

**COUNTY OF**



**ALLEGHENY**

**RICH FITZGERALD**  
COUNTY EXECUTIVE

# **2016 General Election Experience Report**

## **Contributors:**

**Gwen Abramowitz**

**John O'Brien**

**Kristin Perkoski**

**Larry Szurley**

**David Voyer**

**Mark Wolosik**

---

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 924,506 registered voters in Allegheny County, 660,009 – or 71.39%, voted at the past November 8, 2016 General Election. This level of voter participation is higher than turnout levels in recent past elections of this type.

A total of 37,050 absentee ballots were issued and 2,220 provisional ballots were cast. Of the provisional ballots, 275 were fully counted, 671 partially counted and 1,274 were not counted. The majority of those not counted were due to the fact that the provisional voter was not a registered voter.

Over 350,000 “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. 217 emergency ballots were used in 17 voting districts. 50 were cast in one precinct when the Judge of Election did not appear to serve that day and the remaining 167 were cast primarily due to the fact that the local district election boards had difficulty in printing a “zero tape” prior to the opening of the polls. All of the affected precincts successfully printed their zero tapes that morning.

58 candidates appeared on the ballot and a total of over 75 distinct ballot configurations were created to accommodate the Federal and State office contests. An amendment to the Pennsylvania Constitution concerning the mandatory retirement age of judges and justices appeared on every ballot.

## **Accessibility**

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

## **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, no instance of uncertified software has been detected. Copies of the reports prepared for the November 8, 2016 General Election have been posted on the Allegheny County Elections website.

## **Logic and Accuracy Testing**

Extensive automated and manual Logic and Accuracy Testing (L&A) was performed. Automated L&A was performed on all 4,508 iVotronic voting machines deployed on Election Day. Manual L&A was also performed for each of the approximately 75 different ballot configurations. Those parties and organizations permitted by Pennsylvania law to be present during this process were duly notified.

The “test deck” comprised of 22,491 ballots, containing ballots for every candidate and question in all 1,322 election districts, 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 election. This test was conducted prior to Election day as well as before final certification of the election results. In both tests, the ballot scanners produced an accurate count. Public notice of the pre-election test was given, as required by law.

## **Network Security**

Also following past practice, an independent third-party review was conducted both prior to and after the past Election to assure that the election network was isolated and not connected to any external network. The report produced by Solutions 4 Networks has been posted to the Elections website.

## **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. Once again, the parallel testing performed at the November 8, 2016 General Election indicated that the randomly-selected voting devices recorded and counted all votes completely and correctly. A copy of the report issued by Baker Tilly has been posted to the Elections website

---

**GRP Consulting Group, LLC**  
4915 Twin Lakes Rd  
Suite 15  
Boulder, Colorado 80301  
tel: 303/249-0445 • fax: 303/442-1511

---



## **GRP Consulting Group, LLC**

---

***ALLEGHENY COUNTY PRE NOVEMBER 8, 2016  
GENERAL ELECTION  
ES&S iVOTRONICS FIRMWARE VERIFICATION  
STUDY***

### **EXECUTIVE SUMMARY**

Developed for:

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

Document Number GCG-AC-iVo-FRPT-000229

## TABLE OF CONTENTS

<b>1. INTRODUCTION: ALLEGHENY COUNTY ES&amp;S IVOTRONICS FIRMWARE VERIFICATION STUDY .....</b>	<b>2</b>
1.1 APPROACH.....	2
1.1.1 <i>Study's Focus</i> .....	2
1.1.2 <i>Study's Concentration</i> .....	2
1.1.3 <i>Study's Phases</i> .....	2
<b>2. FINDINGS .....</b>	<b>4</b>

# 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 November 8, 2016 General 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 September 12, 2016.

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 November 8, 2016 General 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 September 12, 2016 ; 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 September 12, 2016, 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.

---

**GRP Consulting Group, LLC**  
4915 Twin Lakes Rd  
Suite 15  
Boulder, Colorado 80301  
tel: 303/249-0445 • fax: 303/442-1511

---



# **GRP Consulting Group, LLC**

---

***ALLEGHENY COUNTY PRE NOVEMBER 8, 2016  
GENERAL 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-000229

## **TABLE OF CONTENTS**

<b>1. INTRODUCTION: ALLEGHENY COUNTY ES&amp;S IVOTRONICS FIRMWARE VERIFICATION STUDY .....</b>	<b>2</b>
1.1 APPROACH.....	2
1.1.1 <i>Study's Focus</i> .....	2
1.1.2 <i>Study's Concentration</i> .....	2
1.1.3 <i>Study's Phases</i> .....	3
1.2 PURPOSE.....	3
1.3 STATEMENT OF INDEPENDENCE .....	3
1.4 REFERENCES.....	4
1.5 SYSTEMS INFORMATION .....	4
<b>2. ALLEGHENY COUNTY PRE NOVEMBER 8, 2016 GENERAL IVOTRONIC FIRMWARE VERIFICATION PROCESS; PREFORMED SEPTEMBER 12, 2016 .....</b>	<b>7</b>
2.1 PRESENT DURING THE SEPTEMBER 12, 2016 VERIFICATION PROCESS: .....	7
2.2 SAMPLE SIZE RANDOMIZATION PROCEDURE .....	7
<b>3. ALLEGHENY COUNTY PRE NOVEMBER 8, 2016 GENERAL ELECTION ES&amp;S IVOTRONIC FIRMWARE VERIFICATION STUDY RESULTS .....</b>	<b>8</b>
3.1 SEPTEMBER 12, 2016 RESULTS .....	8
3.2 SEPTEMBER 12, 2016 COLLECTIVE FIRMWARE FILES .....	15
<b>4. FINDINGS .....</b>	<b>17</b>
<b>5. APPENDIX A - TERMS AND ABBREVIATIONS .....</b>	<b>18</b>

## 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 November 8, 2016 General 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 September 12, 2016.

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 November 8, 2016 General 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-November 8, 2016 General 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, 10/14/08

## 1.5 Systems Information

Items identified in Table 1 reflect firmware deployed at the Allegheny County Division of Elections warehouse on September 12, 2016:

**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 September 12, 2016:

**Table 2 - Matrix of Hardware**

<u>iVotronic Serial Number</u>	<u>Microchip Manufacturer</u>	<u>Microchip Part Number</u>
-> V5176601	AMD	0202ABC-S
-> V5177618	Spansion	0612EBA-G
-> V5180797	Spansion	0603FRC-G
-> V5183971	Spansion	0692FBE-G
-> V5184223	Spansion	0609BRB-G
-> V5184777	Spansion	0612GBA-G
-> V5187152	Spansion	0609BRB-G
-> V5176930	Spansion	0612GBA-G
-> V5177814	Spansion	0612EBA-G

<u>iVotronic Serial Number</u>	<u>Microchip Manufacturer</u>	<u>Microchip Part Number</u>
-> V5182792	Spansion	0612EBA-G
-> V5183999	Spansion	0612GBA-G
-> V5184235	Spansion	0612GBA-G
-> V5185987	Spansion	0609BRB-G
-> V5177572	Spansion	0603FRC-G
-> V5179674	Spansion	0603FRC-G
-> V5182846	Spansion	0612EBA-G
-> V5184023	Spansion	0612GBA-G
-> V5184692	Spansion	06009BRB-G
-> V5186498	Spansion	0612FBE-G
-> V5173231	Spansion	0446EBE-G

**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 NOVEMBER 8, 2016 GENERAL I VOTRONIC FIRMWARE VERIFICATION PROCESS; PREFORMED SEPTEMBER 12, 2016**

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 September 12, 2016 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:

Ron Brandes – VoteAllegheny

Louise Cannon – The League of Women Voters

### **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.

Ron Brandes of VoteAllegheny and Louise Cannon of The League of Women Voters along with Division of Election employees initiated the machine-selection effort 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 November 8, 2016 General Election ES&S iVotronic Firmware Verification Study Results**

#### **3.1 September 12, 2016 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.

#### **09:48 Verify firmware procedure for iVotronic DRE #1**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5184023 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 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.

#### **09:54 Verify firmware procedure for iVotronic DRE #2**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5182846 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 ->V5177572 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.

**10:02 Verify firmware procedure for iVotronic DRE #4**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5184692 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.

**10:06 Verify firmware procedure for iVotronic DRE #5**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5182792 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 #6**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5176601 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.

**10:13 Verify firmware procedure for iVotronic DRE #7**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5184235 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.

**10:16 Verify firmware procedure for iVotronic DRE #8**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5183999 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.

**10:22 Verify firmware procedure for iVotronic DRE #9**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5176930 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.

**10:24 Verify firmware procedure for iVotronic DRE #10**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5186498 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 ->V5187152 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.

**10:30 Verify firmware procedure for iVotronic DRE #12**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n V510797 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.

**10:32 Verify firmware procedure for iVotronic DRE #13**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5183971 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.

**10:35 Verify firmware procedure for iVotronic DRE #14**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5184777 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.

**10:37 Verify firmware procedure for iVotronic DRE #15**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5184223 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.

**10:40 Verify firmware procedure for iVotronic DRE #16**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->5185987 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.

**10:43 Verify firmware procedure for iVotronic DRE #17**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5179674 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.

**10:46 Verify firmware procedure for iVotronic DRE #18**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5177814 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 #19**

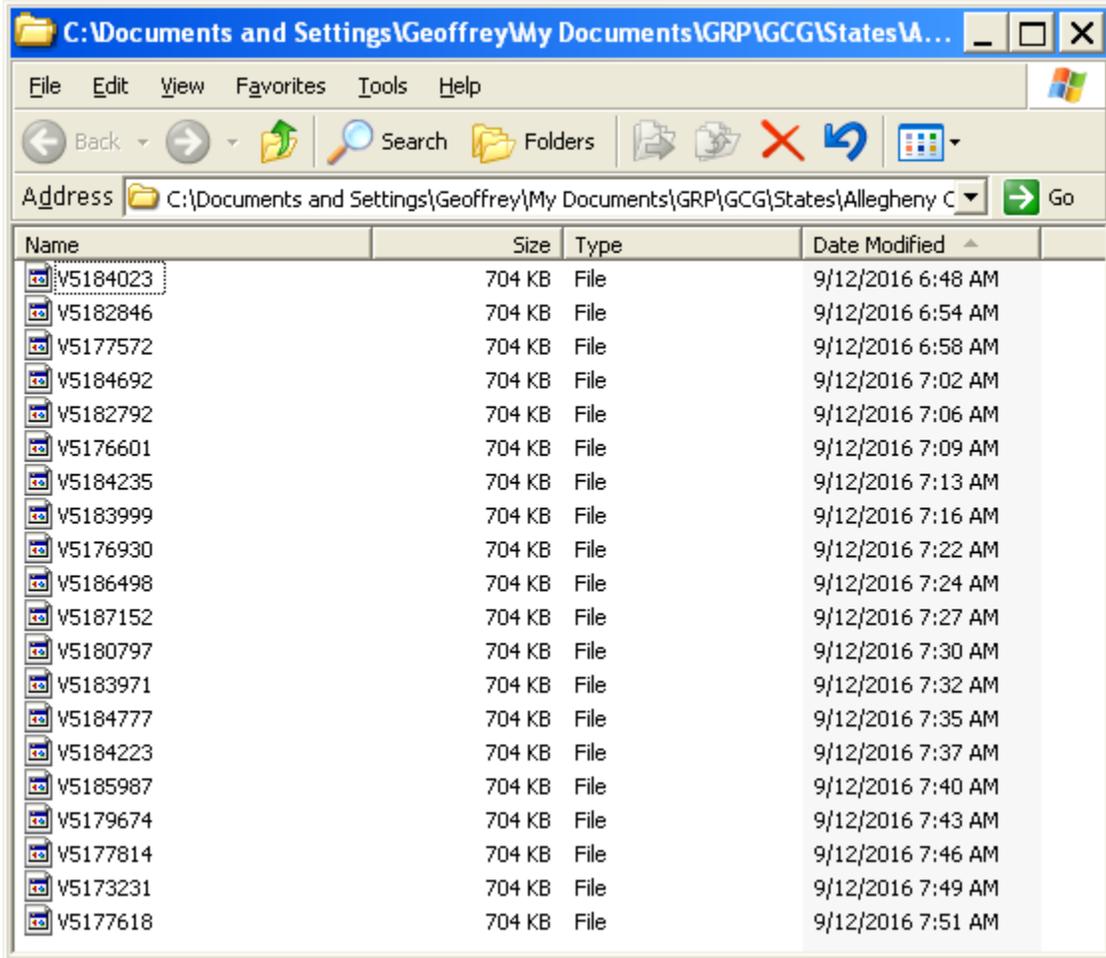
1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V5173231 was selected. (*ADA Device*)
2. Perform iVotronic Firmware Verify Procedure.
3. Upon opening of iVotronic DRE, the removable CMOS was a Spansion CMOS part S29AL016D90TF101, and the CHIPMASTER 6000 XPU EEPROM programmer was used to read and save the binary firmware code.
4. The 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.

**10:51 Verify firmware procedure for iVotronic DRE #20**

1. Randomly select an iVotronic DRE from the warehouse for the firmware verification procedure; s/n ->V51786498 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 September 12, 2016 Collective Firmware Files



Name	Size	Type	Date Modified
V5184023	704 KB	File	9/12/2016 6:48 AM
V5182846	704 KB	File	9/12/2016 6:54 AM
V5177572	704 KB	File	9/12/2016 6:58 AM
V5184692	704 KB	File	9/12/2016 7:02 AM
V5182792	704 KB	File	9/12/2016 7:06 AM
V5176601	704 KB	File	9/12/2016 7:09 AM
V5184235	704 KB	File	9/12/2016 7:13 AM
V5183999	704 KB	File	9/12/2016 7:16 AM
V5176930	704 KB	File	9/12/2016 7:22 AM
V5186498	704 KB	File	9/12/2016 7:24 AM
V5187152	704 KB	File	9/12/2016 7:27 AM
V5180797	704 KB	File	9/12/2016 7:30 AM
V5183971	704 KB	File	9/12/2016 7:32 AM
V5184777	704 KB	File	9/12/2016 7:35 AM
V5184223	704 KB	File	9/12/2016 7:37 AM
V5185987	704 KB	File	9/12/2016 7:40 AM
V5179674	704 KB	File	9/12/2016 7:43 AM
V5177814	704 KB	File	9/12/2016 7:46 AM
V5173231	704 KB	File	9/12/2016 7:49 AM
V5177618	704 KB	File	9/12/2016 7:51 AM

```
C:\WINDOWS\system32\cmd.exe
C:\>fciv 91216 -shal
///
/// File Checksum Integrity Verifier version 2.05.
///
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05173231
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05176601
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05176930
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05177572
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05177618
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05177814
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05179674
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05180797
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05182792
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05182846
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05183971
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05183999
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05184023
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05184223
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05184235
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05184692
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05184777
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05185987
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05186498
f6a8d4570988e2d159398503144e64d48f0cc69f 91216\05187152
```

## 4. FINDINGS

GRP Consulting Group was engaged by the Allegheny Division of Elections on site at 901 Pennsylvania Ave., Pittsburgh, PA on September 12, 2016; 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 September 12, 2016, 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

## November 2016 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

**Table of Contents**

Overview.....2

    Site Contact .....2

General Physical Security/Building Access .....2

    Physical Security/Building Access - No Issues Found .....2

Election Tabulations Network .....5

    Network Overview - Physical.....5

    Network Overview - Logical.....5

        No External Connections Found .....7

        No Wireless Adapters or Bluetooth Capability Found on Client Devices .....7

        No Wireless Keyboards and Mice.....7

    “Air Gap” Network Intact - Recommendations for Improvement .....7

        Client Operating Systems – Update the Clients to a supported OS. ....7

        Server Operating System – Update the Server Operating System.....7

        Remote Assistance Enabled.....7

        Remote Desktop is Enabled.....7

        Windows Update Enabled/None Selected. ....8

        Lock Physical Access to the Dell Powerconnect 2716 .....8

        Remove the Default Gateway Option .....8

## **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 November 7, 2016. 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 November 10, 2016. 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

