

## Senate Hearing –

### SB 800 (Alloway)

### Updates to the Covered Device Recycling Act (Act 108 of 2010)

## Environmental Resources & Energy Committee

October 24, 2017

**Robert J. Bylone, Jr.**

*Executive Director, President*

*Pennsylvania Recycling Markets Center*



Pennsylvania  
**Recycling Markets Center**

The Keystone of Recycling Markets Development

**Recycling markets development experts  
helping industry decision makers  
throughout Pennsylvania.**

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1           The Pennsylvania Recycling Markets Center (RMC) has participated in previous  
 2 electronics scrap (or e-waste) studies and examinations of the Joint Legislative Conservation  
 3 Committee, including their last e-waste hearing in 2016. Of the last 5 years, the RMC has  
 4 offered 28 e-waste industry-driven programs, with approximately 2,000 attendees. RMC also  
 5 provides internal auditing services for the various certification systems required of e-waste  
 6 material processors; permit facilitation services, and develops market relationships between the  
 7 public and private e-waste sectors. The Pennsylvania Recycling Markets Center is the only  
 8 Pennsylvania non-profit organization that is a member of the national Electronics Recycling  
 9 Coordination Clearinghouse (ERCC), an organization for national exchange of electronics  
 10 recycling information. Along the technical assistance pathway of those in the e-waste industry,  
 11 these experiences culminate in information provided for SB 800.

12           Serving as the subject matter expert, over the last 3 years the RMC has conducted  
 13 statistically accurate, third-party verified Pennsylvania citizen surveys on electronics waste.  
 14 These surveys have been done as part of the Penn State University Spring Omnibus Poll,  
 15 through the Center for Survey Research. The Center for Survey Research is a complimentary  
 16 Center of the State Data Center, which has also worked with the RMC in accurately geocoding  
 17 electronics waste recycling locations across Pennsylvania. The Pennsylvania Recycling Markets  
 18 Center has assisted the majority of electronics scrap recycling processors state-wide. To this end,  
 19 the RMC provides you today summary of our findings throughout Pennsylvania explaining the  
 20 connections which tie Pennsylvania’s electronics scrap to a global marketplace.

21           Through survey of Pennsylvanians e-waste in 2015, 2016, and 2017, the Penn State Poll  
 22 uses a dual-frame sampling approach consisting of a representative landline sample and a cell  
 23 phone supplement, including VOIP and unlisted phones as well. State-level estimates indicate  
 24 that 35.2% of Pennsylvania households are cell phone-only and that 16.5% receive all or almost  
 25 all calls on cell phones despite having a landline phone in the home, therefore, at least 50% of  
 26 the interviews are completed with a respondent on their cell phone. Including cell phone  
 27 sample is important to assist with reaching young adults (18-34 years), renters, non-whites,  
 28 Hispanics, and individuals with lower incomes as compared to individuals with landlines¹.

29           Each survey and related methodology is contained in Appendix A, “Pennsylvania Penn  
 30 State Polls.” Significant findings of these surveys includes:

- 31           • In 2015, 61.5% of Pennsylvanians knew where to recycle their electronics. In  
 32           2016, 44.5% or less than half of Pennsylvanians knew where to recycle their  
 33           electronics. In 2017, 52.8% of Pennsylvanians reported knowing where they can  
 34           recycle their electronics.

- Nearly half of the 2017 respondents, 46.2% said they are willing to travel up to 10 miles to recycle their electronics. An additional 32.5% said they are willing to travel 11 to 20 miles. An additional 11.4% said they are willing to travel up to 49 miles for electronics recycling.
- In 2017, it was reported that the most prevalent, in-use electronic device in the household is flat screen televisions, with an average of 2.41 per household.
- Extrapolating from 2017 survey data, it is estimated that there are approximately 5.1 Million (5,066,310) CRT Monitors and Tube Televisions combined in Pennsylvania homes, either in or out-of-use, still waiting to be recycled. This is down from 6.8 Million (6,776,657) in 2016, or a difference of 1.7 Million units (1,710,347).

Extrapolated from the 2016 and 2017 survey data, please reference the table below for estimated unit quantities and weights. Weights were either actually weighed and averaged from manufacturers’ product listings or the weight was provided by the Electronics Recycling Coordination Clearinghouse (ERCC), a programmatic subset of the National Center for Electronics Recycling (NCER).

		2016		2017	
Type of equipment		# of items	total pounds	# of items	total pounds
	<b>CRT monitors &amp; TVs</b>	6,776,657	395,079,110	5,066,310	257,345,626
In	Flat panel monitors	4,734,614	53,378,042	3,697,373	41,684,186
Out	Flat panel monitors	1,320,017	14,881,869	960,491	10,828,574
In	Flat panel TVs	10,390,455	298,143,705	11,927,169	342,238,196
Out	Flat panel TVs	1,089,152	31,252,139	875,292	25,115,640
In	Desktop computers	3,015,823	68,157,604	2,743,863	62,011,304
Out	Desktop computers	1,634,301	36,935,202	1,442,217	32,594,099
In	Laptop computers	6,204,771	35,367,196	6,708,435	38,238,077
Out	Laptop computers	1,918,132	10,933,353	1,910,526	10,889,999
In	Tablets & pads	6,365,142	6,046,885	7,269,222	6,905,761
Out	Tablets & pads	1,066,073	1,012,769	1,512,410	1,436,789
In	Printers	3,939,188	74,864,273	4,048,734	76,946,188
Out	Printers	1,808,291	34,366,563	1,397,403	26,557,637
<b>Total:</b>		<b>50,262,616</b>	<b>1,060,418,709</b>	<b>49,559,445</b>	<b>932,792,076</b>

In observation of the types of electronics equipment, CRTs and tube televisions global opportunity to be recycled continues to dwindle. As of the time of this testimony, it is estimated that there are approximately 9 locations globally where CRT and tube television glass can be recycled into an end product, including the leaded glass fraction of the unit. Additionally, the challenges of heavy metal containing glass, metals such as lead, mercury, and arsenic can be found in first generation (circa 1998 – 2007) flat panel displays, especially plasma televisions.

