14	9	581	120	797
753	PITTSBURGH	14	10	513	97	714
754	PITTSBURGH	14	11	551	118	805
755	PITTSBURGH	14	12	564	68	768
756	PITTSBURGH	14	13	618	60	767
757	PITTSBURGH	14	14	644	111	892
758	PITTSBURGH	14	15	592	70	775
759	PITTSBURGH	14	16	364	86	511
760	PITTSBURGH	14	17	349	52	458
761	PITTSBURGH	14	18	556	101	769
762	PITTSBURGH	14	19	491	64	616
763	PITTSBURGH	14	20	481	83	664
764	PITTSBURGH	14	21	427	76	584
765	PITTSBURGH	14	22	510	80	707
766	PITTSBURGH	14	23	535	90	725
767	PITTSBURGH	14	24	401	63	567
768	PITTSBURGH	14	25	666	133	940
769	PITTSBURGH	14	26	431	100	619
770	PITTSBURGH	14	27	364	95	530
771	PITTSBURGH	14	28	361	111	531
772	PITTSBURGH	14	29	537	114	776
773	PITTSBURGH	14	30	493	95	690
774	PITTSBURGH	14	31	733	157	1069
775	PITTSBURGH	14	32	514	93	779
776	PITTSBURGH	14	33	502	144	808
777	PITTSBURGH	14	34	525	161	851
778	PITTSBURGH	14	35	451	71	617
779	PITTSBURGH	14	36	613	113	867
780	PITTSBURGH	14	37	407	119	652
781	PITTSBURGH	14	38	407	91	579
782	PITTSBURGH	14	39	390	88	580
783	PITTSBURGH	14	40	353	61	530
784	PITTSBURGH	14	41	65	8	91
785	PITTSBURGH	15	1	454	81	621
786	PITTSBURGH	15	2	511	97	734
787	PITTSBURGH	15	3	418	83	614
788	PITTSBURGH	15	4	434	105	639
789	PITTSBURGH	15	5	370	91	551
790	PITTSBURGH	15	6	380	80	547
791	PITTSBURGH	15	7	478	97	679
792	PITTSBURGH	15	8	426	97	640
793	PITTSBURGH	15	9	138	23	177
794	PITTSBURGH	15	10	434	84	613
795	PITTSBURGH	15	11	396	103	579
796	PITTSBURGH	15	12	360	54	492
797	PITTSBURGH	15	13	371	28	448

2017 Primary  
Ballot Quantity Spreadsheet

798	PITTSBURGH	15	14	274	29	328
799	PITTSBURGH	15	15	290	42	383
800	PITTSBURGH	15	16	478	35	567
801	PITTSBURGH	15	17	29	1	34
802	PITTSBURGH	15	18	452	48	570
803	PITTSBURGH	15	19	430	31	504
804	PITTSBURGH	16	1	471	171	812
805	PITTSBURGH	16	2	633	274	1158
806	PITTSBURGH	16	3	486	190	847
807	PITTSBURGH	16	4	297	63	430
808	PITTSBURGH	16	5	376	99	598
809	PITTSBURGH	16	6	316	82	475
810	PITTSBURGH	16	7	316	48	415
811	PITTSBURGH	16	8	162	11	198
812	PITTSBURGH	16	9	404	63	533
813	PITTSBURGH	16	10	297	50	393
814	PITTSBURGH	16	11	308	46	402
815	PITTSBURGH	17	1	110	45	194
816	PITTSBURGH	17	2	441	218	863
817	PITTSBURGH	17	3	394	137	657
818	PITTSBURGH	17	4	441	186	784
819	PITTSBURGH	17	5	351	140	591
820	PITTSBURGH	17	6	336	78	499
821	PITTSBURGH	17	7	265	76	413
822	PITTSBURGH	17	8	286	85	452
823	PITTSBURGH	18	1	423	110	597
824	PITTSBURGH	18	2	393	23	447
825	PITTSBURGH	18	3	354	6	388
826	PITTSBURGH	18	4	421	17	481
827	PITTSBURGH	18	5	607	190	953
828	PITTSBURGH	18	6	300	37	389
829	PITTSBURGH	18	7	304	69	446
830	PITTSBURGH	18	8	202	24	258
831	PITTSBURGH	18	9	522	83	705
832	PITTSBURGH	18	10	44	32	91
833	PITTSBURGH	18	11	443	55	585
834	PITTSBURGH	19	1	328	124	539
835	PITTSBURGH	19	2	402	157	678
836	PITTSBURGH	19	3	312	148	546
837	PITTSBURGH	19	4	221	123	408
838	PITTSBURGH	19	5	249	113	441
839	PITTSBURGH	19	6	290	135	513
840	PITTSBURGH	19	7	125	56	240
841	PITTSBURGH	19	8	336	150	578
842	PITTSBURGH	19	9	341	113	556
843	PITTSBURGH	19	10	428	124	679
844	PITTSBURGH	19	11	317	95	490