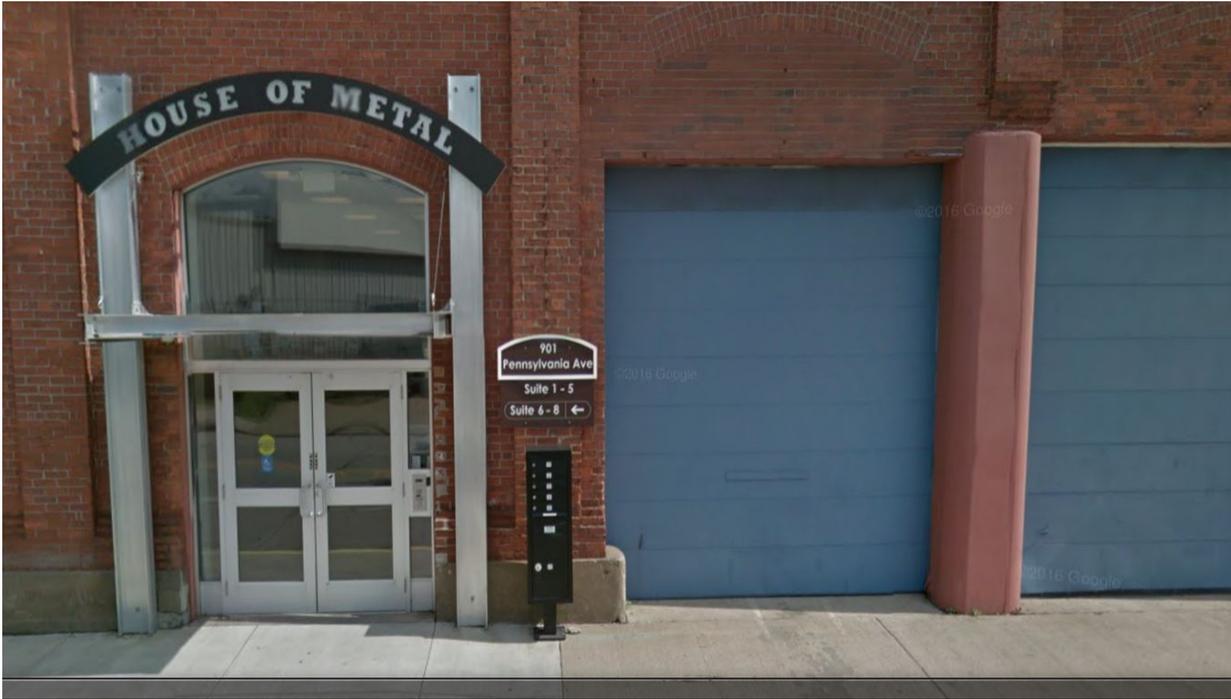
Pittsburgh, PA 15233

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

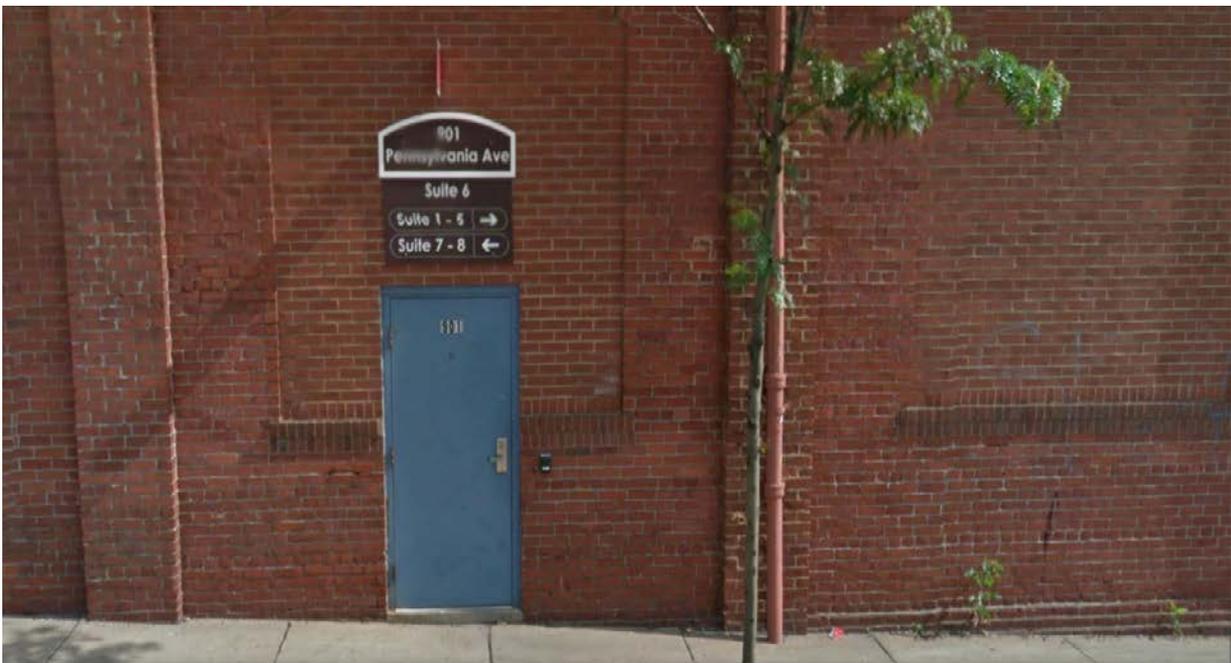
### **Physical Security/Building Access - No Issues Found**

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:**



11/7/16 - solutions4networks was met at suite 901 by Robin Gigliotti after a call was placed and was asked to provide a driver's license identification and a business card before access to the building was granted.

11/10/16 - solutions4networks was met at suite 901 by Elizabeth Dell after a call was placed 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. Cell phones were not permitted into the computer room that contained the tabulation network.

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

# Election Tabulations Network

## Network Overview - Physical

A Network Topology diagram was provided to solutions4networks. The observed network topology was identical to the provided drawing.

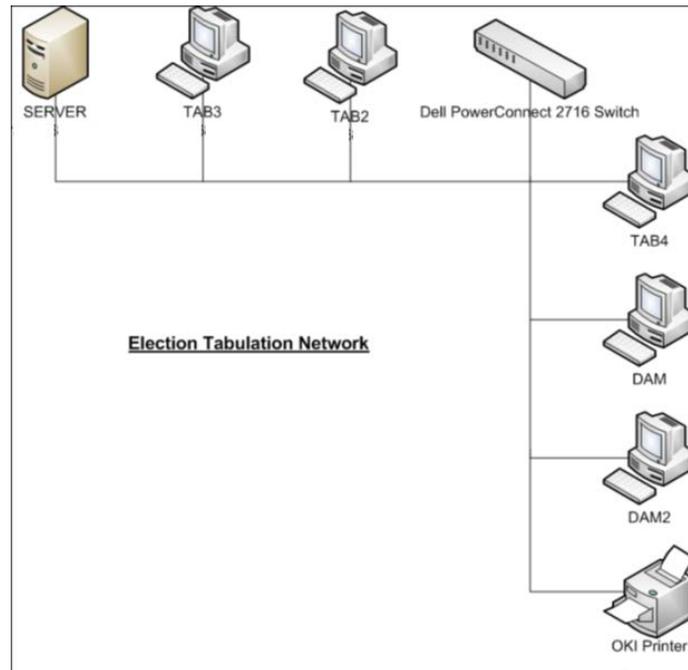


Figure 1 - Election Tabulation Network

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 of 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.

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

Dell Optiplex GX520	Dell Optiplex GX520	Dell Optiplex GX520	Dell Precision PWS690	Dell Precision PWS690	Okidata Printer B6300
TAB3.elections.local	TAB2.elections.local	TAB4.elections.local	DAM.elections.local	DAM2.elections.local	
DHCP	DHCP	DHCP	static	DHCP enabled/DNS hard coded	DHCP reserved
WinXP SP2	WinXP SP2	WinXP SP2	WinXP SP2	WinXP SP2	
1 GB Ram	1 GB Ram	1 GB Ram	2 GB Ram	2 GB Ram	
192.168.1.24	192.168.1.22	192.168.1.10	192.168.1.101	192.168.1.102	192.168.1.50
255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0
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)	
DHCP Server: 192.168.1.20	DHCP Server: 192.168.1.20	DHCP Server: 192.168.1.20		DHCP 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	DNS Server: 192.168.1.20	
Wins Server: 192.168.1.20	Wins Server: 192.168.1.20	Wins Server: 192.168.1.20			
wired keyboard	wired keyboard	wired keyboard	wired keyboard	wired keyboard	
wired mouse	wired mouse	wired mouse	wired mouse	wired mouse	
3.5 floppy disk	3.5 floppy disk	3.5 floppy disk	3.5 floppy disk	3.5 floppy disk	
RW/DVD	RW/DVD	RW/DVD	RW/DVD	RW/DVD	
com1/com2	com1/com2	com1/com2	com1/com2	com1/com2	
N/A	N/A	N/A	N/A	N/A	
	Connected to printer	Connected to printer	Connected to printer		
Remote Assistance is enabled	Remote Assistance is enabled	Remote Assistance is enabled	Remote Assistance is enabled	Remote Assistance is enabled	
No Automatic Updates Allowed	No Automatic Updates Allowed	No Automatic Updates Allowed	Nothing is selected for Auto Updates	Auto Updates enabled for 3:00AM daily	
Symantec A/V: Parent Server BOE Definition File 5/8/2006 Rev. 35	Symantec A/V: Parent Server BOE Definition File 5/8/2006 Rev. 35	Symantec A/V: Parent Server BOE Definition File 5/8/2006 Rev. 35	N/A	N/A	
<b>Physical Connections:</b>	<b>Physical Connections:</b>	<b>Physical Connections:</b>	<b>Physical Connections:</b>	<b>Physical Connections:</b>	
ethernet	ethernet	ethernet	ethernet	ethernet	
usb mouse	usb mouse	usb mouse	usb mouse	usb mouse	
usb keyboard	usb keyboard	usb keyboard	usb keyboard	usb keyboard	
monitor	monitor	monitor	monitor	monitor	
Serial connection to the ESS (Elections System&Software) Hub This the cardridge that the voter data is on	Serial connection to the ESS (Elections System&Software) Hub This the cardridge that the voter data is on	Serial connection to the ESS (Elections System&Software) Hub This the cardridge that the voter data is on	Serial Bus connection going to a bank of 8 v.92 modems all are powered off.	Serial Bus connection going to a bank of 8 v.92 modems all are powered off.	

“Air Gap” Analysis – No Issues Found

### **No External Connections Found**

The only outside (external) connections found on the network were the 16 dial-up modems on the 2 DAM servers which are part of the application. 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 in the vicinity of the switch. solutions4networks 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.

### **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.

### **Remote Assistance Enabled.**

Remote Assistance is enabled on the 3 clients and 2 DAM servers. This serves 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 really 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.

### **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 of 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 of 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  
General Election

November 8, 2016



Candor. Insight. Results.

# County of Allegheny, Commonwealth of Pennsylvania

---

Table of Contents

November 8, 2016

	<u>Page</u>
<b>Parallel Test Report</b>	1
<b>Reconciliation of Vote Totals in Script to Final Results Tape, Flash Cards and Master PEB</b>	2
<b>Exhibit A</b> - Parallel Testing Work Performed	
<b>Exhibit B</b> - Zero Tape	
<b>Exhibit C</b> - Scripts	
<b>Exhibit D</b> - Final Results Tape	
<b>Exhibit E</b> - Flash Cards and Personalized Ballot Printouts	
<b>Exhibit F</b> - Precinct Listing	
<b>Exhibit G</b> - Random Sample Selection	
Attachment - 8 Video Tapes	

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 November 8, 2016, the date of the general 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 1192, Swissvale, District 10. 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 two voting machines tested, accurately recorded and counted the results of 152 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  
November 8, 2016

**COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
RECONCILIATION OF VOTE TOTALS IN SCRIPT TO FINAL RESULTS TAPE, FLASH CARDS AND MASTER PEB  
NOVEMBER 8, 2016**

PRECINCT: SWISSVALE DISTRICT 10

	Voter Terminal Data per Script		Final Results Tape	Flash Card Data (from Precinct Report)		Master PEB		Differences
	V5179968	V5174171		Total	V5179968	V5174171	Total	
Public Count	92	0	92	92	0	92	92	0
	0	60	60	0	60	60	60	0
	92	60	152	92	60	152	152	0

**Presidential Electors**

Hillary Clinton	24	15	39	39	15	39	39	0
Donald J. Trump	30	21	51	51	21	51	51	0
Darrell L. Castle	10	6	16	16	6	16	16	0
Jill Stein	13	9	22	22	9	22	22	0
Gary Johnson	15	9	24	24	9	24	24	0
Write-in	0	0	0	0	0	0	0	0
<b>Total</b>	92	60	152	152	60	152	152	0

**United States Senator**

Katie McGinty	36	24	60	60	24	60	60	0
Pat Toomey	31	21	52	52	21	52	52	0
Edward T. Clifford, III	25	15	40	40	15	40	40	0
Write-in	0	0	0	0	0	0	0	0
<b>Total</b>	92	60	152	152	60	152	152	0

**Attorney General**

Josh Shapiro	49	30	79	79	30	79	79	0
John Rafferty	43	30	73	73	30	73	73	0
Write-in	0	0	0	0	0	0	0	0
<b>Total</b>	92	60	152	152	60	152	152	0

**Auditor General**

Eugene A. DePasquale	30	14	44	44	14	44	44	0
John Brown	24	18	42	42	18	42	42	0
John J. Sweeney	22	19	41	41	19	41	41	0
Roy A. Minet	16	9	25	25	9	25	25	0
Write-in	0	0	0	0	0	0	0	0
<b>Total</b>	92	60	152	152	60	152	152	0

**COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
RECONCILIATION OF VOTE TOTALS IN SCRIPT TO FINAL RESULTS TAPE, FLASH CARDS AND MASTER PEB  
NOVEMBER 8, 2016**

PRECINCT: SWISSVALE DISTRICT 10

	Voter Terminal Data per Script		Final Results Tape	Flash Card Data (from Precinct Report)		Master PEB Data		Differences
	V5179968	V5174171		Total	V5179968	V5174171	Total	
State Treasurer								
Joe Torsella	25	16	41	25	16	41	41	0
Otto Voit	31	23	54	31	23	54	54	0
Kristin Combs	19	8	27	19	8	27	27	0
James Babb	17	13	30	17	13	30	30	0
Write-in	0	0	0	0	0	0	0	0
<b>Total</b>	<b>92</b>	<b>60</b>	<b>152</b>	<b>92</b>	<b>60</b>	<b>152</b>	<b>152</b>	<b>0</b>

Representative in Congress

Mike Doyle	49	34	83	49	34	83	83	0
Lenny McAllister	43	26	69	43	26	69	69	0
Write-in	0	0	0	0	0	0	0	0
<b>Total</b>	<b>92</b>	<b>60</b>	<b>152</b>	<b>92</b>	<b>60</b>	<b>152</b>	<b>152</b>	<b>0</b>

Senator in the General Assembly

Jay Costa, Jr.	78	51	129	78	51	129	129	0
Write-in: A (Alpha)	14	9	23	14	9	23	23	0
<b>Total</b>	<b>92</b>	<b>60</b>	<b>152</b>	<b>92</b>	<b>60</b>	<b>152</b>	<b>152</b>	<b>0</b>

Representative in General Assembly

Paul Costa	77	50	127	77	50	127	127	0
Write-in: B (Bravo)	15	10	25	15	10	25	25	0
<b>Total</b>	<b>92</b>	<b>60</b>	<b>152</b>	<b>92</b>	<b>60</b>	<b>152</b>	<b>152</b>	<b>0</b>

Constitutional Amendment

Yes	81	56	137	81	56	137	137	0
No	11	4	15	11	4	15	15	0
<b>Total</b>	<b>92</b>	<b>60</b>	<b>152</b>	<b>92</b>	<b>60</b>	<b>152</b>	<b>152</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 two 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: V5174171->  
PEB S/N PS224114-\_ (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