58 Therefore, the supposition that lead goes “away” with collection of all CRTs and tube TVs is  
59 incorrect. As presently constructed, SB 800 expands end-of life management options for  
60 electronics glass.

61 In 2015, 2016, and 2017, the Pennsylvania Recycling Markets Center has also tracked the  
62 quantity and location of electronics waste (scrap) recycling sites which have been listed in  
63 original equipment manufacturer recycling plans, plans which are required to be submitted to  
64 the Pennsylvania Department of Environmental Protection on an annual basis.

65 During 2015, 2016, and 2017 the Pennsylvania Recycling Markets Center in conjunction  
66 with the Pennsylvania State Data Center tracked e-waste recycling sites. Verification of the sites,  
67 reported to exist in Manufacturers’ Recycling Plans have been verified via RMC personnel  
68 through a robust, multi-layer approach including past practice, website verification, email  
69 verification, phone call verification or on-site confirmation. Again, this includes sites that are  
70 represented in the Covered Device Recycling Act (CDRA) Manufacturers’ Recycling Plans that  
71 must be submitted to PA DEP and also non-Manufacturers’ Recycling Plan sites. Tracking has  
72 included site location, materials accepted, hours of operation, and cost versus no cost to the  
73 consumer. Additionally, population served using a 10-mile radius has been calculated in each  
74 year of site analysis. Although the percent of coverage is well-above the CDRA specified  
75 minimum of 85% population coverage, SB800 provides a uniform, homogenous, coverage  
76 opportunity for the many rural Counties which presently are underserved, especially in  
77 northcentral and northwestern Pennsylvania.

78 The most notable decline during the three-year period of site tracking and analysis is  
79 that sites which accept all CDRA covered devices at no charge to any Pennsylvanian (as intended  
80 in CDRA) has greatly decreased. In 2015, by RMC definition, there were 133 non-restricted sites,  
81 which accepted all CDRA covered devices at no charge to any Pennsylvanian. In 2017, out of a  
82 total verification of 432 sites, the RMC has confirmed 5 locations state-wide that have no  
83 restrictions, leaving 427 sites with some kind of restriction in collection. Restrictions include  
84 quantity limits, type of item, size limits, residency requirements, and charge to recycle locations.  
85 This grave decline is not only because of changes in commodity values of the sorted recycled  
86 items/parts and less outlets internationally for CRTs and tube televisions. It is also because of  
87 the structure of CDRA which has unfortunately provided minimal, if any cost recovery to both  
88 the e-waste recycling processor and the collection program, especially as weight-based goals of  
89 CDRA plateau each year. By contrast, in SB800, the program is based upon a shared  
90 responsibility model whereby there is not a specific cap, rather all materials inbound are

91 recycled, in a declining portion of the waste stream. GIS maps of the 2015, 2016, and 2017 RMC  
92 verified sites are found in Appendix B, “RMC Verified CDRA E-Waste Sites.”

93 As e-waste management has emerged and developed into a fledgling marketplace in  
94 Pennsylvania, we saw a peak of permitted materials processing facilities between 2015 – 2016.  
95 Previously, there were 34 permitted e-waste recycling processing facilities state-wide and at  
96 present, we have reduced to 28 e-waste recycling facilities where dismantling and/or size  
97 reduction, ie, shredding, occurs in order to ready materials for downstream re-manufacturing  
98 into primary metals. The interest of operating in this marketplace to serve the consumer  
99 through a CDRA market-share model has waned as it has become impossible to survive on  
100 manufacturer reimbursement for the recycled e-waste materials. Please reference Appendix C,  
101 “Pennsylvania E-Scrap Recycling Processors.”

102 As a result of the data presented in this testimony, we quickly see failures within a  
103 producer-responsibility model where shared responsibility with the consumer is not present.  
104 Senate Bill 800 answers many of the findings of the survey analysis and site evaluation which  
105 has been recorded over the last 3 years.

References

1. “Research Plan.” *Penn State Poll: An Omnibus Poll of Pennsylvania*. Penn State Harrisburg, Center for Survey Research, Published 2017.  
<https://csr.hbg.psu.edu/PennStatePoll/ResearchPlan/tabid/858/Default.aspx>. Accessed 17 October 2017.



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Experts helping industry decision makers, the Pennsylvania Recycling Markets Center (RMC) is a non-profit corporation with a mission to expand and develop markets for recycled materials. Services include one-on-one technical assistance and business growth consultancy; industry outreach and programming; applied research; and ready access to recycling markets development information.

RMC collaborates with many environmental, economic development, and technical assistance organizations resulting in fast-tracking of time to market for processes or products that use Pennsylvania’s recycled materials. RMC is headquartered at Penn State Harrisburg with a satellite office near Pittsburgh. The RMC is funded in part by the Pennsylvania Department of Environmental Protection.

## Appendix A

### Pennsylvania Penn State Polls

# **SPRING 2017 PENN STATE POLL**

**Report of Results**

**Submitted to:**

**Pennsylvania Recycling Markets Center, Inc.**

**Prepared by:**

**Center for Survey Research**

**Penn State Harrisburg**

**May 2017**



**PennState**  
Harrisburg

Center for Survey Research

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## INTRODUCTION

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The Penn State Poll (Poll) is an omnibus survey conducted by the Center for Survey Research (CSR) at Penn State Harrisburg. A total of 609 telephone interviews with adult Pennsylvanians were conducted between March 8 and April 18, 2017. The Penn State Poll used a dual-frame design consisting of both landline and cell phone samples. Project activity was directed by Stephanie L. Wehnau, Director of the Center for Survey Research at Penn State Harrisburg.

The purpose of the Penn State Poll is to provide timely and accurate data to agencies, organizations, and researchers with statewide interests and responsibilities. Sponsors of past Penn State Polls have used the results of the survey to track public policy issues; measure general attitudes, awareness, and knowledge of their organizations; and measure satisfaction with organizational services and performance.