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Ballot Quantity Spreadsheet

845	PITTSBURGH	19	12	301	80	429
846	PITTSBURGH	19	13	317	88	481
847	PITTSBURGH	19	14	382	104	578
848	PITTSBURGH	19	15	411	108	629
849	PITTSBURGH	19	16	411	81	586
850	PITTSBURGH	19	17	395	118	580
851	PITTSBURGH	19	18	349	49	485
852	PITTSBURGH	19	19	363	83	532
853	PITTSBURGH	19	20	348	98	520
854	PITTSBURGH	19	21	452	108	638
855	PITTSBURGH	19	22	373	94	551
856	PITTSBURGH	19	23	404	115	624
857	PITTSBURGH	19	24	340	101	512
858	PITTSBURGH	19	25	370	97	531
859	PITTSBURGH	19	26	315	87	480
860	PITTSBURGH	19	27	315	99	461
861	PITTSBURGH	19	28	414	152	644
862	PITTSBURGH	19	29	310	114	510
863	PITTSBURGH	19	30	358	106	527
864	PITTSBURGH	19	31	328	113	499
865	PITTSBURGH	19	32	340	95	520
866	PITTSBURGH	19	33	329	88	467
867	PITTSBURGH	19	34	337	115	515
868	PITTSBURGH	19	35	335	103	498
869	PITTSBURGH	19	36	448	127	652
870	PITTSBURGH	19	37	290	90	449
871	PITTSBURGH	19	38	347	91	506
872	PITTSBURGH	20	1	389	161	631
873	PITTSBURGH	20	2	132	52	222
874	PITTSBURGH	20	3	467	153	698
875	PITTSBURGH	20	4	38	12	60
876	PITTSBURGH	20	5	419	90	571
877	PITTSBURGH	20	6	394	75	544
878	PITTSBURGH	20	7	528	82	689
879	PITTSBURGH	20	8	568	86	740
880	PITTSBURGH	20	9	153	18	201
881	PITTSBURGH	20	10	501	66	636
882	PITTSBURGH	20	11	540	67	690
883	PITTSBURGH	20	12	700	103	928
884	PITTSBURGH	20	13	403	33	472
885	PITTSBURGH	20	14	644	134	865
886	PITTSBURGH	20	15	527	206	913
887	PITTSBURGH	20	16	423	151	646
888	PITTSBURGH	20	17	285	97	433
889	PITTSBURGH	20	18	330	132	510
890	PITTSBURGH	21	1	413	28	489
891	PITTSBURGH	21	2	401	18	467

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Ballot Quantity Spreadsheet

892	PITTSBURGH	21	3	576	33	680
893	PITTSBURGH	21	4	487	59	629
894	PITTSBURGH	22	1	501	102	709
895	PITTSBURGH	22	2	468	104	669
896	PITTSBURGH	22	3	500	72	676
897	PITTSBURGH	22	4	549	124	817
898	PITTSBURGH	23	1	699	258	1166
899	PITTSBURGH	23	2	558	138	833
900	PITTSBURGH	23	3	284	49	391
901	PITTSBURGH	24	1	308	64	426
902	PITTSBURGH	24	2	316	63	439
903	PITTSBURGH	24	3	281	39	372
904	PITTSBURGH	24	4	366	142	608
905	PITTSBURGH	24	5	360	77	532
906	PITTSBURGH	24	6	412	83	564
907	PITTSBURGH	25	1	361	43	470
908	PITTSBURGH	25	2	332	32	409
909	PITTSBURGH	25	3	441	57	573
910	PITTSBURGH	25	4	303	14	365
911	PITTSBURGH	25	5	286	41	374
912	PITTSBURGH	25	6	325	16	384
913	PITTSBURGH	25	7	310	65	423
914	PITTSBURGH	26	1	473	29	553
915	PITTSBURGH	26	2	412	20	460
916	PITTSBURGH	26	3	362	44	454
917	PITTSBURGH	26	4	344	38	434
918	PITTSBURGH	26	5	428	21	502
919	PITTSBURGH	26	6	355	14	407
920	PITTSBURGH	26	7	275	23	326
921	PITTSBURGH	26	8	532	43	638
922	PITTSBURGH	26	9	260	49	351
923	PITTSBURGH	26	10	531	71	674
924	PITTSBURGH	26	11	566	77	746
925	PITTSBURGH	26	12	368	64	518
926	PITTSBURGH	26	13	405	88	564
927	PITTSBURGH	26	14	431	123	600
928	PITTSBURGH	26	15	311	123	502
929	PITTSBURGH	26	16	523	105	719
930	PITTSBURGH	26	17	136	43	210
931	PITTSBURGH	27	1	534	151	772
932	PITTSBURGH	27	2	462	137	682
933	PITTSBURGH	27	3	393	103	574
934	PITTSBURGH	27	4	501	147	740
935	PITTSBURGH	27	5	496	126	703
936	PITTSBURGH	27	6	555	105	760
937	PITTSBURGH	27	7	415	102	603
938	PITTSBURGH	27	8	423	102	600