2016 General  
SWISSVALE DIST 10  
POLLING LOCATION ZERO TAPE

Public Count Statistics  
Total Ballots Cast: 0  
Total Ballots Counted: 0

Number of Terminals Opened: 2

Individual Voter Terminal Data  
S/N V5179968  
Public Count: 0  
Protective Count: 7506  
OPENED 06:56:48 11/08/2016  
NOT CLOSED

S/N V5174171  
Public Count: 0  
Protective Count: 3785  
OPENED 07:01:15 11/08/2016  
NOT CLOSED

\*\*\*\*\*

PRECINCT: SWISSVALE DIST 10  
Public Count: 0  
Ballot Style Counts  
Ballot Style #1192 0

Straight Party Option  
(Vote for 1) Total: 0  
DEM-Democratic 0  
REP-Republican 0  
CON-Constitution 0  
GRN-Green 0  
LIB-Libertarian 0  
UnderVotes For Above contest: 0

PRESIDENTIAL ELECTORS  
(Vote for 1) Total: 0  
DEM-Hillary Clinton 0  
REP-Donald J. Trump 0  
CON-Darrell L. Castle 0  
GRN-Jill Stein 0  
LIB-Gary Johnson 0

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

United States Senator			
(Vote for 1)	Total:		0
DEM-Katie McGinty			0
REP-Pat Toomey			0
LIB-Edward T. Clifford, III			0
>Write-ins in above contest:			0
UnderVotes For Above contest:			0
Attorney General			
(Vote for 1)	Total:		0
DEM-Josh Shapiro			0
REP-John Rafferty			0
>Write-ins in above contest:			0
UnderVotes For Above contest:			0
Auditor General			
(Vote for 1)	Total:		0
DEM-Eugene A. DePasquale			0
REP-John Brown			0
GRN-John J. Sweeney			0
LIB-Roy A. Minet			0
>Write-ins in above contest:			0
UnderVotes For Above contest:			0
State Treasurer			
(Vote for 1)	Total:		0
DEM-Joe Torsella			0
REP-Otto Voit			0
GRN-Kristin Combs			0
LIB-James Babb			0
>Write-ins in above contest:			0
UnderVotes For Above contest:			0
CNG0014 Representative in Congress			
(Vote for 1)	Total:		0
DEM-Mike Doyle			0
REP-Lenny McAllister			0
>Write-ins in above contest:			0
UnderVotes For Above contest:			0
SEN0043 Senator in the General Assembly			
(Vote for 1)	Total:		0
DEM-Jay Costa, Jr.			0
>Write-ins in above contest:			0
UnderVotes For Above contest:			0
LEG0034 Representative in the General As			
(Vote for 1)	Total:		0
DEM-Paul Costa			0
>Write-ins in above contest:			0
UnderVotes For Above contest:			0

Constitutional Amendment  
(Vote for 1) Total:

Yes

0

No

0

UnderVotes For Above contest:

0

0

Time/Date: 07:03:31 11/08/2016

Signature: *[Handwritten Signature]*

Signature: *Judrey Hale*

Signature: *[Handwritten Signature]*

Signature: *Elsa Crick*

COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
 ELECTION, TUESDAY, NOVEMBER 8, 2016  
 SUMMARY OF SCRIPTS

Public Count #	President of the United States (vote for one)				United States Senator (vote for one)				Attorney General (vote for one)			Auditor General (vote for one)						
	Clinton	Trump	Castle	Stein	Johnson	Write-In	McGinty	Toomey	Clifford	Write-In	Shapiro	Rafferty	Write-In	DePasquale	Brown	Sweeney	Minet	Write-In
Machine 1 0002756	24	30	10	13	15	0	36	31	25	0	49	43	0	30	24	22	16	0
Machine 2 0002755	15	21	6	9	9	0	24	21	15	0	30	30	0	14	18	19	9	0
Total	39	51	16	22	24	0	60	52	40	0	79	73	0	44	42	41	25	0

Public Count #	State Treasurer (vote for one)			Representative in Congress (vote for one)			Senator in the General Assembly (vote for one)		Representative in the General Assembly (vote for one)		Constitutional Amendment			
	Torsella	Voit	Combs	Babb	Write-in	Doyle	McAllister	Write-in	Jay Costa	Write-in: A (Alpha)	Paul Costa	Write-in: B (Bravo)	Yes	No
Machine 1 0002756	25	31	19	17	0	49	43	0	78	14	77	15	81	11
Machine 2 0002755	16	23	8	13	0	34	26	0	51	9	50	10	56	4
Total	41	54	27	30	0	83	69	0	129	23	127	25	137	15



Machine #  
002756

COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
ELECTION, TUESDAY, NOVEMBER 8, 2016  
VOTER SIMULATION PROJECT SCRIPT

Public Count #	President of the United States (vote for one)				United States Senator (vote for one)				Attorney General (vote for one)			Auditor General (vote for one)						
	Clinton	Trump	Cain	Stein	Johnson	Write-In	McCarthy	Toomay	Clifford	Write-In	Shapiro	Rafferty	Write-In	DePaquale	Brown	Sevency	Miner	Write-In
81																		
82																		
83																		
84																		
85																		
86																		
87																		
88																		
89																		
90																		
91																		
92																		
Subtotal	24	30	0	0	13	15	0	31	25	0	49	43	0	30	24	22	16	0



Machine #  
000756

Public Count #	State Treasurer (vote for one)			Representative in Congress (vote for one)			Senator in the General Assembly (vote for one)		Representative in the General Assembly (vote for one)		Constitutional Amendment			
	Torsella	Voit	Combs	Babb	Write-in	Boyle	McAllister	Write-in	Jay Costa	Write-in: A (Alpha)	Paul Costa	Write-in: B (Bravo)	Yes	No
81														
82														
83														
84														
85														
86														
87														
88														
89														
90														
91														
92														
<b>Subtotal</b>	<b>25</b>	<b>1</b>	<b>19</b>	<b>17</b>	<b>0</b>	<b>49</b>	<b>43</b>	<b>0</b>	<b>78</b>	<b>14</b>	<b>77</b>	<b>15</b>	<b>81</b>	<b>11</b>

Machine #  
0002955

COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA  
ELECTION, TUESDAY, NOVEMBER 8, 2016  
VOTER SIMULATION PROJECT SCRIPT

Public Count #	President of the United States (vote for one)					United States Senator (vote for one)					Attorney General (vote for one)					Auditor General (vote for one)				
	Clinton	Trump	Carik	Stein	Johnson	McCarthy	Toomey	Clifford	Write-in	Shapiro	Rafferty	Write-in	DePasquale	Brown	Sweeney	Minist	Write-in			
93																				
94																				
95																				
96																				
97																				
98																				
99																				
100																				
101																				
102																				
103																				
104																				
105																				
106																				
107																				
108																				
109																				
110																				
111																				
112																				
113																				
114																				
115																				
116																				
117																				
118																				
119																				
120																				
121																				
122																				
123																				
124																				
125																				
126																				
127																				
128																				
129																				
130																				
131																				
132																				
133																				
134																				
135																				
136																				
137																				
138																				
139																				
140																				
141																				
142																				
143																				
144																				
145																				
146																				
147																				
148																				
149																				
150																				
151																				
Subtotal	15	21	6	9	9	0	24	15	0	30	0	30	14	18	9	0				

Machine #  
0002755

Public Count #	State Treasurer (vote for each)				Representative in Congress (vote for each)			Senator in the General Assembly (vote for each)		Representative in the General Assembly (vote for each)		Conditional Amendment		
	Torsella	Voit	Combs	Babb	Wright	Boyle	McAllister	Wright	Jay Costa	Wright	Paul Costa	Wright	Yes	No
93														
94														
95														
96														
97														
98														
99														
100														
101														
102														
103														
104														
105														
106														
107														
108														
109														
110														
111														
112														
113														
114														
115														
116														
117														
118														
119														
120														
121														
122														
123														
124														
125														
126														
127														
128														
129														
130														
131														
132														
133														
134														
135														
136														
137														
138														
139														
140														
141														
142														
143														
144														
145														
146														
147														
148														
149														
150														
151														
152														
Subtotal	16	24	8	13	0	34	26	0	51	9	50	10	56	4

Terminal S/N: V5174171->  
 PEB S/N PS224114-\_ (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

2016 General  
 SWISSVALE DIST 10  
 POLLING LOCATION RESULTS

Public Count Statistics

Total Ballots Cast: 152  
 Total Ballots Counted: 152

Number of Terminals Opened: 2

Individual Voter Terminal Data  
 S/N V5179968

Public Count: 92  
 Protective Count: 7598  
 OPENED 06:56:48 11/08/2016  
 CLOSED 20:04:26 11/08/2016  
 Terminal Ballots Counted: 92

S/N V5174171

Public Count: 60  
 Protective Count: 3845  
 OPENED 07:01:15 11/08/2016  
 CLOSED 20:09:23 11/08/2016  
 Terminal Ballots Counted: 60

\*\*\*\*\*

PRECINCT: SWISSVALE DIST 10

Public Count: 152  
 Ballot Style Counts  
 Ballot Style #1192 152

Straight Party Option

(Vote for 1)	Total:	0
DEM-Democratic		0
REP-Republican		0
CON-Constitution		0
GRN-Green		0
LIB-Libertarian		0
UnderVotes For Above contest:		152

PRESIDENTIAL ELECTORS

(Vote for 1)	Total:	152
DEM-Hillary Clinton		39
REP-Donald J. Trump		51
CON-Darrell L. Castle		16
GRN-Jill Stein		22
LIB-Gary Johnson		24

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

United States Senator		
(Vote for 1)	Total:	152
DEM-Katie McGinty		60
REP-Pat Toomey		52
LIB-Edward T. Clifford, III		40
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
Attorney General		
(Vote for 1)	Total:	152
DEM-Josh Shapiro		79
REP-John Rafferty		73
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
Auditor General		
(Vote for 1)	Total:	152
DEM-Eugene A. DePasquale		44
REP-John Brown		42
GRN-John J. Sweeney		41
LIB-Roy A. Minet		25
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
State Treasurer		
(Vote for 1)	Total:	152
DEM-Joe Torsella		41
REP-Otto Voit		54
GRN-Kristin Combs		27
LIB-James Babb		30
>Write-ins in above contest:		0
UnderVotes For Above contest:		0
CNG0014 Representative in Congress		
(Vote for 1)	Total:	152
DEM-Mike Doyle		83
REP-Lenny McAllister		69
>Write-ins in above contest:		0
UnderVotes For Above contest:		0



Constitutional Amendment  
(Vote for 1) Total: 152  
Yes 137  
No 15  
UnderVotes For Above contest: 0

Time/Date: 20:13:32 11/08/2016

Signature:

Signature:

Signature:

Signature:

{CEF42FD6-C557-4FD8-8711-7FA3A3CEFFF0}

PRECINCT REPORT  
 RUN DATE:12/19/16  
 RUN TIME:02:16 PM

1192 SWISSVALE DIST 10

	VOTES	PERCENT
REGISTERED VOTERS - TOTAL . . . . .	233	
BALLOTS CAST - TOTAL . . . . .	152	
VOTER TURNOUT - TOTAL . . . . .		65.24

Straight Party Option  
 Vote for 1

Democratic (DEM) . . . . .	0
Republican (REP) . . . . .	0
Constitution (CON) . . . . .	0
Green (GRN) . . . . .	0
Libertarian (LIB) . . . . .	0

PRESIDENTIAL ELECTORS

Vote for 1		
Hillary Clinton (DEM) . . . . .	39	25.66
Donald J. Trump (REP) . . . . .	51	33.55
Darrell L. Castle (CON) . . . . .	16	10.53
Jill Stein (GRN) . . . . .	22	14.47
Gary Johnson (LIB) . . . . .	24	15.79
WRITE-IN . . . . .	0	

United States Senator

Vote for 1		
Katie McGinty (DEM) . . . . .	60	39.47
Pat Toomey (REP) . . . . .	52	34.21
Edward T. Clifford, III (LIB) . . . . .	40	26.32
WRITE-IN . . . . .	0	

Attorney General

Vote for 1		
Josh Shapiro (DEM) . . . . .	79	51.97
John Rafferty (REP) . . . . .	73	48.03
WRITE-IN . . . . .	0	

Auditor General

Vote for 1		
Eugene A. DePasquale (DEM) . . . . .	44	28.95
John Brown (REP) . . . . .	42	27.63
John J. Sweeney (GRN) . . . . .	41	26.97
Roy A. Minet (LIB) . . . . .	25	16.45
WRITE-IN . . . . .	0	

State Treasurer

Vote for 1		
Joe Torsella (DEM) . . . . .	41	26.97
Otto Voit (REP) . . . . .	54	35.53
Kristin Combs (GRN) . . . . .	27	17.76
James Babb (LIB) . . . . .	30	19.74
WRITE-IN . . . . .	0	

Representative in Congress 14TH DISTRICT

Vote for 1		
Mike Doyle (DEM) . . . . .	83	54.61
Lenny McAllister (REP) . . . . .	69	45.39

{CEF42FD6-C557-4FD8-8711-7FA3A3CEFFF0}  
WRITE-IN. . . . . 0

Senator in the General Assembly 43RD DISTRICT

Vote for 1  
Jay Costa, Jr. (DEM). . . . . 129 84.87  
WRITE-IN. . . . . 23 15.13

Representative in the General Assembly 34TH DISTRICT

Vote for 1  
Paul Costa (DEM) . . . . . 127 83.55  
WRITE-IN. . . . . 25 16.45

Constitutional Amendment

Vote for 1  
Yes . . . . . 137 90.13  
No. . . . . 15 9.87

{E574F64C-2BDA-4C5E-8C96-2C17F3007476}

PREC REPORT-GROUP DETAIL  
 RUN DATE:12/19/16 02:16 PM

1192 SWISSVALE DIST 10

REGISTERED VOTERS - TOTAL	5174171	5179968
BALLOTS CAST - TOTAL	60	92
VOTER TURNOUT - TOTAL	65.24	

Straight Party Option

Vote for 1	TOTAL VOTES	%	5174171	5179968
Democratic (DEM)	0	0	0	0
Republican (REP)	0	0	0	0
Constitution (CON)	0	0	0	0
Green (GRN)	0	0	0	0
Libertarian (LIB)	0	0	0	0

PRESIDENTIAL ELECTORS

Vote for 1	TOTAL VOTES	%	5174171	5179968
Hillary Clinton (DEM)	39	25.66	15	24
Donald J. Trump (REP)	51	33.55	21	30
Darrell L. Castle (CON)	16	10.53	6	10
Jill Stein (GRN)	22	14.47	9	13
Gary Johnson (LIB)	24	15.79	9	15
WRITE-IN.	0		0	0

United States Senator

Vote for 1	TOTAL VOTES	%	5174171	5179968
Katie McGinty (DEM)	60	39.47	24	36
Pat Toomey (REP)	52	34.21	21	31
Edward T. Clifford, III (LIB)	40	26.32	15	25
WRITE-IN.	0		0	0

Attorney General

Vote for 1	TOTAL VOTES	%	5174171	5179968
Josh Shapiro (DEM)	79	51.97	30	49
John Rafferty (REP)	73	48.03	30	43
WRITE-IN.	0		0	0

Auditor General

Vote for 1	TOTAL VOTES	%	5174171	5179968
Eugene A. DePasquale (DEM)	44	28.95	14	30
John Brown (REP)	42	27.63	18	24
John J. Sweeney (GRN)	41	26.97	19	22
Roy A. Minet (LIB)	25	16.45	9	16
WRITE-IN.	0		0	0