### **Data Analysis Notes**

The following notes should be taken into account when reviewing the results:

1. Results include discussion for relationships that are statistically significant (chi-square or z-test statistics are significant at the .05 level).
2. Results that failed to reach significance in the current survey should not necessarily be construed to be different from the results of the 2016 Penn State Poll. Failing to reach significance does not necessarily mean that there are no differences among demographic sub-groups; it just means that we are unable to make that claim using this dataset.
3. When reviewing figures, it is important to review the preceding text to determine which relationships are statistically significant. Figures may include information about relationships that are not statistically significant.
4. Data are weighted as a function of each respondent's age and sex. All reported numbers and percentages reflect the weighted data. Unless otherwise indicated, non-numerical open-ended responses are not weighted.
5. Percentages may not total to 100% due to rounding in the weighting process.
6. Cross-tabulations and frequencies may not add up to the sample size reported due to rounding in the weighting process and the exclusion of "Don't know" and "Declined to answer" responses.



7. See Appendices A and B of the Report of Methods for a map and list of the Penn State Poll Regions.
8. See Appendix C of the Report of Methods for the sponsored survey questions and standard demographics that were used in data collection.

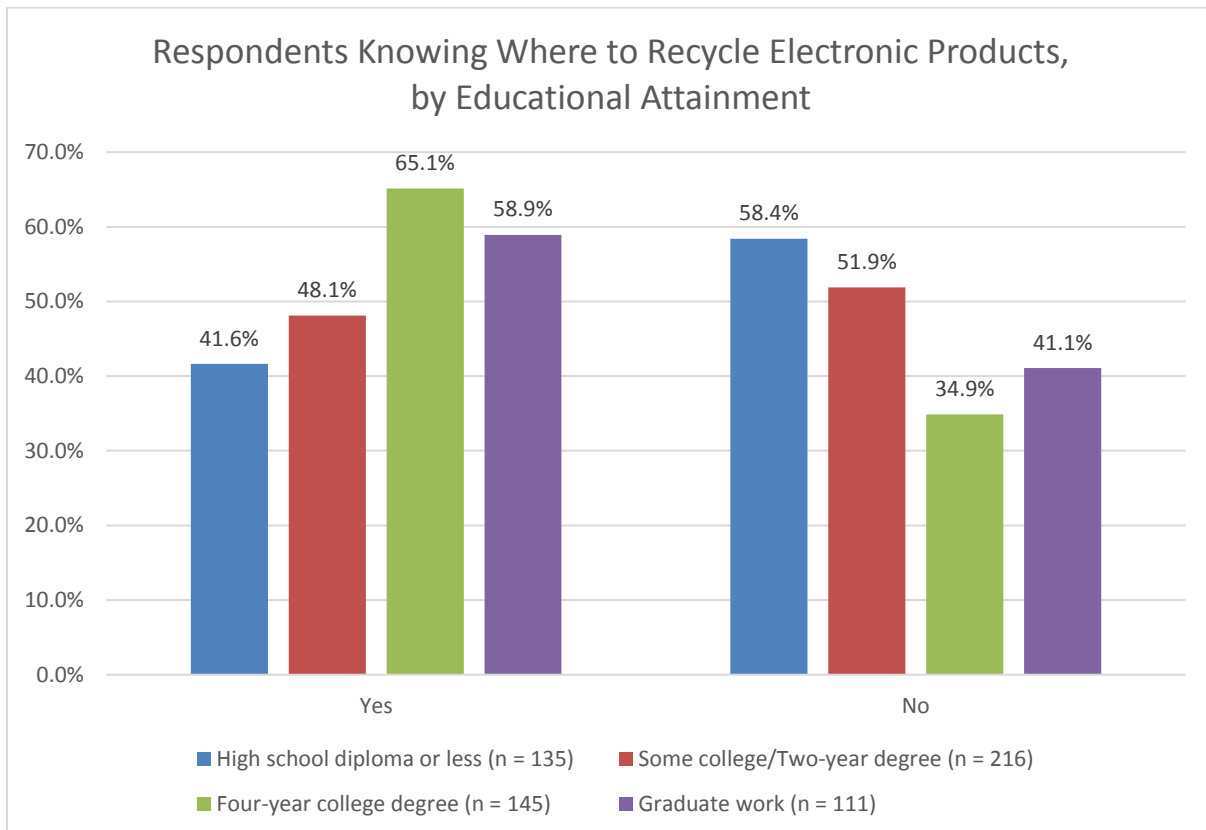
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## RESULTS