2017 Primary  
Ballot Quantity Spreadsheet

939	PITTSBURGH	27	9	457	62	602
940	PITTSBURGH	27	10	502	58	635
941	PITTSBURGH	27	11	487	68	642
942	PITTSBURGH	27	12	418	57	539
943	PITTSBURGH	27	13	445	51	560
944	PITTSBURGH	28	1	419	169	685
945	PITTSBURGH	28	2	349	98	541
946	PITTSBURGH	28	3	529	211	863
947	PITTSBURGH	28	4	454	142	653
948	PITTSBURGH	28	5	441	138	673
949	PITTSBURGH	28	6	401	114	587
950	PITTSBURGH	28	7	521	71	684
951	PITTSBURGH	28	8	574	168	845
952	PITTSBURGH	28	9	496	69	609
953	PITTSBURGH	28	10	312	107	523
954	PITTSBURGH	28	11	117	10	142
955	PITTSBURGH	29	1	421	107	609
956	PITTSBURGH	29	2	357	100	545
957	PITTSBURGH	29	3	334	86	474
958	PITTSBURGH	29	4	363	107	550
959	PITTSBURGH	29	5	386	95	564
960	PITTSBURGH	29	6	382	142	593
961	PITTSBURGH	29	7	409	122	607
962	PITTSBURGH	29	8	350	97	547
963	PITTSBURGH	29	9	315	68	457
964	PITTSBURGH	29	10	373	93	528
965	PITTSBURGH	29	11	442	113	636
966	PITTSBURGH	29	12	378	103	562
967	PITTSBURGH	30	1	349	30	425
968	PITTSBURGH	30	2	342	25	417
969	PITTSBURGH	30	3	307	33	381
970	PITTSBURGH	30	4	486	59	631
971	PITTSBURGH	30	5	516	77	683
972	PITTSBURGH	31	1	155	49	235
973	PITTSBURGH	31	2	286	100	418
974	PITTSBURGH	31	3	363	137	575
975	PITTSBURGH	31	4	364	141	568
976	PITTSBURGH	31	5	456	168	689
977	PITTSBURGH	31	6	328	174	552
978	PITTSBURGH	31	7	112	12	135
979	PITTSBURGH	32	1	294	140	505
980	PITTSBURGH	32	2	402	139	631
981	PITTSBURGH	32	3	355	103	517
982	PITTSBURGH	32	4	247	72	364
983	PITTSBURGH	32	5	376	119	565
984	PITTSBURGH	32	6	401	155	618
985	PITTSBURGH	32	7	339	115	518