{E574F64C-2BDA-4C5E-8C96-2C17F3007476}

State Treasurer					
Vote for 1					
Joe Torsella (DEM)	. . . . .	41	26.97	16	25
Otto Voit (REP)	. . . . .	54	35.53	23	31
Kristin Combs (GRN)	. . . . .	27	17.76	8	19
James Babb (LIB)	. . . . .	30	19.74	13	17
WRITE-IN.	. . . . .	0		0	0
Representative in Congress 14TH DISTRICT					
Vote for 1					
Mike Doyle (DEM)	. . . . .	83	54.61	34	49
Lenny McAllister (REP)	. . . . .	69	45.39	26	43
WRITE-IN.	. . . . .	0		0	0
Senator in the General Assembly 43RD DISTRICT					
Vote for 1					
Jay Costa, Jr. (DEM)	. . . . .	129	84.87	51	78
WRITE-IN.	. . . . .	23	15.13	9	14
Representative in the General Assembly 34TH DISTRICT					
Vote for 1					
Paul Costa (DEM)	. . . . .	127	83.55	50	77
WRITE-IN.	. . . . .	25	16.45	10	15
Constitutional Amendment					
Vote for 1					
Yes	. . . . .	137	90.13	56	81
No.	. . . . .	15	9.87	4	11

Reg. Stats  
by Municipality, Ward and District - General 2016

<u>Pseudo</u>	<u>Municipality</u>	<u>Muni</u>	<u>Ward</u>	<u>Dist.</u>	<u>Tot. Reg</u>
<u>1</u>	ALEPPO	101	0	1	1355
<u>2</u>	ASPINWALL	102	0	1	846
<u>3</u>	ASPINWALL	102	0	2	572
<u>4</u>	ASPINWALL	102	0	3	860
<u>5</u>	AVALON	103	1	0	1067
<u>6</u>	AVALON	103	2	1	676
<u>7</u>	AVALON	103	2	2	461
<u>8</u>	AVALON	103	3	1	324
<u>9</u>	AVALON	103	3	2	453
<u>10</u>	AVALON	103	3	3	477
<u>11</u>	BALDWIN BR	104	0	1	555
<u>12</u>	BALDWIN BR	104	0	2	964
<u>13</u>	BALDWIN BR	104	0	3	776
<u>14</u>	BALDWIN BR	104	0	4	741
<u>15</u>	BALDWIN BR	104	0	5	759
<u>16</u>	BALDWIN BR	104	0	6	731
<u>17</u>	BALDWIN BR	104	0	7	768
<u>18</u>	BALDWIN BR	104	0	8	679
<u>19</u>	BALDWIN BR	104	0	9	724
<u>20</u>	BALDWIN BR	104	0	10	936
<u>21</u>	BALDWIN BR	104	0	11	981
<u>22</u>	BALDWIN BR	104	0	12	613
<u>23</u>	BALDWIN BR	104	0	13	662
<u>24</u>	BALDWIN BR	104	0	14	575
<u>25</u>	BALDWIN BR	104	0	15	748
<u>26</u>	BALDWIN BR	104	0	16	868
<u>27</u>	BALDWIN BR	104	0	17	662
<u>28</u>	BALDWIN BR	104	0	18	889
<u>29</u>	BALDWIN TP	105	0	1	738
<u>30</u>	BALDWIN TP	105	0	2	696
<u>31</u>	BELL ACRES	106	0	1	1084
<u>32</u>	BELLEVUE	107	1	1	991
<u>33</u>	BELLEVUE	107	1	2	919
<u>34</u>	BELLEVUE	107	2	1	1098
<u>35</u>	BELLEVUE	107	2	2	949
<u>36</u>	BELLEVUE	107	3	1	961
<u>37</u>	BELLEVUE	107	3	2	877
<u>38</u>	BEN AVON	108	0	1	467
<u>39</u>	BEN AVON	108	0	2	920
<u>40</u>	BEN AVON HT	109	0	1	306
<u>41</u>	BETHEL PARK	110	1	1	859
<u>42</u>	BETHEL PARK	110	1	2	790
<u>43</u>	BETHEL PARK	110	1	3	797
<u>44</u>	BETHEL PARK	110	2	1	720
<u>45</u>	BETHEL PARK	110	2	2	894
<u>46</u>	BETHEL PARK	110	2	3	1091
<u>47</u>	BETHEL PARK	110	3	1	782
<u>48</u>	BETHEL PARK	110	3	2	918
<u>49</u>	BETHEL PARK	110	3	3	1041
<u>50</u>	BETHEL PARK	110	4	1	1218
<u>51</u>	BETHEL PARK	110	4	2	797
<u>52</u>	BETHEL PARK	110	4	3	845
<u>53</u>	BETHEL PARK	110	5	1	578
<u>54</u>	BETHEL PARK	110	5	2	627
<u>55</u>	BETHEL PARK	110	5	3	1418

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>56</u>	BETHEL PARK	110	6	1	1247
<u>57</u>	BETHEL PARK	110	6	2	931
<u>58</u>	BETHEL PARK	110	6	3	755
<u>59</u>	BETHEL PARK	110	7	1	1105
<u>60</u>	BETHEL PARK	110	7	2	958
<u>61</u>	BETHEL PARK	110	7	3	738
<u>62</u>	BETHEL PARK	110	8	1	488
<u>63</u>	BETHEL PARK	110	8	2	532
<u>64</u>	BETHEL PARK	110	8	3	1204
<u>65</u>	BETHEL PARK	110	8	4	454
<u>66</u>	BETHEL PARK	110	9	1	563
<u>67</u>	BETHEL PARK	110	9	2	682
<u>68</u>	BETHEL PARK	110	9	3	1320
<u>69</u>	BLAWNOX	111	0	1	1006
<u>70</u>	BRACKENRIDGE	112	1	0	479
<u>71</u>	BRACKENRIDGE	112	2	0	757
<u>72</u>	BRACKENRIDGE	112	3	0	632
<u>73</u>	BRADDOCK	113	1	0	527
<u>74</u>	BRADDOCK	113	2	0	586
<u>75</u>	BRADDOCK	113	3	0	466
<u>76</u>	BRADDOCK HL	114	0	1	806
<u>77</u>	BRADDOCK HL	114	0	2	528
<u>78</u>	BRADFORDWOOD	115	0	1	992
<u>79</u>	BRENTWOOD	116	0	1	543
<u>80</u>	BRENTWOOD	116	0	2	725
<u>81</u>	BRENTWOOD	116	0	3	564
<u>82</u>	BRENTWOOD	116	0	4	756
<u>83</u>	BRENTWOOD	116	0	5	687
<u>84</u>	BRENTWOOD	116	0	6	672
<u>85</u>	BRENTWOOD	116	0	7	716
<u>86</u>	BRENTWOOD	116	0	8	697
<u>87</u>	BRENTWOOD	116	0	9	573
<u>88</u>	BRENTWOOD	116	0	10	549
<u>89</u>	BRIDGEVILLE	117	0	1	754
<u>90</u>	BRIDGEVILLE	117	0	2	851
<u>91</u>	BRIDGEVILLE	117	0	3	810
<u>92</u>	BRIDGEVILLE	117	0	4	954
<u>93</u>	CARNEGIE	118	1	1	490
<u>94</u>	CARNEGIE	118	1	2	1136
<u>95</u>	CARNEGIE	118	1	3	795
<u>96</u>	CARNEGIE	118	1	4	355
<u>97</u>	CARNEGIE	118	2	1	629
<u>98</u>	CARNEGIE	118	2	2	482
<u>99</u>	CARNEGIE	118	2	3	469
<u>100</u>	CARNEGIE	118	2	4	913
<u>101</u>	CASL SHANNON	119	0	1	954
<u>102</u>	CASL SHANNON	119	0	2	819
<u>103</u>	CASL SHANNON	119	0	3	767
<u>104</u>	CASL SHANNON	119	0	4	634
<u>105</u>	CASL SHANNON	119	0	5	607
<u>106</u>	CASL SHANNON	119	0	6	614
<u>107</u>	CASL SHANNON	119	0	7	760
<u>108</u>	CASL SHANNON	119	0	8	554
<u>109</u>	CHALFANT	120	0	1	560
<u>110</u>	CHESWICK	121	0	1	606

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>111</u>	CHESWICK	121	0	2	615
<u>112</u>	CHURCHILL	122	0	1	668
<u>113</u>	CHURCHILL	122	0	2	677
<u>114</u>	CHURCHILL	122	0	3	627
<u>115</u>	CHURCHILL	122	0	4	667
<u>116</u>	CLAIRTON	123	1	1	353
<u>117</u>	CLAIRTON	123	1	2	396
<u>118</u>	CLAIRTON	123	1	3	335
<u>119</u>	CLAIRTON	123	2	1	134
<u>120</u>	CLAIRTON	123	2	2	329
<u>121</u>	CLAIRTON	123	2	3	443
<u>122</u>	CLAIRTON	123	3	1	448
<u>123</u>	CLAIRTON	123	3	2	372
<u>124</u>	CLAIRTON	123	3	3	421
<u>125</u>	CLAIRTON	123	4	1	396
<u>126</u>	CLAIRTON	123	4	2	390
<u>127</u>	CLAIRTON	123	4	3	416
<u>128</u>	COLLIER	124	0	1	893
<u>129</u>	COLLIER	124	0	2	1471
<u>130</u>	COLLIER	124	0	3	1288
<u>131</u>	COLLIER	124	0	4	576
<u>132</u>	COLLIER	124	0	5	777
<u>133</u>	COLLIER	124	0	6	874
<u>134</u>	CORAOPOLIS	125	1	1	466
<u>135</u>	CORAOPOLIS	125	1	2	500
<u>136</u>	CORAOPOLIS	125	2	0	776
<u>137</u>	CORAOPOLIS	125	3	1	591
<u>138</u>	CORAOPOLIS	125	3	2	596
<u>139</u>	CORAOPOLIS	125	4	1	418
<u>140</u>	CORAOPOLIS	125	4	2	487
<u>141</u>	CRAFTON	126	1	1	859
<u>142</u>	CRAFTON	126	1	2	595
<u>143</u>	CRAFTON	126	2	1	595
<u>144</u>	CRAFTON	126	2	2	785
<u>145</u>	CRAFTON	126	3	1	943
<u>146</u>	CRAFTON	126	3	2	568
<u>147</u>	CRESCENT	127	1	0	1076
<u>148</u>	CRESCENT	127	2	0	643
<u>149</u>	DORMONT	128	0	1	733
<u>150</u>	DORMONT	128	0	2	517
<u>151</u>	DORMONT	128	0	3	932
<u>152</u>	DORMONT	128	0	4	620
<u>153</u>	DORMONT	128	0	5	1052
<u>154</u>	DORMONT	128	0	6	525
<u>155</u>	DORMONT	128	0	7	501
<u>156</u>	DORMONT	128	0	8	403
<u>157</u>	DORMONT	128	0	9	523
<u>158</u>	DORMONT	128	0	10	589
<u>159</u>	DRAVOSBURG	129	0	1	552
<u>160</u>	DRAVOSBURG	129	0	2	369
<u>161</u>	DRAVOSBURG	129	0	3	266
<u>162</u>	DUQUESNE	130	1	1	465
<u>163</u>	DUQUESNE	130	1	2	516
<u>164</u>	DUQUESNE	130	1	3	293
<u>165</u>	DUQUESNE	130	1	4	214

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>166</u>	DUQUESNE	130	2	1	398
<u>167</u>	DUQUESNE	130	2	2	418
<u>168</u>	DUQUESNE	130	2	3	446
<u>169</u>	DUQUESNE	130	3	1	212
<u>170</u>	DUQUESNE	130	3	2	186
<u>171</u>	DUQUESNE	130	3	3	549
<u>172</u>	EAST DEER	131	1	0	297
<u>173</u>	EAST DEER	131	2	0	578
<u>174</u>	E MCKEESPORT	132	0	1	405
<u>175</u>	E MCKEESPORT	132	0	2	506
<u>176</u>	E MCKEESPORT	132	0	3	478
<u>177</u>	E PITTSBURGH	133	1	0	346
<u>178</u>	E PITTSBURGH	133	2	0	401
<u>179</u>	E PITTSBURGH	133	3	0	484
<u>180</u>	EDGEWOOD	134	0	1	970
<u>181</u>	EDGEWOOD	134	0	2	916
<u>182</u>	EDGEWOOD	134	0	3	855
<u>183</u>	EDGEWORTH	135	0	1	667
<u>184</u>	EDGEWORTH	135	0	2	724
<u>185</u>	ELIZABETH BR	136	0	1	895
<u>186</u>	ELIZABETH TP	137	1	1	569
<u>187</u>	ELIZABETH TP	137	1	2	894
<u>188</u>	ELIZABETH TP	137	2	0	1244
<u>189</u>	ELIZABETH TP	137	3	0	1273
<u>190</u>	ELIZABETH TP	137	4	1	871
<u>191</u>	ELIZABETH TP	137	4	2	435
<u>192</u>	ELIZABETH TP	137	5	1	426
<u>193</u>	ELIZABETH TP	137	5	2	793
<u>194</u>	ELIZABETH TP	137	6	1	604
<u>195</u>	ELIZABETH TP	137	6	2	708
<u>196</u>	ELIZABETH TP	137	7	0	1203
<u>197</u>	EMSWORTH	138	0	1	755
<u>198</u>	EMSWORTH	138	0	2	941
<u>199</u>	ETNA	139	1	0	810
<u>200</u>	ETNA	139	2	0	675
<u>201</u>	ETNA	139	3	0	683
<u>202</u>	FAWN	140	0	1	533
<u>203</u>	FAWN	140	0	2	870
<u>204</u>	FINDLAY	141	0	1	993
<u>205</u>	FINDLAY	141	0	2	1609
<u>206</u>	FINDLAY	141	0	3	1173
<u>207</u>	FOREST HILLS	142	0	1	621
<u>208</u>	FOREST HILLS	142	0	2	619
<u>209</u>	FOREST HILLS	142	0	3	611
<u>210</u>	FOREST HILLS	142	0	4	690
<u>211</u>	FOREST HILLS	142	0	5	683
<u>212</u>	FOREST HILLS	142	0	6	550
<u>213</u>	FOREST HILLS	142	0	7	736
<u>214</u>	FOREST HILLS	142	0	8	690
<u>215</u>	FORWARD	143	0	1	355
<u>216</u>	FORWARD	143	0	2	856
<u>217</u>	FORWARD	143	0	3	371
<u>218</u>	FORWARD	143	0	4	448
<u>219</u>	FOX CHAPEL	144	0	1	786
<u>220</u>	FOX CHAPEL	144	0	2	989

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>221</u>	FOX CHAPEL	144	0	3	729
<u>222</u>	FOX CHAPEL	144	0	4	1166
<u>223</u>	FOX CHAPEL	144	0	5	871
<u>224</u>	FRANKLIN PK	145	1	1	1122
<u>225</u>	FRANKLIN PK	145	1	2	1137
<u>226</u>	FRANKLIN PK	145	1	3	1297
<u>227</u>	FRANKLIN PK	145	2	1	990
<u>228</u>	FRANKLIN PK	145	2	2	1216
<u>229</u>	FRANKLIN PK	145	2	3	1283
<u>230</u>	FRANKLIN PK	145	3	1	1252
<u>231</u>	FRANKLIN PK	145	3	2	767
<u>232</u>	FRANKLIN PK	145	3	3	1195
<u>233</u>	FRAZER	146	0	1	742
<u>234</u>	GLASSPORT	147	0	1	555
<u>235</u>	GLASSPORT	147	0	2	387
<u>236</u>	GLASSPORT	147	0	3	535
<u>237</u>	GLASSPORT	147	0	4	229
<u>238</u>	GLASSPORT	147	0	5	473
<u>239</u>	GLASSPORT	147	0	6	437
<u>240</u>	GLENFIELD	148	0	1	142
<u>241</u>	GREENTREE	149	0	1	774
<u>242</u>	GREENTREE	149	0	2	1052
<u>243</u>	GREENTREE	149	0	3	920
<u>244</u>	GREENTREE	149	0	4	801
<u>245</u>	HAMPTON	150	0	1	1168
<u>246</u>	HAMPTON	150	0	2	1159
<u>247</u>	HAMPTON	150	0	3	1272
<u>248</u>	HAMPTON	150	0	4	604
<u>249</u>	HAMPTON	150	0	5	684
<u>250</u>	HAMPTON	150	0	6	646
<u>251</u>	HAMPTON	150	0	7	1269
<u>252</u>	HAMPTON	150	0	8	913
<u>253</u>	HAMPTON	150	0	9	1225
<u>254</u>	HAMPTON	150	0	10	1435
<u>255</u>	HAMPTON	150	0	11	1637
<u>256</u>	HAMPTON	150	0	12	824
<u>257</u>	HAMPTON	150	0	13	739
<u>258</u>	HARMAR	151	0	1	1233
<u>259</u>	HARMAR	151	0	2	712
<u>260</u>	HARMAR	151	0	3	356
<u>261</u>	HARRISON	152	1	1	280
<u>262</u>	HARRISON	152	1	2	561
<u>263</u>	HARRISON	152	1	3	625
<u>264</u>	HARRISON	152	2	1	316
<u>265</u>	HARRISON	152	2	2	586
<u>266</u>	HARRISON	152	3	1	959
<u>267</u>	HARRISON	152	3	2	600
<u>268</u>	HARRISON	152	4	1	662
<u>269</u>	HARRISON	152	4	2	561
<u>270</u>	HARRISON	152	5	1	491
<u>271</u>	HARRISON	152	5	2	771
<u>272</u>	HAYSVILLE	153	0	1	57
<u>273</u>	HEIDELBERG	154	0	1	818
<u>274</u>	HOMESTEAD	155	1	1	582
<u>275</u>	HOMESTEAD	155	1	2	364