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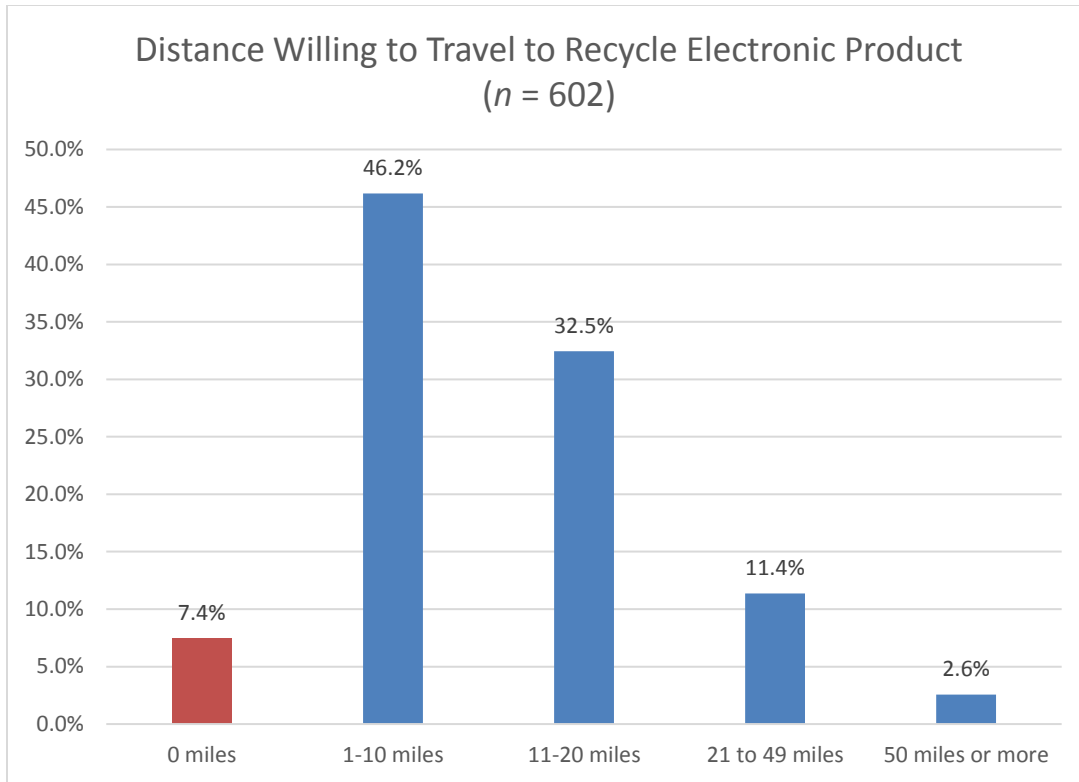
**Just over half of respondents (52.8%;  $n = 607$ ) reported knowing where they can recycle electronic products. After accounting for the margin of sampling error, this could indicate a small increase in knowledge since this question was asked in the Spring 2016 Penn State Poll, where 44.5% ( $n = 606$ ) said the same.**

- High levels of educational attainment were correlated with reported knowledge of knowing where to recycle electronic products. Respondents with college degrees were more likely to say so (65.1%;  $n = 145$ ) than those with some college or a two-year degree (48.1%;  $n = 216$ ) and those with a high school diploma or less (41.6%;  $n = 135$ ). Those with graduate work were also more likely to say so (58.9%;  $n = 111$ ) than those with a high school diploma or less, as shown in the next figure.



- Respondents living in households with annual incomes of less than \$30,000 were more likely to say that they did **not** know where to recycle electronic products (67.0%;  $n = 100$ ) than those in households making \$30,000 or more annually (43.8%;  $n = 432$ ).
- There were no significant reportable differences by gender, age, race, ethnicity, political affiliation, or region. Results that failed to reach significance in the current survey should not necessarily be construed to be different from the results of the 2016 Penn State Poll. Failing to reach significance does not necessarily mean that there are no differences among demographic sub-groups; it just means that we are unable to make that claim using this dataset.

**Nearly half of respondents (46.2%;  $n = 602$ ) said that they would be willing to travel between one and 10 miles to get rid of or recycle an electronic product.** An additional one-third of respondents (32.5%) said that they would be willing to travel between 11 and 20 miles. More than one in 10 (11.4%) were willing to travel 21 to 49 miles, but just 2.6% would travel 50 miles or more. Finally, 7.4% said that they would not be willing to travel, as shown in the next figure. **Compared to the 2016 results, fewer respondents said that they would be willing to travel one to 10 miles (57.5% said so in 2016;  $n = 603$ ), but more respondents said that they would be willing to travel more than 10 miles (46.5% in 2017 versus 35.0% in 2016).**

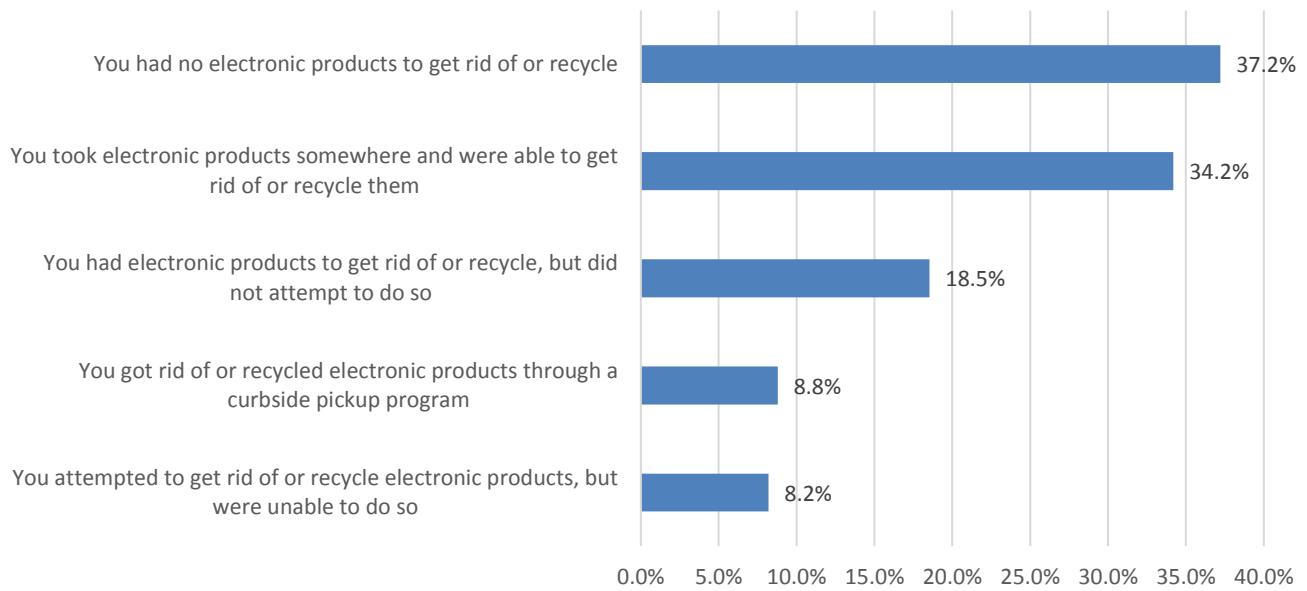


- Black/African American respondents were more likely to say that they were not willing to travel to recycle (22.5%; *n* = 42) than white respondents (5.7%; *n* = 506).
- Respondents who lived in households with annual incomes of less than \$30,000 were also more likely to say that they were unwilling to travel (19.9%; *n* = 97) than those in households making \$30,000 a year or more (5.5%; *n* = 433).
- Respondents between ages 35 and 64 were more likely to say they were willing to travel 11 to 20 miles (36.7%; *n* = 303) than those 65 years of age and older (22.7%; *n* = 129).
- There were no significant reportable differences by gender, ethnicity, education, political affiliation, or region.