2017 Primary  
Ballot Quantity Spreadsheet

986	PITTSBURGH	32	8	399	172	648
987	PLEASANT HL	0	1	343	266	707
988	PLEASANT HL	0	2	262	200	540
989	PLEASANT HL	0	3	274	212	552
990	PLEASANT HL	0	4	278	167	513
991	PLEASANT HL	0	5	428	250	755
992	PLEASANT HL	0	6	437	388	918
993	PLEASANT HL	0	7	240	202	507
994	PLEASANT HL	0	8	233	237	514
995	PLEASANT HL	0	9	294	272	639
996	PLEASANT HL	0	10	242	228	536
997	PLUM	0	1	779	763	1768
998	PLUM	0	2	286	217	587
999	PLUM	0	3	402	484	966
1000	PLUM	0	4	389	345	820
1001	PLUM	0	5	480	306	894
1002	PLUM	0	6	578	512	1237
1003	PLUM	0	7	621	480	1240
1004	PLUM	0	8	292	226	586
1005	PLUM	0	9	554	445	1093
1006	PLUM	0	10	251	236	587
1007	PLUM	0	11	404	287	791
1008	PLUM	0	12	540	400	1076
1009	PLUM	0	13	257	240	569
1010	PLUM	0	14	357	285	746
1011	PLUM	0	15	348	306	797
1012	PLUM	0	16	264	245	573
1013	PLUM	0	17	390	224	705
1014	PLUM	0	18	408	323	832
1015	PLUM	0	19	839	795	1859
1016	PLUM	0	20	382	301	782
1017	PLUM	0	21	186	177	413
1018	PORT VUE	0	1	374	149	591
1019	PORT VUE	0	2	322	162	542
1020	PORT VUE	0	3	366	146	555
1021	PORT VUE	0	4	400	215	689
1022	RANKIN	1	0	313	13	362
1023	RANKIN	2	0	363	23	423
1024	RANKIN	3	0	521	34	619
1025	RESERVE	1	0	339	118	519
1026	RESERVE	2	0	333	151	569
1027	RESERVE	3	0	307	130	523
1028	RESERVE	4	0	489	251	849
1029	RICHLAND	0	1	377	514	1057
1030	RICHLAND	0	2	439	524	1135
1031	RICHLAND	0	3	448	544	1149
1032	RICHLAND	0	4	392	571	1124

2017 Primary  
Ballot Quantity Spreadsheet

1033	RICHLAND	0	5	329	523	1008
1034	RICHLAND	0	6	385	551	1066
1035	RICHLAND	0	7	406	508	1098
1036	RICHLAND	0	8	362	491	946
1037	ROBINSON	0	1	765	655	1584
1038	ROBINSON	0	2	534	325	964
1039	ROBINSON	0	3	411	200	678
1040	ROBINSON	0	4	405	196	688
1041	ROBINSON	0	5	410	154	605
1042	ROBINSON	0	6	441	284	880
1043	ROBINSON	0	7	704	553	1383
1044	ROBINSON	0	8	709	517	1435
1045	ROBINSON	0	9	1212	893	2436
1046	ROSS	1	1	338	299	728
1047	ROSS	1	2	316	225	618
1048	ROSS	1	3	280	151	491
1049	ROSS	1	4	372	340	828
1050	ROSS	2	1	542	438	1165
1051	ROSS	2	2	440	401	944
1052	ROSS	2	3	328	291	711
1053	ROSS	3	1	311	254	661
1054	ROSS	3	2	317	247	674
1055	ROSS	3	3	269	184	530
1056	ROSS	3	4	337	258	684
1057	ROSS	4	1	418	341	874
1058	ROSS	4	2	290	240	610
1059	ROSS	4	3	317	325	728
1060	ROSS	4	4	299	303	699
1061	ROSS	5	1	241	282	596
1062	ROSS	5	2	201	145	402
1063	ROSS	5	3	416	316	818
1064	ROSS	5	4	365	287	738
1065	ROSS	6	1	277	155	503
1066	ROSS	6	2	520	292	967
1067	ROSS	6	3	352	204	650
1068	ROSS	6	4	359	172	587
1069	ROSS	7	1	293	223	605
1070	ROSS	7	2	293	178	557
1071	ROSS	7	3	413	225	709
1072	ROSS	7	4	304	193	586
1073	ROSS	8	1	834	522	1576
1074	ROSS	8	2	281	170	530
1075	ROSS	8	3	292	181	545
1076	ROSS	9	1	354	342	788
1077	ROSS	9	2	437	372	940
1078	ROSS	9	3	401	333	829
1079	ROSSLYN FARM	0	1	150	179	374