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>276</u>	HOMESTEAD	155	2	1	421
<u>277</u>	HOMESTEAD	155	2	2	324
<u>278</u>	HOMESTEAD	155	3	1	532
<u>279</u>	HOMESTEAD	155	3	2	310
<u>280</u>	INDIANA	156	0	1	916
<u>281</u>	INDIANA	156	0	2	887
<u>282</u>	INDIANA	156	0	3	1165
<u>283</u>	INDIANA	156	0	4	1070
<u>284</u>	INDIANA	156	0	5	900
<u>285</u>	INGRAM	157	0	1	778
<u>286</u>	INGRAM	157	0	2	607
<u>287</u>	INGRAM	157	0	3	897
<u>288</u>	JEFFERSON HL	158	0	1	1505
<u>289</u>	JEFFERSON HL	158	0	2	803
<u>290</u>	JEFFERSON HL	158	0	3	611
<u>291</u>	JEFFERSON HL	158	0	4	659
<u>292</u>	JEFFERSON HL	158	0	5	1997
<u>293</u>	JEFFERSON HL	158	0	6	906
<u>294</u>	JEFFERSON HL	158	0	7	358
<u>295</u>	JEFFERSON HL	158	0	8	1041
<u>296</u>	KENNEDY	159	0	1	1511
<u>297</u>	KENNEDY	159	0	2	812
<u>298</u>	KENNEDY	159	0	3	1001
<u>299</u>	KENNEDY	159	0	4	422
<u>300</u>	KENNEDY	159	0	5	1287
<u>301</u>	KENNEDY	159	0	6	786
<u>302</u>	KENNEDY	159	0	7	514
<u>303</u>	KILBUCK	160	0	1	571
<u>304</u>	LEET	161	0	1	387
<u>305</u>	LEET	161	0	2	727
<u>306</u>	LEETSDALE	162	0	1	843
<u>307</u>	LIBERTY	163	0	1	893
<u>308</u>	LIBERTY	163	0	2	780
<u>309</u>	LINCOLN	164	0	1	670
<u>310</u>	MARSHALL	165	0	1	862
<u>311</u>	MARSHALL	165	0	2	1057
<u>312</u>	MARSHALL	165	0	3	760
<u>313</u>	MARSHALL	165	0	4	1021
<u>314</u>	MARSHALL	165	0	5	1170
<u>315</u>	MARSHALL	165	0	6	939
<u>316</u>	MCCANDLESS	166	1	1	1077
<u>317</u>	MCCANDLESS	166	1	2	851
<u>318</u>	MCCANDLESS	166	1	3	1196
<u>319</u>	MCCANDLESS	166	2	1	1370
<u>320</u>	MCCANDLESS	166	2	2	835
<u>321</u>	MCCANDLESS	166	2	3	829
<u>322</u>	MCCANDLESS	166	3	1	918
<u>323</u>	MCCANDLESS	166	3	2	1041
<u>324</u>	MCCANDLESS	166	3	3	1013
<u>325</u>	MCCANDLESS	166	4	1	1460
<u>326</u>	MCCANDLESS	166	4	2	900
<u>327</u>	MCCANDLESS	166	4	3	710
<u>328</u>	MCCANDLESS	166	5	1	802
<u>329</u>	MCCANDLESS	166	5	2	1279
<u>330</u>	MCCANDLESS	166	5	3	911

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>331</u>	MCCANDLESS	166	6	1	482
<u>332</u>	MCCANDLESS	166	6	2	989
<u>333</u>	MCCANDLESS	166	6	3	1692
<u>334</u>	MCCANDLESS	166	7	1	1530
<u>335</u>	MCCANDLESS	166	7	2	948
<u>336</u>	MCCANDLESS	166	7	3	505
<u>337</u>	MCDONALD	167	0	5	190
<u>338</u>	MCKEESPORT	168	1	0	17
<u>339</u>	MCKEESPORT	168	2	0	248
<u>340</u>	MCKEESPORT	168	3	1	265
<u>341</u>	MCKEESPORT	168	3	2	123
<u>342</u>	MCKEESPORT	168	4	0	308
<u>343</u>	MCKEESPORT	168	5	0	519
<u>344</u>	MCKEESPORT	168	6	1	388
<u>345</u>	MCKEESPORT	168	6	2	316
<u>346</u>	MCKEESPORT	168	7	1	488
<u>347</u>	MCKEESPORT	168	7	2	298
<u>348</u>	MCKEESPORT	168	7	3	334
<u>349</u>	MCKEESPORT	168	7	4	447
<u>350</u>	MCKEESPORT	168	7	5	538
<u>351</u>	MCKEESPORT	168	7	6	514
<u>352</u>	MCKEESPORT	168	7	7	374
<u>353</u>	MCKEESPORT	168	8	1	306
<u>354</u>	MCKEESPORT	168	8	2	516
<u>355</u>	MCKEESPORT	168	8	3	543
<u>356</u>	MCKEESPORT	168	8	4	446
<u>357</u>	MCKEESPORT	168	8	5	524
<u>358</u>	MCKEESPORT	168	8	6	230
<u>359</u>	MCKEESPORT	168	9	1	477
<u>360</u>	MCKEESPORT	168	9	2	578
<u>361</u>	MCKEESPORT	168	9	3	400
<u>362</u>	MCKEESPORT	168	10	1	324
<u>363</u>	MCKEESPORT	168	10	2	315
<u>364</u>	MCKEESPORT	168	11	1	456
<u>365</u>	MCKEESPORT	168	11	2	412
<u>366</u>	MCKEESPORT	168	11	3	259
<u>367</u>	MCKEESPORT	168	12	1	304
<u>368</u>	MCKEESPORT	168	12	2	355
<u>369</u>	MCKEESPORT	168	12	3	572
<u>370</u>	MCKEES ROCKS	169	1	1	260
<u>371</u>	MCKEES ROCKS	169	1	2	565
<u>372</u>	MCKEES ROCKS	169	2	1	678
<u>373</u>	MCKEES ROCKS	169	2	2	633
<u>374</u>	MCKEES ROCKS	169	3	1	740
<u>375</u>	MCKEES ROCKS	169	3	2	543
<u>376</u>	MCKEES ROCKS	169	3	3	537
<u>377</u>	MILLVALE	170	0	1	561
<u>378</u>	MILLVALE	170	0	2	415
<u>379</u>	MILLVALE	170	0	3	447
<u>380</u>	MILLVALE	170	0	4	417
<u>381</u>	MILLVALE	170	0	5	565
<u>382</u>	MONROEVILLE	171	1	1	662
<u>383</u>	MONROEVILLE	171	1	2	630
<u>384</u>	MONROEVILLE	171	1	3	835
<u>385</u>	MONROEVILLE	171	1	4	869

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>386</u>	MONROEVILLE	171	2	1	882
<u>387</u>	MONROEVILLE	171	2	2	948
<u>388</u>	MONROEVILLE	171	2	3	1063
<u>389</u>	MONROEVILLE	171	3	1	1198
<u>390</u>	MONROEVILLE	171	3	2	631
<u>391</u>	MONROEVILLE	171	3	3	963
<u>392</u>	MONROEVILLE	171	3	4	412
<u>393</u>	MONROEVILLE	171	4	1	659
<u>394</u>	MONROEVILLE	171	4	2	1010
<u>395</u>	MONROEVILLE	171	4	3	944
<u>396</u>	MONROEVILLE	171	5	1	592
<u>397</u>	MONROEVILLE	171	5	2	843
<u>398</u>	MONROEVILLE	171	5	3	845
<u>399</u>	MONROEVILLE	171	5	4	619
<u>400</u>	MONROEVILLE	171	6	1	782
<u>401</u>	MONROEVILLE	171	6	2	761
<u>402</u>	MONROEVILLE	171	6	3	1019
<u>403</u>	MONROEVILLE	171	6	4	359
<u>404</u>	MONROEVILLE	171	7	1	1307
<u>405</u>	MONROEVILLE	171	7	2	792
<u>406</u>	MONROEVILLE	171	7	3	602
<u>407</u>	MOON	172	0	1	1151
<u>408</u>	MOON	172	0	2	1751
<u>409</u>	MOON	172	0	3	1383
<u>410</u>	MOON	172	0	4	736
<u>411</u>	MOON	172	0	5	2265
<u>412</u>	MOON	172	0	6	2111
<u>413</u>	MOON	172	0	7	1470
<u>414</u>	MOON	172	0	8	954
<u>415</u>	MOON	172	0	9	1826
<u>416</u>	MOON	172	0	10	754
<u>417</u>	MOON	172	0	11	1298
<u>418</u>	MOON	172	0	12	950
<u>419</u>	MOON	172	0	13	689
<u>420</u>	MT LEBANON	173	1	1	803
<u>421</u>	MT LEBANON	173	1	2	651
<u>422</u>	MT LEBANON	173	1	3	620
<u>423</u>	MT LEBANON	173	1	4	754
<u>424</u>	MT LEBANON	173	1	5	593
<u>425</u>	MT LEBANON	173	1	6	1072
<u>426</u>	MT LEBANON	173	1	7	771
<u>427</u>	MT LEBANON	173	2	1	941
<u>428</u>	MT LEBANON	173	2	2	589
<u>429</u>	MT LEBANON	173	2	3	691
<u>430</u>	MT LEBANON	173	2	4	531
<u>431</u>	MT LEBANON	173	2	5	577
<u>432</u>	MT LEBANON	173	2	6	545
<u>433</u>	MT LEBANON	173	2	7	607
<u>434</u>	MT LEBANON	173	2	8	982
<u>435</u>	MT LEBANON	173	3	1	653
<u>436</u>	MT LEBANON	173	3	2	834
<u>437</u>	MT LEBANON	173	3	3	675
<u>438</u>	MT LEBANON	173	3	4	738
<u>439</u>	MT LEBANON	173	3	5	691
<u>440</u>	MT LEBANON	173	3	6	450

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>441</u>	MT LEBANON	173	3	7	815
<u>442</u>	MT LEBANON	173	3	8	313
<u>443</u>	MT LEBANON	173	4	1	741
<u>444</u>	MT LEBANON	173	4	2	861
<u>445</u>	MT LEBANON	173	4	3	710
<u>446</u>	MT LEBANON	173	4	4	662
<u>447</u>	MT LEBANON	173	4	5	597
<u>448</u>	MT LEBANON	173	4	6	649
<u>449</u>	MT LEBANON	173	4	7	784
<u>450</u>	MT LEBANON	173	5	1	621
<u>451</u>	MT LEBANON	173	5	2	427
<u>452</u>	MT LEBANON	173	5	3	602
<u>453</u>	MT LEBANON	173	5	4	557
<u>454</u>	MT LEBANON	173	5	5	625
<u>455</u>	MT LEBANON	173	5	6	451
<u>456</u>	MT LEBANON	173	5	7	767
<u>457</u>	MT LEBANON	173	5	8	992
<u>458</u>	MT OLIVER	174	0	1	697
<u>459</u>	MT OLIVER	174	0	2	730
<u>460</u>	MT OLIVER	174	0	3	483
<u>461</u>	MT OLIVER	174	0	4	332
<u>462</u>	MUNHALL	175	0	1	481
<u>463</u>	MUNHALL	175	0	2	475
<u>464</u>	MUNHALL	175	0	3	517
<u>465</u>	MUNHALL	175	0	4	416
<u>466</u>	MUNHALL	175	0	5	724
<u>467</u>	MUNHALL	175	0	6	693
<u>468</u>	MUNHALL	175	0	7	1118
<u>469</u>	MUNHALL	175	0	8	599
<u>470</u>	MUNHALL	175	0	9	680
<u>471</u>	MUNHALL	175	0	10	512
<u>472</u>	MUNHALL	175	0	11	912
<u>473</u>	MUNHALL	175	0	12	564
<u>474</u>	NEVILLE	176	1	0	267
<u>475</u>	NEVILLE	176	2	0	225
<u>476</u>	NEVILLE	176	3	0	267
<u>477</u>	N BRADDOCK	177	1	1	212
<u>478</u>	N BRADDOCK	177	1	2	499
<u>479</u>	N BRADDOCK	177	1	3	547
<u>480</u>	N BRADDOCK	177	2	1	435
<u>481</u>	N BRADDOCK	177	2	2	595
<u>482</u>	N BRADDOCK	177	3	1	376
<u>483</u>	N BRADDOCK	177	3	2	512
<u>484</u>	N FAYETTE	178	0	1	1910
<u>485</u>	N FAYETTE	178	0	2	2198
<u>486</u>	N FAYETTE	178	0	3	2358
<u>487</u>	N FAYETTE	178	0	4	1017
<u>488</u>	N FAYETTE	178	0	5	2242
<u>489</u>	N VERSAILLES	179	1	1	673
<u>490</u>	N VERSAILLES	179	1	2	649
<u>491</u>	N VERSAILLES	179	2	1	620
<u>492</u>	N VERSAILLES	179	2	2	214
<u>493</u>	N VERSAILLES	179	3	1	491
<u>494</u>	N VERSAILLES	179	3	2	612
<u>495</u>	N VERSAILLES	179	4	1	450

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>496</u>	N VERSAILLES	179	4	2	384
<u>497</u>	N VERSAILLES	179	5	1	521
<u>498</u>	N VERSAILLES	179	5	2	421
<u>499</u>	N VERSAILLES	179	6	1	613
<u>500</u>	N VERSAILLES	179	6	2	526
<u>501</u>	N VERSAILLES	179	7	0	691
<u>502</u>	OAKDALE	180	0	1	565
<u>503</u>	OAKDALE	180	0	2	431
<u>504</u>	OAKMONT	181	0	1	906
<u>505</u>	OAKMONT	181	0	2	1060
<u>506</u>	OAKMONT	181	0	3	695
<u>507</u>	OAKMONT	181	0	4	837
<u>508</u>	OAKMONT	181	0	5	700
<u>509</u>	OAKMONT	181	0	6	990
<u>510</u>	OHARA	182	1	1	981
<u>511</u>	OHARA	182	1	2	625
<u>512</u>	OHARA	182	2	1	583
<u>513</u>	OHARA	182	2	2	884
<u>514</u>	OHARA	182	3	1	655
<u>515</u>	OHARA	182	3	2	557
<u>516</u>	OHARA	182	4	1	529
<u>517</u>	OHARA	182	4	2	753
<u>518</u>	OHARA	182	5	1	737
<u>519</u>	OHARA	182	5	2	853
<u>520</u>	OHIO	183	0	1	1314
<u>521</u>	OHIO	183	0	2	1401
<u>522</u>	OHIO	183	0	3	1683
<u>523</u>	GLEN OSBORNE	184	0	1	423
<u>524</u>	PENN HILLS	185	1	1	755
<u>525</u>	PENN HILLS	185	1	2	744
<u>526</u>	PENN HILLS	185	1	3	539
<u>527</u>	PENN HILLS	185	1	4	347
<u>528</u>	PENN HILLS	185	1	5	263
<u>529</u>	PENN HILLS	185	2	1	776
<u>530</u>	PENN HILLS	185	2	2	733
<u>531</u>	PENN HILLS	185	2	3	852
<u>532</u>	PENN HILLS	185	2	4	585
<u>533</u>	PENN HILLS	185	3	1	789
<u>534</u>	PENN HILLS	185	3	2	496
<u>535</u>	PENN HILLS	185	3	3	617
<u>536</u>	PENN HILLS	185	3	4	776
<u>537</u>	PENN HILLS	185	3	5	463
<u>538</u>	PENN HILLS	185	3	6	434
<u>539</u>	PENN HILLS	185	4	1	539
<u>540</u>	PENN HILLS	185	4	2	715
<u>541</u>	PENN HILLS	185	4	3	724
<u>542</u>	PENN HILLS	185	4	4	563
<u>543</u>	PENN HILLS	185	4	5	570
<u>544</u>	PENN HILLS	185	5	1	703
<u>545</u>	PENN HILLS	185	5	2	602
<u>546</u>	PENN HILLS	185	5	3	661
<u>547</u>	PENN HILLS	185	5	4	611
<u>548</u>	PENN HILLS	185	5	5	497
<u>549</u>	PENN HILLS	185	5	6	725
<u>550</u>	PENN HILLS	185	6	1	548