Respondents were asked to describe all of their electronic recycling activities in the last year.

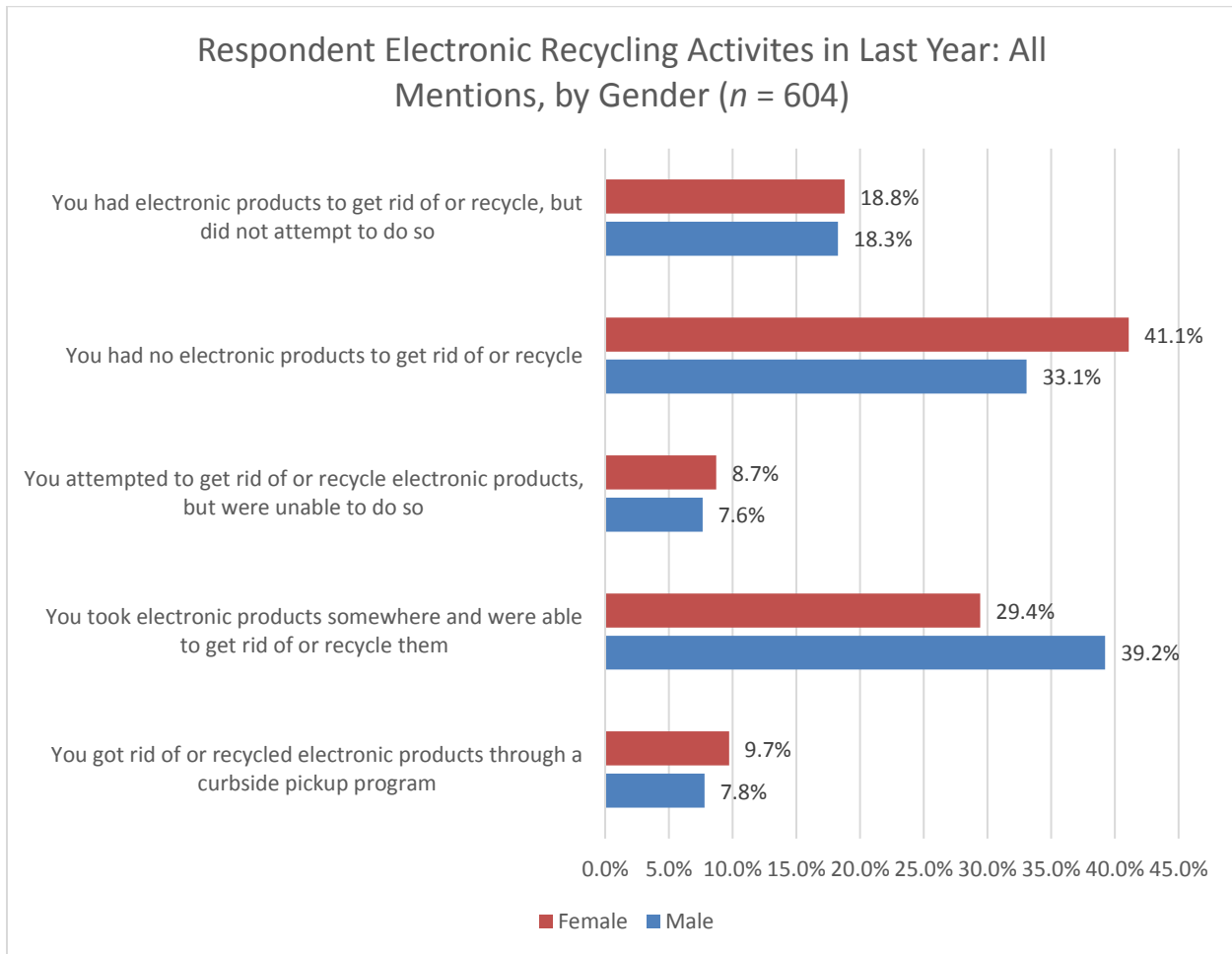
**More than one-third of respondents (37.2%; *n* = 604) said that they had no electronic products to get rid of or recycle. An additional third (34.2%) said that they took electronic products somewhere and were able to get rid of them or recycle them.** Nearly one in five (18.5%) said that they had electronic products to get rid of or recycle, but did not attempt to do so. The remainder said that they recycled through a curbside pick-up program (8.8%) or attempted to recycle, but were unable to do so (8.2%), as shown in the next figure.

Respondent Electronic Recycling Activities in Last Year: All Mentions  
(n = 604)



- **Respondents who said that they had no electronic products to recycle were more likely to be female, have lower levels of education and lower household incomes, and be some race other than white or black/African American.**
- Black/African American respondents were more likely to say that they recycled using a curbside pick-up program (22.4%; n = 40) than white respondents (7.9%; n = 509) or those reporting some other race (3.6%; n = 42). White respondents were more likely to say that they had no electronic products to recycle (40.2%) than both black/African American respondents (16.9%) and those listing some other race (21.5%). In contrast, those listing some other race were more likely to say that they had electronic products to recycle, but did not attempt to (40.9%) than white respondents (16.1%).
- In terms of educational attainment, respondents with a high school diploma or less were less likely to say that they took electronic products somewhere and were able to recycle them (19.6%; n = 134) than those with higher level of formal education (38.2%; n = 469). In comparison, respondents with a high school diploma or less were more likely to say that they had no electronic products to recycle (52.9%) than those with a four-year college degree (26.3% = 144) and graduate work (28.2%; n = 112).