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1080	SCOTT	1	1	351	136	572
1081	SCOTT	1	2	400	148	655
1082	SCOTT	2	1	293	145	502
1083	SCOTT	2	2	424	187	673
1084	SCOTT	3	1	272	168	498
1085	SCOTT	3	2	395	253	725
1086	SCOTT	4	1	405	275	771
1087	SCOTT	4	2	356	173	614
1088	SCOTT	5	1	344	176	594
1089	SCOTT	5	2	419	231	741
1090	SCOTT	6	1	398	205	702
1091	SCOTT	6	2	448	240	785
1092	SCOTT	7	1	458	320	898
1093	SCOTT	7	2	340	214	634
1094	SCOTT	8	1	272	184	522
1095	SCOTT	8	2	437	478	1020
1096	SCOTT	9	1	174	81	307
1097	SCOTT	9	2	198	84	338
1098	SEWICKLEY	1	0	423	367	951
1099	SEWICKLEY	2	1	189	229	502
1100	SEWICKLEY	2	2	225	284	606
1101	SEWICKLEY	3	0	477	375	1013
1102	SEWICKLEY HT	0	1	191	456	763
1103	SEWICKLEY HL	0	1	187	251	522
1104	SHALER	1	1	285	152	492
1105	SHALER	1	2	285	159	504
1106	SHALER	1	3	319	188	595
1107	SHALER	1	4	346	166	589
1108	SHALER	1	5	374	189	658
1109	SHALER	2	1	532	386	1046
1110	SHALER	2	2	370	299	747
1111	SHALER	2	3	338	173	592
1112	SHALER	2	4	376	274	752
1113	SHALER	2	5	198	119	368
1114	SHALER	3	1	298	235	592
1115	SHALER	3	2	307	227	601
1116	SHALER	3	3	263	246	585
1117	SHALER	3	4	361	282	712
1118	SHALER	3	5	300	308	674
1119	SHALER	4	1	382	326	821
1120	SHALER	4	2	232	175	468
1121	SHALER	4	3	297	263	653
1122	SHALER	4	4	284	297	655
1123	SHALER	4	5	267	187	524
1124	SHALER	5	1	313	306	708
1125	SHALER	5	2	321	263	670
1126	SHALER	5	3	261	210	531

2017 Primary  
Ballot Quantity Spreadsheet

1127	SHALER	5	4	164	147	350
1128	SHALER	5	5	355	287	753
1129	SHALER	6	1	334	233	628
1130	SHALER	6	2	351	238	681
1131	SHALER	6	3	248	227	537
1132	SHALER	6	4	199	104	332
1133	SHALER	6	5	274	228	550
1134	SHALER	7	1	325	189	584
1135	SHALER	7	2	411	294	792
1136	SHALER	7	3	328	226	639
1137	SHALER	7	4	545	346	1011
1138	SHARPSBURG	0	1	408	88	581
1139	SHARPSBURG	0	2	555	111	788
1140	SHARPSBURG	0	3	556	192	859
1141	S FAYETTE	0	1	275	214	561
1142	S FAYETTE	0	2	460	488	1077
1143	S FAYETTE	0	3	634	576	1450
1144	S FAYETTE	0	4	401	343	855
1145	S FAYETTE	0	5	398	333	845
1146	S FAYETTE	0	6	534	495	1206
1147	S FAYETTE	0	7	320	238	632
1148	S FAYETTE	0	8	544	732	1491
1149	S FAYETTE	0	9	277	278	635
1150	S FAYETTE	0	10	388	272	779
1151	S FAYETTE	0	11	433	374	929
1152	S FAYETTE	0	12	245	176	483
1153	SOUTH PARK	0	1	330	309	723
1154	SOUTH PARK	0	2	388	287	763
1155	SOUTH PARK	0	3	308	224	617
1156	SOUTH PARK	0	4	280	138	469
1157	SOUTH PARK	0	5	419	258	754
1158	SOUTH PARK	0	6	437	319	858
1159	SOUTH PARK	0	7	625	366	1107
1160	SOUTH PARK	0	8	280	180	521
1161	SOUTH PARK	0	9	382	330	809
1162	SOUTH PARK	0	10	437	308	843
1163	SOUTH PARK	0	11	311	202	593
1164	SOUTH PARK	0	12	298	204	567
1165	SOUTH PARK	0	13	452	434	1017
1166	S VERSAILLES	0	1	100	86	211
1167	SPRINGDAL BR	0	1	394	217	713
1168	SPRINGDAL BR	0	2	321	210	588
1169	SPRINGDAL BR	0	3	309	152	524
1170	SPRINGDAL BR	0	4	260	125	437
1171	SPRINGDAL TP	0	1	655	388	1153
1172	STOWE	1	0	313	52	414
1173	STOWE	2	1	121	31	180