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>551</u>	PENN HILLS	185	6	2	622
<u>552</u>	PENN HILLS	185	6	3	518
<u>553</u>	PENN HILLS	185	6	4	584
<u>554</u>	PENN HILLS	185	6	5	563
<u>555</u>	PENN HILLS	185	6	6	565
<u>556</u>	PENN HILLS	185	7	1	652
<u>557</u>	PENN HILLS	185	7	2	625
<u>558</u>	PENN HILLS	185	7	3	873
<u>559</u>	PENN HILLS	185	7	4	587
<u>560</u>	PENN HILLS	185	7	5	674
<u>561</u>	PENN HILLS	185	7	6	761
<u>562</u>	PENN HILLS	185	7	7	711
<u>563</u>	PENN HILLS	185	8	1	609
<u>564</u>	PENN HILLS	185	8	2	532
<u>565</u>	PENN HILLS	185	8	3	544
<u>566</u>	PENN HILLS	185	8	4	617
<u>567</u>	PENN HILLS	185	8	5	911
<u>568</u>	PENN HILLS	185	8	6	447
<u>569</u>	PENN HILLS	185	9	1	503
<u>570</u>	PENN HILLS	185	9	2	538
<u>571</u>	PENN HILLS	185	9	3	782
<u>572</u>	PENN HILLS	185	9	4	581
<u>573</u>	PENN HILLS	185	9	5	326
<u>574</u>	PINE	186	0	1	1130
<u>575</u>	PINE	186	0	2	1643
<u>576</u>	PINE	186	0	3	424
<u>577</u>	PINE	186	0	4	1142
<u>578</u>	PINE	186	0	5	1566
<u>579</u>	PINE	186	0	6	513
<u>580</u>	PINE	186	0	7	1356
<u>581</u>	PINE	186	0	8	1066
<u>582</u>	PITCAIRN	187	0	1	912
<u>583</u>	PITCAIRN	187	0	2	494
<u>584</u>	PITCAIRN	187	0	3	628
<u>585</u>	PITTSBURGH	188	1	1	2916
<u>586</u>	PITTSBURGH	188	1	2	633
<u>587</u>	PITTSBURGH	188	2	1	1717
<u>588</u>	PITTSBURGH	188	2	2	806
<u>589</u>	PITTSBURGH	188	3	1	250
<u>590</u>	PITTSBURGH	188	3	2	661
<u>591</u>	PITTSBURGH	188	3	3	361
<u>592</u>	PITTSBURGH	188	3	4	546
<u>593</u>	PITTSBURGH	188	3	5	438
<u>594</u>	PITTSBURGH	188	4	1	269
<u>595</u>	PITTSBURGH	188	4	2	697
<u>596</u>	PITTSBURGH	188	4	3	381
<u>597</u>	PITTSBURGH	188	4	4	258
<u>598</u>	PITTSBURGH	188	4	5	929
<u>599</u>	PITTSBURGH	188	4	6	611
<u>600</u>	PITTSBURGH	188	4	7	2450
<u>601</u>	PITTSBURGH	188	4	8	4049
<u>602</u>	PITTSBURGH	188	4	9	580
<u>603</u>	PITTSBURGH	188	4	10	508
<u>604</u>	PITTSBURGH	188	4	11	527
<u>605</u>	PITTSBURGH	188	4	12	575

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>606</u>	PITTSBURGH	188	4	13	731
<u>607</u>	PITTSBURGH	188	4	14	1244
<u>608</u>	PITTSBURGH	188	4	15	870
<u>609</u>	PITTSBURGH	188	4	16	1205
<u>610</u>	PITTSBURGH	188	4	17	584
<u>611</u>	PITTSBURGH	188	4	18	361
<u>612</u>	PITTSBURGH	188	4	19	250
<u>613</u>	PITTSBURGH	188	5	1	252
<u>614</u>	PITTSBURGH	188	5	2	329
<u>615</u>	PITTSBURGH	188	5	3	157
<u>616</u>	PITTSBURGH	188	5	4	308
<u>617</u>	PITTSBURGH	188	5	5	239
<u>618</u>	PITTSBURGH	188	5	6	546
<u>619</u>	PITTSBURGH	188	5	7	441
<u>620</u>	PITTSBURGH	188	5	8	448
<u>621</u>	PITTSBURGH	188	5	9	1047
<u>622</u>	PITTSBURGH	188	5	10	448
<u>623</u>	PITTSBURGH	188	5	11	363
<u>624</u>	PITTSBURGH	188	5	12	420
<u>625</u>	PITTSBURGH	188	5	13	272
<u>626</u>	PITTSBURGH	188	5	14	270
<u>627</u>	PITTSBURGH	188	5	15	222
<u>628</u>	PITTSBURGH	188	5	16	183
<u>629</u>	PITTSBURGH	188	5	17	246
<u>630</u>	PITTSBURGH	188	5	18	51
<u>631</u>	PITTSBURGH	188	6	1	842
<u>632</u>	PITTSBURGH	188	6	2	598
<u>633</u>	PITTSBURGH	188	6	3	773
<u>634</u>	PITTSBURGH	188	6	4	589
<u>635</u>	PITTSBURGH	188	6	5	452
<u>636</u>	PITTSBURGH	188	7	1	610
<u>637</u>	PITTSBURGH	188	7	2	979
<u>638</u>	PITTSBURGH	188	7	3	715
<u>639</u>	PITTSBURGH	188	7	4	999
<u>640</u>	PITTSBURGH	188	7	5	660
<u>641</u>	PITTSBURGH	188	7	6	626
<u>642</u>	PITTSBURGH	188	7	7	704
<u>643</u>	PITTSBURGH	188	7	8	663
<u>644</u>	PITTSBURGH	188	7	9	751
<u>645</u>	PITTSBURGH	188	7	10	965
<u>646</u>	PITTSBURGH	188	7	11	940
<u>647</u>	PITTSBURGH	188	7	12	836
<u>648</u>	PITTSBURGH	188	7	13	467
<u>649</u>	PITTSBURGH	188	7	14	445
<u>650</u>	PITTSBURGH	188	8	1	350
<u>651</u>	PITTSBURGH	188	8	2	646
<u>652</u>	PITTSBURGH	188	8	3	800
<u>653</u>	PITTSBURGH	188	8	4	659
<u>654</u>	PITTSBURGH	188	8	5	565
<u>655</u>	PITTSBURGH	188	8	6	401
<u>656</u>	PITTSBURGH	188	8	7	742
<u>657</u>	PITTSBURGH	188	8	8	597
<u>658</u>	PITTSBURGH	188	8	9	660
<u>659</u>	PITTSBURGH	188	8	10	610
<u>660</u>	PITTSBURGH	188	8	11	568

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>661</u>	PITTSBURGH	188	8	12	618
<u>662</u>	PITTSBURGH	188	8	13	590
<u>663</u>	PITTSBURGH	188	9	1	462
<u>664</u>	PITTSBURGH	188	9	2	597
<u>665</u>	PITTSBURGH	188	9	3	574
<u>666</u>	PITTSBURGH	188	9	4	561
<u>667</u>	PITTSBURGH	188	9	5	667
<u>668</u>	PITTSBURGH	188	9	6	566
<u>669</u>	PITTSBURGH	188	9	7	435
<u>670</u>	PITTSBURGH	188	9	8	672
<u>671</u>	PITTSBURGH	188	9	9	623
<u>672</u>	PITTSBURGH	188	10	1	517
<u>673</u>	PITTSBURGH	188	10	2	605
<u>674</u>	PITTSBURGH	188	10	3	645
<u>675</u>	PITTSBURGH	188	10	4	528
<u>676</u>	PITTSBURGH	188	10	5	499
<u>677</u>	PITTSBURGH	188	10	6	506
<u>678</u>	PITTSBURGH	188	10	7	575
<u>679</u>	PITTSBURGH	188	10	8	577
<u>680</u>	PITTSBURGH	188	10	9	522
<u>681</u>	PITTSBURGH	188	10	10	582
<u>682</u>	PITTSBURGH	188	10	11	593
<u>683</u>	PITTSBURGH	188	10	12	542
<u>684</u>	PITTSBURGH	188	10	13	539
<u>685</u>	PITTSBURGH	188	10	14	544
<u>686</u>	PITTSBURGH	188	10	15	349
<u>687</u>	PITTSBURGH	188	10	16	333
<u>688</u>	PITTSBURGH	188	10	17	534
<u>689</u>	PITTSBURGH	188	10	18	544
<u>690</u>	PITTSBURGH	188	10	19	473
<u>691</u>	PITTSBURGH	188	11	1	595
<u>692</u>	PITTSBURGH	188	11	2	555
<u>693</u>	PITTSBURGH	188	11	3	454
<u>694</u>	PITTSBURGH	188	11	4	526
<u>695</u>	PITTSBURGH	188	11	5	568
<u>696</u>	PITTSBURGH	188	11	6	848
<u>697</u>	PITTSBURGH	188	11	7	625
<u>698</u>	PITTSBURGH	188	11	8	587
<u>699</u>	PITTSBURGH	188	11	9	615
<u>700</u>	PITTSBURGH	188	11	10	570
<u>701</u>	PITTSBURGH	188	11	11	666
<u>702</u>	PITTSBURGH	188	11	12	654
<u>703</u>	PITTSBURGH	188	11	13	668
<u>704</u>	PITTSBURGH	188	11	14	567
<u>705</u>	PITTSBURGH	188	11	15	337
<u>706</u>	PITTSBURGH	188	11	16	589
<u>707</u>	PITTSBURGH	188	11	17	649
<u>708</u>	PITTSBURGH	188	11	18	550
<u>709</u>	PITTSBURGH	188	12	1	205
<u>710</u>	PITTSBURGH	188	12	2	337
<u>711</u>	PITTSBURGH	188	12	3	111
<u>712</u>	PITTSBURGH	188	12	4	330
<u>713</u>	PITTSBURGH	188	12	5	171
<u>714</u>	PITTSBURGH	188	12	6	238
<u>715</u>	PITTSBURGH	188	12	7	284

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>716</u>	PITTSBURGH	188	12	8	222
<u>717</u>	PITTSBURGH	188	12	9	343
<u>718</u>	PITTSBURGH	188	12	10	444
<u>719</u>	PITTSBURGH	188	12	11	462
<u>720</u>	PITTSBURGH	188	12	12	739
<u>721</u>	PITTSBURGH	188	12	13	410
<u>722</u>	PITTSBURGH	188	12	14	351
<u>723</u>	PITTSBURGH	188	12	15	546
<u>724</u>	PITTSBURGH	188	12	16	395
<u>725</u>	PITTSBURGH	188	13	1	309
<u>726</u>	PITTSBURGH	188	13	2	406
<u>727</u>	PITTSBURGH	188	13	3	338
<u>728</u>	PITTSBURGH	188	13	4	308
<u>729</u>	PITTSBURGH	188	13	5	348
<u>730</u>	PITTSBURGH	188	13	6	363
<u>731</u>	PITTSBURGH	188	13	7	392
<u>732</u>	PITTSBURGH	188	13	8	255
<u>733</u>	PITTSBURGH	188	13	9	321
<u>734</u>	PITTSBURGH	188	13	10	223
<u>735</u>	PITTSBURGH	188	13	11	428
<u>736</u>	PITTSBURGH	188	13	12	451
<u>737</u>	PITTSBURGH	188	13	13	292
<u>738</u>	PITTSBURGH	188	13	14	279
<u>739</u>	PITTSBURGH	188	13	15	343
<u>740</u>	PITTSBURGH	188	13	16	349
<u>741</u>	PITTSBURGH	188	13	17	848
<u>742</u>	PITTSBURGH	188	13	18	228
<u>743</u>	PITTSBURGH	188	13	19	480
<u>744</u>	PITTSBURGH	188	14	1	630
<u>745</u>	PITTSBURGH	188	14	2	1272
<u>746</u>	PITTSBURGH	188	14	3	790
<u>747</u>	PITTSBURGH	188	14	4	731
<u>748</u>	PITTSBURGH	188	14	5	772
<u>749</u>	PITTSBURGH	188	14	6	679
<u>750</u>	PITTSBURGH	188	14	7	2908
<u>751</u>	PITTSBURGH	188	14	8	692
<u>752</u>	PITTSBURGH	188	14	9	788
<u>753</u>	PITTSBURGH	188	14	10	681
<u>754</u>	PITTSBURGH	188	14	11	768
<u>755</u>	PITTSBURGH	188	14	12	728
<u>756</u>	PITTSBURGH	188	14	13	757
<u>757</u>	PITTSBURGH	188	14	14	852
<u>758</u>	PITTSBURGH	188	14	15	758
<u>759</u>	PITTSBURGH	188	14	16	503
<u>760</u>	PITTSBURGH	188	14	17	457
<u>761</u>	PITTSBURGH	188	14	18	736
<u>762</u>	PITTSBURGH	188	14	19	592
<u>763</u>	PITTSBURGH	188	14	20	653
<u>764</u>	PITTSBURGH	188	14	21	559
<u>765</u>	PITTSBURGH	188	14	22	677
<u>766</u>	PITTSBURGH	188	14	23	687
<u>767</u>	PITTSBURGH	188	14	24	556
<u>768</u>	PITTSBURGH	188	14	25	925
<u>769</u>	PITTSBURGH	188	14	26	606
<u>770</u>	PITTSBURGH	188	14	27	529