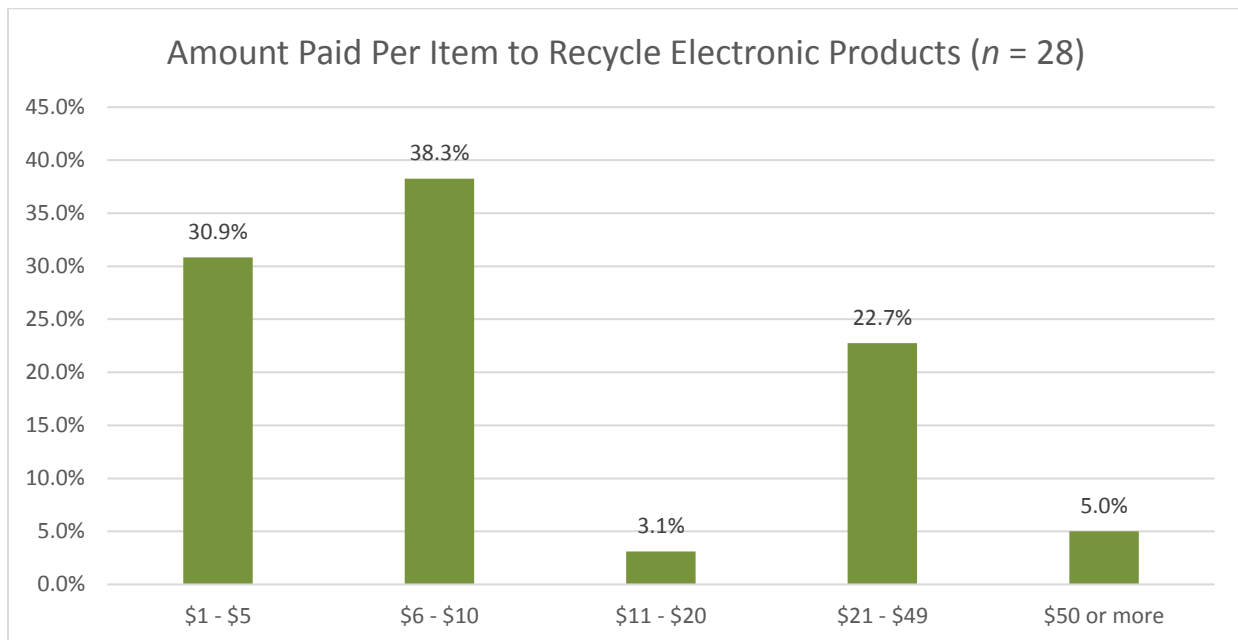
- Men were more likely to say that they took electronic products somewhere and were able to get rid of them (39.2%;  $n = 293$ ) than women (29.4%;  $n = 311$ ). Women were slightly more likely than men to say that they had no electronic products to get rid of or recycle (41.1% versus 33.1%, respectively), as shown in the next figure.



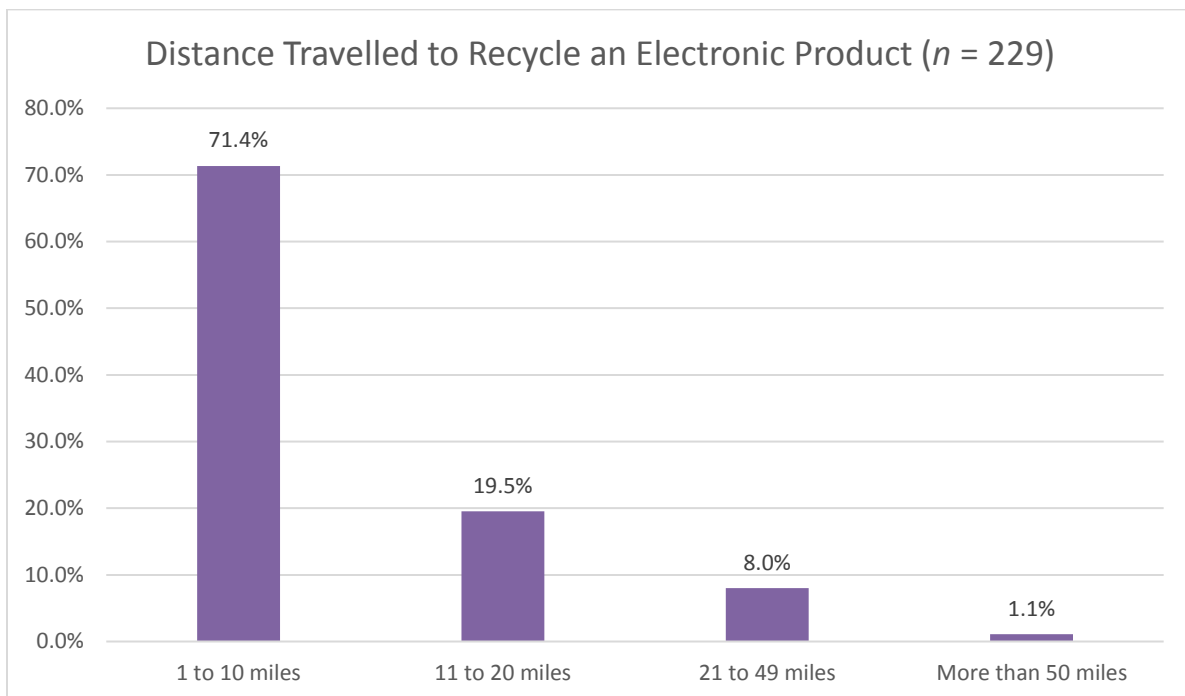
- Respondents living in households with annual incomes of \$100,000 or more were more likely to say that they took electronic product somewhere and were able to get rid of them (43.9%;  $n = 165$ ) than those living in households with lower annual household incomes (30.1%;  $n = 432$ ). Respondents living in households with annual incomes of less than \$30,000 were more likely to say that they had no electronic products to recycle (48.4%;  $n = 95$ ) than those in households with annual incomes of \$100,000 or more (29.0%;  $n = 165$ ).