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Ballot Quantity Spreadsheet

1174	STOWE	2	2	542	90	710
1175	STOWE	3	0	288	64	395
1176	STOWE	4	1	281	56	372
1177	STOWE	4	2	269	59	366
1178	STOWE	5	0	364	85	502
1179	STOWE	6	0	358	60	466
1180	STOWE	7	0	239	36	295
1181	STOWE	8	0	344	52	447
1182	STOWE	9	0	261	30	329
1183	SWISSVALE	0	1	732	87	924
1184	SWISSVALE	0	2	585	73	764
1185	SWISSVALE	0	3	524	81	700
1186	SWISSVALE	0	4	437	104	643
1187	SWISSVALE	0	5	545	101	759
1188	SWISSVALE	0	6	311	45	406
1189	SWISSVALE	0	7	487	92	671
1190	SWISSVALE	0	8	490	139	737
1191	SWISSVALE	0	9	510	68	655
1192	SWISSVALE	0	10	200	14	238
1193	SWISSVALE	0	11	491	107	677
1194	TARENTUM	1	1	381	179	670
1195	TARENTUM	1	2	268	140	486
1196	TARENTUM	2	0	322	126	528
1197	TARENTUM	3	1	151	89	306
1198	TARENTUM	3	2	337	175	602
1199	THORNBURG	0	1	189	178	420
1200	THORNBURG	0	2	315	184	597
1201	TRAFFORD	0	1	24	15	44
1202	TURTLE CREEK	1	1	549	191	826
1203	TURTLE CREEK	1	2	291	65	404
1204	TURTLE CREEK	2	1	502	101	686
1205	TURTLE CREEK	2	2	220	63	325
1206	TURTLE CREEK	3	1	439	102	628
1207	TURTLE CREEK	3	2	333	110	486
1208	UP ST CLAIR	1	1	247	351	688
1209	UP ST CLAIR	1	2	285	417	832
1210	UP ST CLAIR	1	3	333	490	941
1211	UP ST CLAIR	1	4	290	387	793
1212	UP ST CLAIR	2	1	409	398	951
1213	UP ST CLAIR	2	2	200	393	684
1214	UP ST CLAIR	2	3	462	422	1024
1215	UP ST CLAIR	2	4	180	270	534
1216	UP ST CLAIR	3	1	410	484	1031
1217	UP ST CLAIR	3	2	347	416	864
1218	UP ST CLAIR	3	3	390	650	1185
1219	UP ST CLAIR	4	1	341	483	971
1220	UP ST CLAIR	4	2	244	408	761

2017 Primary  
Ballot Quantity Spreadsheet

1221	UP ST CLAIR	4	3	221	318	610
1222	UP ST CLAIR	4	4	272	634	1021
1223	UP ST CLAIR	5	1	474	644	1305
1224	UP ST CLAIR	5	2	283	420	799
1225	UP ST CLAIR	5	3	317	400	865
1226	VERONA	0	1	339	88	506
1227	VERONA	0	2	372	141	589
1228	VERONA	0	3	415	127	621
1229	VERSAILLES	0	1	342	128	531
1230	VERSAILLES	0	2	319	100	469
1231	WALL	0	1	203	68	318
1232	WEST DEER	0	1	587	604	1361
1233	WEST DEER	0	2	266	230	567
1234	WEST DEER	0	3	422	296	831
1235	WEST DEER	0	4	332	357	770
1236	WEST DEER	0	5	428	310	825
1237	WEST DEER	0	6	356	278	752
1238	WEST DEER	0	7	611	738	1546
1239	WEST DEER	0	8	624	616	1419
1240	W ELIZABETH	0	1	160	79	272
1241	W HOMESTEAD	0	1	358	63	488
1242	W HOMESTEAD	0	2	311	105	452
1243	W HOMESTEAD	0	3	342	139	523
1244	WEST MIFFLIN	0	1	478	144	724
1245	WEST MIFFLIN	0	2	387	44	469
1246	WEST MIFFLIN	0	3	311	99	466
1247	WEST MIFFLIN	0	4	389	14	466
1248	WEST MIFFLIN	0	5	616	174	847
1249	WEST MIFFLIN	0	6	209	70	321
1250	WEST MIFFLIN	0	7	528	149	746
1251	WEST MIFFLIN	0	8	442	81	575
1252	WEST MIFFLIN	0	9	545	163	769
1253	WEST MIFFLIN	0	10	329	120	518
1254	WEST MIFFLIN	0	11	448	224	778
1255	WEST MIFFLIN	0	12	672	226	1005
1256	WEST MIFFLIN	0	13	399	128	590
1257	WEST MIFFLIN	0	14	552	235	868
1258	WEST MIFFLIN	0	15	419	125	592
1259	WEST MIFFLIN	0	16	755	325	1195
1260	WEST MIFFLIN	0	17	339	158	565
1261	WEST MIFFLIN	0	18	518	176	774
1262	WEST MIFFLIN	0	19	410	186	652
1263	WEST MIFFLIN	0	20	329	91	456
1264	WEST MIFFLIN	0	21	393	176	650
1265	WEST VIEW	0	1	385	230	707
1266	WEST VIEW	0	2	432	215	770
1267	WEST VIEW	0	3	323	180	577