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Req</b>
<u>771</u>	PITTSBURGH	188	14	28	519
<u>772</u>	PITTSBURGH	188	14	29	740
<u>773</u>	PITTSBURGH	188	14	30	682
<u>774</u>	PITTSBURGH	188	14	31	1021
<u>775</u>	PITTSBURGH	188	14	32	722
<u>776</u>	PITTSBURGH	188	14	33	781
<u>777</u>	PITTSBURGH	188	14	34	825
<u>778</u>	PITTSBURGH	188	14	35	592
<u>779</u>	PITTSBURGH	188	14	36	795
<u>780</u>	PITTSBURGH	188	14	37	627
<u>781</u>	PITTSBURGH	188	14	38	563
<u>782</u>	PITTSBURGH	188	14	39	553
<u>783</u>	PITTSBURGH	188	14	40	514
<u>784</u>	PITTSBURGH	188	14	41	91
<u>785</u>	PITTSBURGH	188	15	1	607
<u>786</u>	PITTSBURGH	188	15	2	700
<u>787</u>	PITTSBURGH	188	15	3	598
<u>788</u>	PITTSBURGH	188	15	4	615
<u>789</u>	PITTSBURGH	188	15	5	518
<u>790</u>	PITTSBURGH	188	15	6	536
<u>791</u>	PITTSBURGH	188	15	7	653
<u>792</u>	PITTSBURGH	188	15	8	609
<u>793</u>	PITTSBURGH	188	15	9	172
<u>794</u>	PITTSBURGH	188	15	10	604
<u>795</u>	PITTSBURGH	188	15	11	570
<u>796</u>	PITTSBURGH	188	15	12	470
<u>797</u>	PITTSBURGH	188	15	13	442
<u>798</u>	PITTSBURGH	188	15	14	335
<u>799</u>	PITTSBURGH	188	15	15	360
<u>800</u>	PITTSBURGH	188	15	16	538
<u>801</u>	PITTSBURGH	188	15	17	33
<u>802</u>	PITTSBURGH	188	15	18	560
<u>803</u>	PITTSBURGH	188	15	19	498
<u>804</u>	PITTSBURGH	188	16	1	763
<u>805</u>	PITTSBURGH	188	16	2	1035
<u>806</u>	PITTSBURGH	188	16	3	761
<u>807</u>	PITTSBURGH	188	16	4	418
<u>808</u>	PITTSBURGH	188	16	5	549
<u>809</u>	PITTSBURGH	188	16	6	449
<u>810</u>	PITTSBURGH	188	16	7	394
<u>811</u>	PITTSBURGH	188	16	8	180
<u>812</u>	PITTSBURGH	188	16	9	529
<u>813</u>	PITTSBURGH	188	16	10	390
<u>814</u>	PITTSBURGH	188	16	11	384
<u>815</u>	PITTSBURGH	188	17	1	187
<u>816</u>	PITTSBURGH	188	17	2	772
<u>817</u>	PITTSBURGH	188	17	3	602
<u>818</u>	PITTSBURGH	188	17	4	720
<u>819</u>	PITTSBURGH	188	17	5	552
<u>820</u>	PITTSBURGH	188	17	6	444
<u>821</u>	PITTSBURGH	188	17	7	382
<u>822</u>	PITTSBURGH	188	17	8	435
<u>823</u>	PITTSBURGH	188	18	1	569
<u>824</u>	PITTSBURGH	188	18	2	446
<u>825</u>	PITTSBURGH	188	18	3	368

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Re.</b>
<u>826</u>	PITTSBURGH	188	18	4	459
<u>827</u>	PITTSBURGH	188	18	5	881
<u>828</u>	PITTSBURGH	188	18	6	368
<u>829</u>	PITTSBURGH	188	18	7	418
<u>830</u>	PITTSBURGH	188	18	8	248
<u>831</u>	PITTSBURGH	188	18	9	660
<u>832</u>	PITTSBURGH	188	18	10	82
<u>833</u>	PITTSBURGH	188	18	11	581
<u>834</u>	PITTSBURGH	188	19	1	525
<u>835</u>	PITTSBURGH	188	19	2	669
<u>836</u>	PITTSBURGH	188	19	3	535
<u>837</u>	PITTSBURGH	188	19	4	396
<u>838</u>	PITTSBURGH	188	19	5	416
<u>839</u>	PITTSBURGH	188	19	6	489
<u>840</u>	PITTSBURGH	188	19	7	230
<u>841</u>	PITTSBURGH	188	19	8	536
<u>842</u>	PITTSBURGH	188	19	9	518
<u>843</u>	PITTSBURGH	188	19	10	634
<u>844</u>	PITTSBURGH	188	19	11	459
<u>845</u>	PITTSBURGH	188	19	12	426
<u>846</u>	PITTSBURGH	188	19	13	459
<u>847</u>	PITTSBURGH	188	19	14	533
<u>848</u>	PITTSBURGH	188	19	15	591
<u>849</u>	PITTSBURGH	188	19	16	553
<u>850</u>	PITTSBURGH	188	19	17	574
<u>851</u>	PITTSBURGH	188	19	18	479
<u>852</u>	PITTSBURGH	188	19	19	510
<u>853</u>	PITTSBURGH	188	19	20	505
<u>854</u>	PITTSBURGH	188	19	21	606
<u>855</u>	PITTSBURGH	188	19	22	527
<u>856</u>	PITTSBURGH	188	19	23	607
<u>857</u>	PITTSBURGH	188	19	24	519
<u>858</u>	PITTSBURGH	188	19	25	521
<u>859</u>	PITTSBURGH	188	19	26	459
<u>860</u>	PITTSBURGH	188	19	27	457
<u>861</u>	PITTSBURGH	188	19	28	632
<u>862</u>	PITTSBURGH	188	19	29	504
<u>863</u>	PITTSBURGH	188	19	30	510
<u>864</u>	PITTSBURGH	188	19	31	498
<u>865</u>	PITTSBURGH	188	19	32	501
<u>866</u>	PITTSBURGH	188	19	33	443
<u>867</u>	PITTSBURGH	188	19	34	502
<u>868</u>	PITTSBURGH	188	19	35	492
<u>869</u>	PITTSBURGH	188	19	36	636
<u>870</u>	PITTSBURGH	188	19	37	435
<u>871</u>	PITTSBURGH	188	19	38	481
<u>872</u>	PITTSBURGH	188	20	1	606
<u>873</u>	PITTSBURGH	188	20	2	210
<u>874</u>	PITTSBURGH	188	20	3	690
<u>875</u>	PITTSBURGH	188	20	4	54
<u>876</u>	PITTSBURGH	188	20	5	550
<u>877</u>	PITTSBURGH	188	20	6	543
<u>878</u>	PITTSBURGH	188	20	7	663
<u>879</u>	PITTSBURGH	188	20	8	729
<u>880</u>	PITTSBURGH	188	20	9	203

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>881</u>	PITTSBURGH	188	20	10	634
<u>882</u>	PITTSBURGH	188	20	11	683
<u>883</u>	PITTSBURGH	188	20	12	906
<u>884</u>	PITTSBURGH	188	20	13	454
<u>885</u>	PITTSBURGH	188	20	14	847
<u>886</u>	PITTSBURGH	188	20	15	868
<u>887</u>	PITTSBURGH	188	20	16	636
<u>888</u>	PITTSBURGH	188	20	17	419
<u>889</u>	PITTSBURGH	188	20	18	493
<u>890</u>	PITTSBURGH	188	21	1	480
<u>891</u>	PITTSBURGH	188	21	2	456
<u>892</u>	PITTSBURGH	188	21	3	644
<u>893</u>	PITTSBURGH	188	21	4	599
<u>894</u>	PITTSBURGH	188	22	1	687
<u>895</u>	PITTSBURGH	188	22	2	654
<u>896</u>	PITTSBURGH	188	22	3	650
<u>897</u>	PITTSBURGH	188	22	4	747
<u>898</u>	PITTSBURGH	188	23	1	1116
<u>899</u>	PITTSBURGH	188	23	2	803
<u>900</u>	PITTSBURGH	188	23	3	386
<u>901</u>	PITTSBURGH	188	24	1	417
<u>902</u>	PITTSBURGH	188	24	2	430
<u>903</u>	PITTSBURGH	188	24	3	358
<u>904</u>	PITTSBURGH	188	24	4	591
<u>905</u>	PITTSBURGH	188	24	5	506
<u>906</u>	PITTSBURGH	188	24	6	537
<u>907</u>	PITTSBURGH	188	25	1	488
<u>908</u>	PITTSBURGH	188	25	2	406
<u>909</u>	PITTSBURGH	188	25	3	547
<u>910</u>	PITTSBURGH	188	25	4	335
<u>911</u>	PITTSBURGH	188	25	5	379
<u>912</u>	PITTSBURGH	188	25	6	388
<u>913</u>	PITTSBURGH	188	25	7	441
<u>914</u>	PITTSBURGH	188	26	1	528
<u>915</u>	PITTSBURGH	188	26	2	453
<u>916</u>	PITTSBURGH	188	26	3	446
<u>917</u>	PITTSBURGH	188	26	4	421
<u>918</u>	PITTSBURGH	188	26	5	483
<u>919</u>	PITTSBURGH	188	26	6	402
<u>920</u>	PITTSBURGH	188	26	7	323
<u>921</u>	PITTSBURGH	188	26	8	624
<u>922</u>	PITTSBURGH	188	26	9	344
<u>923</u>	PITTSBURGH	188	26	10	641
<u>924</u>	PITTSBURGH	188	26	11	731
<u>925</u>	PITTSBURGH	188	26	12	491
<u>926</u>	PITTSBURGH	188	26	13	557
<u>927</u>	PITTSBURGH	188	26	14	583
<u>928</u>	PITTSBURGH	188	26	15	483
<u>929</u>	PITTSBURGH	188	26	16	691
<u>930</u>	PITTSBURGH	188	26	17	209
<u>931</u>	PITTSBURGH	188	27	1	756
<u>932</u>	PITTSBURGH	188	27	2	667
<u>933</u>	PITTSBURGH	188	27	3	561
<u>934</u>	PITTSBURGH	188	27	4	710
<u>935</u>	PITTSBURGH	188	27	5	696

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>936</u>	PITTSBURGH	188	27	6	731
<u>937</u>	PITTSBURGH	188	27	7	596
<u>938</u>	PITTSBURGH	188	27	8	571
<u>939</u>	PITTSBURGH	188	27	9	596
<u>940</u>	PITTSBURGH	188	27	10	633
<u>941</u>	PITTSBURGH	188	27	11	632
<u>942</u>	PITTSBURGH	188	27	12	533
<u>943</u>	PITTSBURGH	188	27	13	553
<u>944</u>	PITTSBURGH	188	28	1	670
<u>945</u>	PITTSBURGH	188	28	2	523
<u>946</u>	PITTSBURGH	188	28	3	834
<u>947</u>	PITTSBURGH	188	28	4	629
<u>948</u>	PITTSBURGH	188	28	5	656
<u>949</u>	PITTSBURGH	188	28	6	564
<u>950</u>	PITTSBURGH	188	28	7	674
<u>951</u>	PITTSBURGH	188	28	8	828
<u>952</u>	PITTSBURGH	188	28	9	587
<u>953</u>	PITTSBURGH	188	28	10	477
<u>954</u>	PITTSBURGH	188	28	11	138
<u>955</u>	PITTSBURGH	188	29	1	585
<u>956</u>	PITTSBURGH	188	29	2	523
<u>957</u>	PITTSBURGH	188	29	3	469
<u>958</u>	PITTSBURGH	188	29	4	520
<u>959</u>	PITTSBURGH	188	29	5	526
<u>960</u>	PITTSBURGH	188	29	6	568
<u>961</u>	PITTSBURGH	188	29	7	587
<u>962</u>	PITTSBURGH	188	29	8	528
<u>963</u>	PITTSBURGH	188	29	9	441
<u>964</u>	PITTSBURGH	188	29	10	506
<u>965</u>	PITTSBURGH	188	29	11	611
<u>966</u>	PITTSBURGH	188	29	12	527
<u>967</u>	PITTSBURGH	188	30	1	407
<u>968</u>	PITTSBURGH	188	30	2	392
<u>969</u>	PITTSBURGH	188	30	3	377
<u>970</u>	PITTSBURGH	188	30	4	611
<u>971</u>	PITTSBURGH	188	30	5	656
<u>972</u>	PITTSBURGH	188	31	1	238
<u>973</u>	PITTSBURGH	188	31	2	408
<u>974</u>	PITTSBURGH	188	31	3	562
<u>975</u>	PITTSBURGH	188	31	4	550
<u>976</u>	PITTSBURGH	188	31	5	665
<u>977</u>	PITTSBURGH	188	31	6	544
<u>978</u>	PITTSBURGH	188	31	7	142
<u>979</u>	PITTSBURGH	188	32	1	496
<u>980</u>	PITTSBURGH	188	32	2	624
<u>981</u>	PITTSBURGH	188	32	3	506
<u>982</u>	PITTSBURGH	188	32	4	357
<u>983</u>	PITTSBURGH	188	32	5	536
<u>984</u>	PITTSBURGH	188	32	6	616
<u>985</u>	PITTSBURGH	188	32	7	500
<u>986</u>	PITTSBURGH	188	32	8	638
<u>987</u>	PLEASANT HL	189	0	1	696
<u>988</u>	PLEASANT HL	189	0	2	530
<u>989</u>	PLEASANT HL	189	0	3	542
<u>990</u>	PLEASANT HL	189	0	4	495

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<b>991</b>	PLEASANT HL	189	0	5	733
<b>992</b>	PLEASANT HL	189	0	6	905
<b>993</b>	PLEASANT HL	189	0	7	505
<b>994</b>	PLEASANT HL	189	0	8	513
<b>995</b>	PLEASANT HL	189	0	9	632
<b>996</b>	PLEASANT HL	189	0	10	528
<b>997</b>	PLUM	190	0	1	1721
<b>998</b>	PLUM	190	0	2	566
<b>999</b>	PLUM	190	0	3	935
<b>1000</b>	PLUM	190	0	4	802
<b>1001</b>	PLUM	190	0	5	870
<b>1002</b>	PLUM	190	0	6	1196
<b>1003</b>	PLUM	190	0	7	1181
<b>1004</b>	PLUM	190	0	8	573
<b>1005</b>	PLUM	190	0	9	1067
<b>1006</b>	PLUM	190	0	10	560
<b>1007</b>	PLUM	190	0	11	770
<b>1008</b>	PLUM	190	0	12	1049
<b>1009</b>	PLUM	190	0	13	555
<b>1010</b>	PLUM	190	0	14	714
<b>1011</b>	PLUM	190	0	15	790
<b>1012</b>	PLUM	190	0	16	551
<b>1013</b>	PLUM	190	0	17	688
<b>1014</b>	PLUM	190	0	18	809
<b>1015</b>	PLUM	190	0	19	1783
<b>1016</b>	PLUM	190	0	20	713
<b>1017</b>	PLUM	190	0	21	396
<b>1018</b>	PORT VUE	191	0	1	569
<b>1019</b>	PORT VUE	191	0	2	536
<b>1020</b>	PORT VUE	191	0	3	543
<b>1021</b>	PORT VUE	191	0	4	679
<b>1022</b>	RANKIN	192	1	0	359
<b>1023</b>	RANKIN	192	2	0	426
<b>1024</b>	RANKIN	192	3	0	610
<b>1025</b>	RESERVE	193	1	0	494
<b>1026</b>	RESERVE	193	2	0	556
<b>1027</b>	RESERVE	193	3	0	518
<b>1028</b>	RESERVE	193	4	0	828
<b>1029</b>	RICHLAND	194	0	1	1018
<b>1030</b>	RICHLAND	194	0	2	1065
<b>1031</b>	RICHLAND	194	0	3	1116
<b>1032</b>	RICHLAND	194	0	4	1095
<b>1033</b>	RICHLAND	194	0	5	976
<b>1034</b>	RICHLAND	194	0	6	1042
<b>1035</b>	RICHLAND	194	0	7	1073
<b>1036</b>	RICHLAND	194	0	8	924
<b>1037</b>	ROBINSON	195	0	1	1543
<b>1038</b>	ROBINSON	195	0	2	950
<b>1039</b>	ROBINSON	195	0	3	666
<b>1040</b>	ROBINSON	195	0	4	675
<b>1041</b>	ROBINSON	195	0	5	599
<b>1042</b>	ROBINSON	195	0	6	837
<b>1043</b>	ROBINSON	195	0	7	1369
<b>1044</b>	ROBINSON	195	0	8	1376
<b>1045</b>	ROBINSON	195	0	9	2292