2017 Primary  
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1268	WEST VIEW	0	4	311	195	584
1269	WEST VIEW	0	5	447	192	745
1270	WEST VIEW	0	6	393	199	687
1271	WEST VIEW	0	7	358	203	639
1272	WHITAKER	0	1	302	78	423
1273	WHITAKER	0	2	300	55	392
1274	WHITEHALL	0	1	283	187	527
1275	WHITEHALL	0	2	314	211	599
1276	WHITEHALL	0	3	334	261	666
1277	WHITEHALL	0	4	337	255	669
1278	WHITEHALL	0	5	373	235	688
1279	WHITEHALL	0	6	659	153	1027
1280	WHITEHALL	0	7	279	152	455
1281	WHITEHALL	0	8	390	307	785
1282	WHITEHALL	0	9	297	193	547
1283	WHITEHALL	0	10	334	219	616
1284	WHITEHALL	0	11	315	240	626
1285	WHITEHALL	0	12	280	215	547
1286	WHITEHALL	0	13	257	131	445
1287	WHITEHALL	0	14	282	236	577
1288	WHITEHALL	0	15	513	342	964
1289	WHITEHALL	0	16	280	254	596
1290	WHITE OAK	0	1	410	236	740
1291	WHITE OAK	0	2	420	288	790
1292	WHITE OAK	0	3	477	292	862
1293	WHITE OAK	0	4	417	267	760
1294	WHITE OAK	0	5	448	277	801
1295	WHITE OAK	0	6	369	273	713
1296	WHITE OAK	0	7	559	407	1068
1297	WILKINS	1	1	431	215	770
1298	WILKINS	1	2	343	241	655
1299	WILKINS	1	3	473	224	795
1300	WILKINS	1	4	361	181	631
1301	WILKINS	1	5	289	91	434
1302	WILKINS	2	1	350	195	618
1303	WILKINS	2	2	590	196	899
1304	WILKINSBURG	1	1	899	34	1017
1305	WILKINSBURG	1	2	669	27	767
1306	WILKINSBURG	1	3	420	15	481
1307	WILKINSBURG	1	4	475	55	605
1308	WILKINSBURG	1	5	379	88	536
1309	WILKINSBURG	1	6	850	59	1009
1310	WILKINSBURG	2	1	649	68	827
1311	WILKINSBURG	2	2	772	120	981
1312	WILKINSBURG	2	3	709	51	865
1313	WILKINSBURG	2	4	452	22	544
1314	WILKINSBURG	2	5	628	30	763

2017 Primary  
Ballot Quantity Spreadsheet

<b>1315</b>	WILKINSBURG	3	1	484	106	726
<b>1316</b>	WILKINSBURG	3	2	465	87	669
<b>1317</b>	WILKINSBURG	3	3	723	35	849
<b>1318</b>	WILKINSBURG	3	4	762	90	1018
<b>1319</b>	WILKINSBURG	3	5	839	54	1039
<b>1320</b>	WILKINSBURG	3	6	467	40	557
<b>1321</b>	WILMERDING	0	1	401	68	540
<b>1322</b>	WILMERDING	0	2	523	125	751
<b>1323</b>	CASTLE SHANNON	0	6			
<b>1324</b>	PITTSBURGH	32	8			
<b>1325</b>	PLEASANT HL	0	1			
<b>1326</b>	S. VERSAILLES	0	1			
<b>1327</b>	WHITE OAK	0	7			
	Totals:			538018	259800	924159

PSEUDO	MUNICIPALITY	WARD	DIST	DEM_REG	REP_REG	TOTAL_REG	SAM_RECNO
1185	SWISSVALE	0	3	524	81	700	1185