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<b>1046</b>	ROSS	196	1	1	715
<b>1047</b>	ROSS	196	1	2	602
<b>1048</b>	ROSS	196	1	3	478
<b>1049</b>	ROSS	196	1	4	815
<b>1050</b>	ROSS	196	2	1	1099
<b>1051</b>	ROSS	196	2	2	922
<b>1052</b>	ROSS	196	2	3	691
<b>1053</b>	ROSS	196	3	1	648
<b>1054</b>	ROSS	196	3	2	675
<b>1055</b>	ROSS	196	3	3	525
<b>1056</b>	ROSS	196	3	4	665
<b>1057</b>	ROSS	196	4	1	833
<b>1058</b>	ROSS	196	4	2	515
<b>1059</b>	ROSS	196	4	3	724
<b>1060</b>	ROSS	196	4	4	673
<b>1061</b>	ROSS	196	5	1	579
<b>1062</b>	ROSS	196	5	2	379
<b>1063</b>	ROSS	196	5	3	798
<b>1064</b>	ROSS	196	5	4	726
<b>1065</b>	ROSS	196	6	1	498
<b>1066</b>	ROSS	196	6	2	925
<b>1067</b>	ROSS	196	6	3	633
<b>1068</b>	ROSS	196	6	4	569
<b>1069</b>	ROSS	196	7	1	590
<b>1070</b>	ROSS	196	7	2	532
<b>1071</b>	ROSS	196	7	3	702
<b>1072</b>	ROSS	196	7	4	567
<b>1073</b>	ROSS	196	8	1	1543
<b>1074</b>	ROSS	196	8	2	514
<b>1075</b>	ROSS	196	8	3	516
<b>1076</b>	ROSS	196	9	1	766
<b>1077</b>	ROSS	196	9	2	915
<b>1078</b>	ROSS	196	9	3	814
<b>1079</b>	ROSSLYN FARM	197	0	1	369
<b>1080</b>	SCOTT	198	1	1	553
<b>1081</b>	SCOTT	198	1	2	626
<b>1082</b>	SCOTT	198	2	1	495
<b>1083</b>	SCOTT	198	2	2	651
<b>1084</b>	SCOTT	198	3	1	487
<b>1085</b>	SCOTT	198	3	2	711
<b>1086</b>	SCOTT	198	4	1	762
<b>1087</b>	SCOTT	198	4	2	593
<b>1088</b>	SCOTT	198	5	1	574
<b>1089</b>	SCOTT	198	5	2	734
<b>1090</b>	SCOTT	198	6	1	667
<b>1091</b>	SCOTT	198	6	2	764
<b>1092</b>	SCOTT	198	7	1	878
<b>1093</b>	SCOTT	198	7	2	618
<b>1094</b>	SCOTT	198	8	1	524
<b>1095</b>	SCOTT	198	8	2	998
<b>1096</b>	SCOTT	198	9	1	312
<b>1097</b>	SCOTT	198	9	2	347
<b>1098</b>	SEWICKLEY	199	1	0	925
<b>1099</b>	SEWICKLEY	199	2	1	494
<b>1100</b>	SEWICKLEY	199	2	2	605

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<b>1101</b>	SEWICKLEY	199	3	0	967
<b>1102</b>	SEWICKLEY HT	200	0	1	746
<b>1103</b>	SEWICKLEY HL	201	0	1	518
<b>1104</b>	SHALER	202	1	1	483
<b>1105</b>	SHALER	202	1	2	487
<b>1106</b>	SHALER	202	1	3	587
<b>1107</b>	SHALER	202	1	4	571
<b>1108</b>	SHALER	202	1	5	640
<b>1109</b>	SHALER	202	2	1	1026
<b>1110</b>	SHALER	202	2	2	730
<b>1111</b>	SHALER	202	2	3	566
<b>1112</b>	SHALER	202	2	4	731
<b>1113</b>	SHALER	202	2	5	366
<b>1114</b>	SHALER	202	3	1	571
<b>1115</b>	SHALER	202	3	2	582
<b>1116</b>	SHALER	202	3	3	574
<b>1117</b>	SHALER	202	3	4	693
<b>1118</b>	SHALER	202	3	5	666
<b>1119</b>	SHALER	202	4	1	809
<b>1120</b>	SHALER	202	4	2	441
<b>1121</b>	SHALER	202	4	3	636
<b>1122</b>	SHALER	202	4	4	641
<b>1123</b>	SHALER	202	4	5	499
<b>1124</b>	SHALER	202	5	1	700
<b>1125</b>	SHALER	202	5	2	661
<b>1126</b>	SHALER	202	5	3	527
<b>1127</b>	SHALER	202	5	4	354
<b>1128</b>	SHALER	202	5	5	745
<b>1129</b>	SHALER	202	6	1	609
<b>1130</b>	SHALER	202	6	2	658
<b>1131</b>	SHALER	202	6	3	528
<b>1132</b>	SHALER	202	6	4	326
<b>1133</b>	SHALER	202	6	5	542
<b>1134</b>	SHALER	202	7	1	574
<b>1135</b>	SHALER	202	7	2	776
<b>1136</b>	SHALER	202	7	3	618
<b>1137</b>	SHALER	202	7	4	994
<b>1138</b>	SHARPSBURG	203	0	1	557
<b>1139</b>	SHARPSBURG	203	0	2	758
<b>1140</b>	SHARPSBURG	203	0	3	832
<b>1141</b>	S FAYETTE	204	0	1	540
<b>1142</b>	S FAYETTE	204	0	2	1048
<b>1143</b>	S FAYETTE	204	0	3	1360
<b>1144</b>	S FAYETTE	204	0	4	818
<b>1145</b>	S FAYETTE	204	0	5	801
<b>1146</b>	S FAYETTE	204	0	6	1159
<b>1147</b>	S FAYETTE	204	0	7	621
<b>1148</b>	S FAYETTE	204	0	8	1442
<b>1149</b>	S FAYETTE	204	0	9	636
<b>1150</b>	S FAYETTE	204	0	10	768
<b>1151</b>	S FAYETTE	204	0	11	890
<b>1152</b>	S FAYETTE	204	0	12	472
<b>1153</b>	SOUTH PARK	205	0	1	645
<b>1154</b>	SOUTH PARK	205	0	2	740
<b>1155</b>	SOUTH PARK	205	0	3	589

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<b>1156</b>	SOUTH PARK	205	0	4	448
<b>1157</b>	SOUTH PARK	205	0	5	719
<b>1158</b>	SOUTH PARK	205	0	6	840
<b>1159</b>	SOUTH PARK	205	0	7	1073
<b>1160</b>	SOUTH PARK	205	0	8	491
<b>1161</b>	SOUTH PARK	205	0	9	793
<b>1162</b>	SOUTH PARK	205	0	10	810
<b>1163</b>	SOUTH PARK	205	0	11	571
<b>1164</b>	SOUTH PARK	205	0	12	563
<b>1165</b>	SOUTH PARK	205	0	13	976
<b>1166</b>	S VERSAILLES	206	0	1	195
<b>1167</b>	SPRINGDAL BR	207	0	1	670
<b>1168</b>	SPRINGDAL BR	207	0	2	575
<b>1169</b>	SPRINGDAL BR	207	0	3	508
<b>1170</b>	SPRINGDAL BR	207	0	4	415
<b>1171</b>	SPRINGDAL TP	208	0	1	1133
<b>1172</b>	STOWE	209	1	0	410
<b>1173</b>	STOWE	209	2	1	178
<b>1174</b>	STOWE	209	2	2	687
<b>1175</b>	STOWE	209	3	0	377
<b>1176</b>	STOWE	209	4	1	371
<b>1177</b>	STOWE	209	4	2	364
<b>1178</b>	STOWE	209	5	0	475
<b>1179</b>	STOWE	209	6	0	464
<b>1180</b>	STOWE	209	7	0	290
<b>1181</b>	STOWE	209	8	0	413
<b>1182</b>	STOWE	209	9	0	327
<b>1183</b>	SWISSVALE	210	0	1	873
<b>1184</b>	SWISSVALE	210	0	2	734
<b>1185</b>	SWISSVALE	210	0	3	666
<b>1186</b>	SWISSVALE	210	0	4	615
<b>1187</b>	SWISSVALE	210	0	5	726
<b>1188</b>	SWISSVALE	210	0	6	408
<b>1189</b>	SWISSVALE	210	0	7	634
<b>1190</b>	SWISSVALE	210	0	8	699
<b>1191</b>	SWISSVALE	210	0	9	632
<b>1192</b>	SWISSVALE	210	0	10	221
<b>1193</b>	SWISSVALE	210	0	11	660
<b>1194</b>	TARENTUM	211	1	1	643
<b>1195</b>	TARENTUM	211	1	2	469
<b>1196</b>	TARENTUM	211	2	0	515
<b>1197</b>	TARENTUM	211	3	1	291
<b>1198</b>	TARENTUM	211	3	2	561
<b>1199</b>	THORNBURG	212	0	1	411
<b>1200</b>	THORNBURG	212	0	2	579
<b>1201</b>	TRAFFORD	213	0	1	45
<b>1202</b>	TURTLE CREEK	214	1	1	805
<b>1203</b>	TURTLE CREEK	214	1	2	395
<b>1204</b>	TURTLE CREEK	214	2	1	642
<b>1205</b>	TURTLE CREEK	214	2	2	316
<b>1206</b>	TURTLE CREEK	214	3	1	586
<b>1207</b>	TURTLE CREEK	214	3	2	468
<b>1208</b>	UP ST CLAIR	215	1	1	669
<b>1209</b>	UP ST CLAIR	215	1	2	802
<b>1210</b>	UP ST CLAIR	215	1	3	898

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<u>1211</u>	UP ST CLAIR	215	1	4	790
<u>1212</u>	UP ST CLAIR	215	2	1	925
<u>1213</u>	UP ST CLAIR	215	2	2	663
<u>1214</u>	UP ST CLAIR	215	2	3	1009
<u>1215</u>	UP ST CLAIR	215	2	4	520
<u>1216</u>	UP ST CLAIR	215	3	1	989
<u>1217</u>	UP ST CLAIR	215	3	2	846
<u>1218</u>	UP ST CLAIR	215	3	3	1178
<u>1219</u>	UP ST CLAIR	215	4	1	961
<u>1220</u>	UP ST CLAIR	215	4	2	760
<u>1221</u>	UP ST CLAIR	215	4	3	599
<u>1222</u>	UP ST CLAIR	215	4	4	979
<u>1223</u>	UP ST CLAIR	215	5	1	1287
<u>1224</u>	UP ST CLAIR	215	5	2	787
<u>1225</u>	UP ST CLAIR	215	5	3	840
<u>1226</u>	VERONA	216	0	1	500
<u>1227</u>	VERONA	216	0	2	577
<u>1228</u>	VERONA	216	0	3	583
<u>1229</u>	VERSAILLES	217	0	1	515
<u>1230</u>	VERSAILLES	217	0	2	466
<u>1231</u>	WALL	218	0	1	305
<u>1232</u>	WEST DEER	219	0	1	1325
<u>1233</u>	WEST DEER	219	0	2	537
<u>1234</u>	WEST DEER	219	0	3	792
<u>1235</u>	WEST DEER	219	0	4	757
<u>1236</u>	WEST DEER	219	0	5	811
<u>1237</u>	WEST DEER	219	0	6	724
<u>1238</u>	WEST DEER	219	0	7	1470
<u>1239</u>	WEST DEER	219	0	8	1349
<u>1240</u>	W ELIZABETH	220	0	1	275
<u>1241</u>	W HOMESTEAD	221	0	1	469
<u>1242</u>	W HOMESTEAD	221	0	2	436
<u>1243</u>	W HOMESTEAD	221	0	3	518
<u>1244</u>	WEST MIFFLIN	222	0	1	684
<u>1245</u>	WEST MIFFLIN	222	0	2	446
<u>1246</u>	WEST MIFFLIN	222	0	3	447
<u>1247</u>	WEST MIFFLIN	222	0	4	429
<u>1248</u>	WEST MIFFLIN	222	0	5	834
<u>1249</u>	WEST MIFFLIN	222	0	6	312
<u>1250</u>	WEST MIFFLIN	222	0	7	719
<u>1251</u>	WEST MIFFLIN	222	0	8	548
<u>1252</u>	WEST MIFFLIN	222	0	9	756
<u>1253</u>	WEST MIFFLIN	222	0	10	494
<u>1254</u>	WEST MIFFLIN	222	0	11	770
<u>1255</u>	WEST MIFFLIN	222	0	12	999
<u>1256</u>	WEST MIFFLIN	222	0	13	565
<u>1257</u>	WEST MIFFLIN	222	0	14	841
<u>1258</u>	WEST MIFFLIN	222	0	15	570
<u>1259</u>	WEST MIFFLIN	222	0	16	1174
<u>1260</u>	WEST MIFFLIN	222	0	17	549
<u>1261</u>	WEST MIFFLIN	222	0	18	762
<u>1262</u>	WEST MIFFLIN	222	0	19	647
<u>1263</u>	WEST MIFFLIN	222	0	20	439
<u>1264</u>	WEST MIFFLIN	222	0	21	632
<u>1265</u>	WEST VIEW	223	0	1	683

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<b>1266</b>	WEST VIEW	223	0	2	750
<b>1267</b>	WEST VIEW	223	0	3	550
<b>1268</b>	WEST VIEW	223	0	4	567
<b>1269</b>	WEST VIEW	223	0	5	714
<b>1270</b>	WEST VIEW	223	0	6	681
<b>1271</b>	WEST VIEW	223	0	7	625
<b>1272</b>	WHITAKER	224	0	1	404
<b>1273</b>	WHITAKER	224	0	2	385
<b>1274</b>	WHITEHALL	225	0	1	503
<b>1275</b>	WHITEHALL	225	0	2	584
<b>1276</b>	WHITEHALL	225	0	3	638
<b>1277</b>	WHITEHALL	225	0	4	659
<b>1278</b>	WHITEHALL	225	0	5	657
<b>1279</b>	WHITEHALL	225	0	6	912
<b>1280</b>	WHITEHALL	225	0	7	469
<b>1281</b>	WHITEHALL	225	0	8	779
<b>1282</b>	WHITEHALL	225	0	9	511
<b>1283</b>	WHITEHALL	225	0	10	591
<b>1284</b>	WHITEHALL	225	0	11	600
<b>1285</b>	WHITEHALL	225	0	12	531
<b>1286</b>	WHITEHALL	225	0	13	447
<b>1287</b>	WHITEHALL	225	0	14	568
<b>1288</b>	WHITEHALL	225	0	15	912
<b>1289</b>	WHITEHALL	225	0	16	585
<b>1290</b>	WHITE OAK	226	0	1	725
<b>1291</b>	WHITE OAK	226	0	2	758
<b>1292</b>	WHITE OAK	226	0	3	857
<b>1293</b>	WHITE OAK	226	0	4	717
<b>1294</b>	WHITE OAK	226	0	5	762
<b>1295</b>	WHITE OAK	226	0	6	704
<b>1296</b>	WHITE OAK	226	0	7	1007
<b>1297</b>	WILKINS	227	1	1	758
<b>1298</b>	WILKINS	227	1	2	645
<b>1299</b>	WILKINS	227	1	3	785
<b>1300</b>	WILKINS	227	1	4	613
<b>1301</b>	WILKINS	227	1	5	421
<b>1302</b>	WILKINS	227	2	1	606
<b>1303</b>	WILKINS	227	2	2	889
<b>1304</b>	WILKINSBURG	228	1	1	989
<b>1305</b>	WILKINSBURG	228	1	2	759
<b>1306</b>	WILKINSBURG	228	1	3	469
<b>1307</b>	WILKINSBURG	228	1	4	582
<b>1308</b>	WILKINSBURG	228	1	5	523
<b>1309</b>	WILKINSBURG	228	1	6	984
<b>1310</b>	WILKINSBURG	228	2	1	801
<b>1311</b>	WILKINSBURG	228	2	2	955
<b>1312</b>	WILKINSBURG	228	2	3	861
<b>1313</b>	WILKINSBURG	228	2	4	520
<b>1314</b>	WILKINSBURG	228	2	5	758
<b>1315</b>	WILKINSBURG	228	3	1	700
<b>1316</b>	WILKINSBURG	228	3	2	639
<b>1317</b>	WILKINSBURG	228	3	3	815
<b>1318</b>	WILKINSBURG	228	3	4	987
<b>1319</b>	WILKINSBURG	228	3	5	987
<b>1320</b>	WILKINSBURG	228	3	6	536

Reg. Stats  
by Municipality, Ward and District - General 2016

<b>Pseudo</b>	<b>Municipality</b>	<b>Muni</b>	<b>Ward</b>	<b>Dist.</b>	<b>Tot. Reg</b>
<b>1321</b>	WILMERDING	229	0	1	520
<b>1322</b>	WILMERDING	229	0	2	741
<b>1323</b>	WHITEHALL	225	0	1	

PSEUDO	MUNICIPALITY	MUNI	WARD	DIST	TOT_REG
1192	SWISSVALE	210	0	10	221