- Respondents in the North Central Region were more likely to say that they took electronic products somewhere and were able to recycle them (44.8%;  $n = 47$ ) than those in the Northwest Region (14.4%;  $n = 42$ ).
- There were no significant reportable differences in those who said that they attempted to recycle electronic products, but were unable to do so, by any demographic sub-groups.

**Respondents who said that they had gotten rid of or recycled electronic products through a curbside pickup program or took them somewhere and were able to get rid of them were asked whether they paid to get rid of or recycle their electronic products. Nearly nine out of 10 (86.4%;  $n = 237$ ) said that they did not pay anything.** Respondents who said that they did pay something to get rid of or recycle electronic products reported paying a mean of \$16.97 per item ( $n = 28$ ), with responses ranging from \$1 to \$100. With the \$100 outlying response removed, respondents reported paying a mean of \$12.58 per item ( $n = 27$ ). Responses were evenly divided among those who paid \$1 to \$5 (30.9%;  $n = 8$ ), those who paid \$6 to \$10 (38.3%) and those who paid more than \$10 (30.9%) per item. Seven respondents (27.7%) reported that they paid more than \$20 per item, with only one respondent reporting that they paid \$50 or more, as shown in the next figure. There were no significant reportable differences by demographic sub-groups due to small sample sizes for these questions.



Respondents who said that they took electronic products somewhere or attempted to get rid of them but were unable to do so were asked to provide the greatest distance they traveled one-way to get rid of or recycle the product. **Nearly three-fourths of these respondents (71.4%; n = 229) only travelled one to 10 miles.** About one-fifth (19.5%) travelled 11 to 20 miles, and the balance travelled 21 miles or more (9.1%). Only two respondents (1.1%) said that they travelled more than 50 miles, as shown in the next figure. There were no significant reportable differences in response by demographic sub-groups.

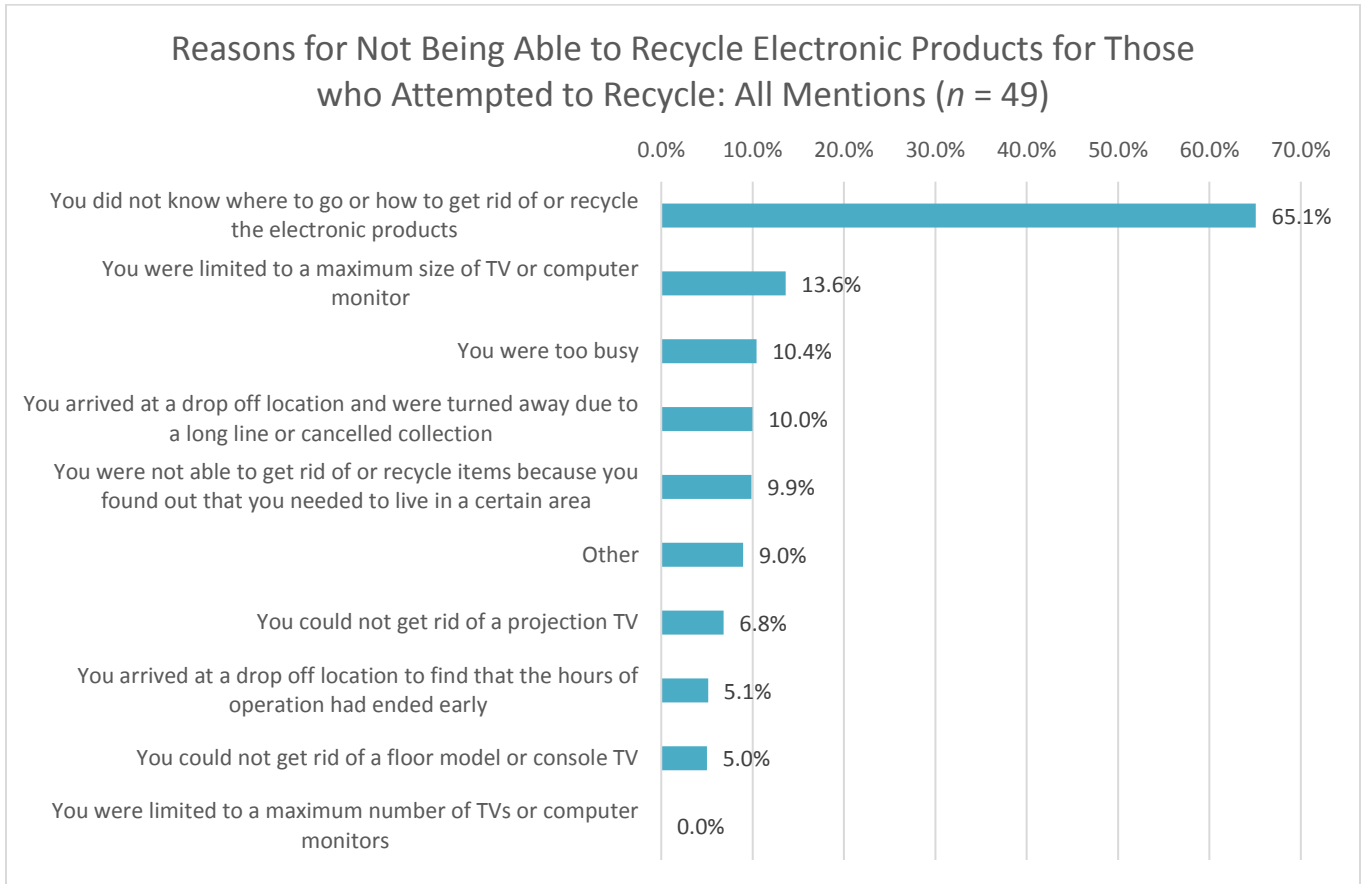


**Respondents who said that they attempted to get rid of or recycle electronic products but were unable to do so were asked to indicate all of the reasons why they were prevented from doing so. About two-thirds (65.1%; n = 49) indicated that they did not know where to go or how to get rid of or recycle electronic products, as shown in the next figure.** The rest of the reasons mentioned were:

- Limited to a maximum size of TV or computer monitor (13.6%),
- Too busy (10.4%),
- Arrived at a drop-off location and was turned away due to a long line or cancelled collection (10.0%),
- Found out that they needed to live in a certain area (9.9%),



- Could not get rid of a projection TV (6.8%),
- Arrived at drop-off location to find that the hours of operations ended early (5.1%), and
- Could not get rid of a floor model or console TV (5.0%)



In addition, six respondents mentioned other reasons for not being able to get rid of or recycle electronic products. They included a television being rejected, but not remembering why ( $n = 1$ ); being turned away because the electronics store did not recycle anymore ( $n = 1$ ); being physically unable to move the electronic product ( $n = 2$ ); and not being able to afford the cost ( $n = 2$ ). No respondents indicated that being limited to a maximum number of TVs or computer monitors prevented them from recycling. There were no significant reportable differences by demographic sub-groups due to the small sample size.

Respondents who said that they had electronic products to get rid of recycle, but did not attempt to do so were asked whether they did not attempt to do so because they refused to pay a cost.

**Nearly nine out of 10 respondents (88.3%;  $n = 110$ ) said that the cost was not a factor in not attempting to recycle.** There were no significant reportable differences by demographic sub-groups.

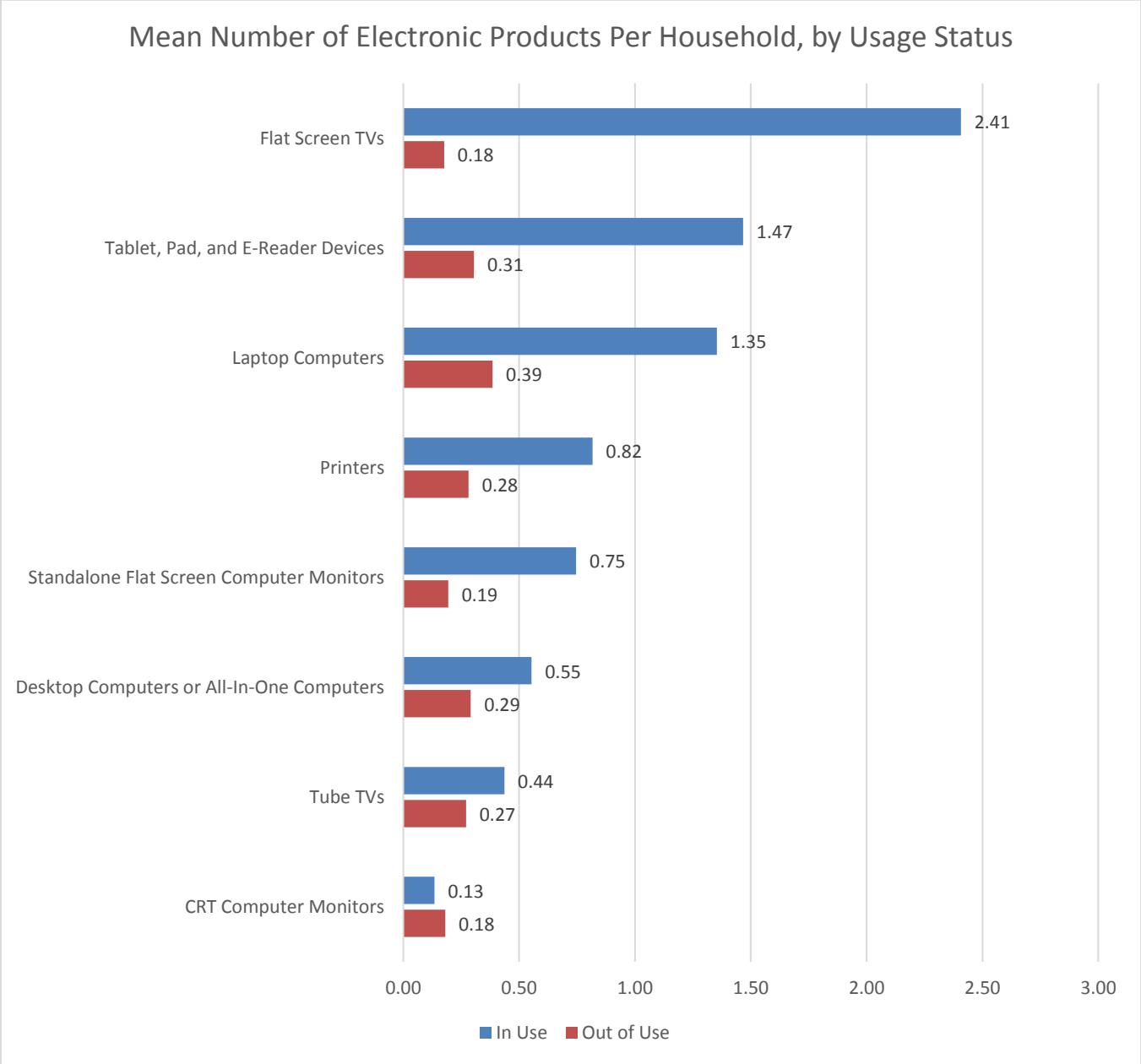
Finally, respondents were asked to indicate how many of a variety of electronic products they had both in-use and out-of-use in their households. **Respondents reported having a mean of 0.44 tube televisions in-use ( $n = 606$ ) and a mean of 0.27 tube televisions out-of-use ( $n = 606$ ) in their households. Nearly three-quarters of respondents (71.8%) had no tube televisions in use, and 81.6% had none out-of-use in their household.** Only 11.2% of respondents had more than one tube television in-use, and only 6.7% had more than one out-of-use. One respondent reported having 43 tube televisions in-use and 11 out-of-use, but these outlying responses were removed from analysis. Excluding these outliers, responses ranged from zero to five tube televisions both in-use and out-of-use.

- Black/African American respondents reported having a higher mean number of tube televisions in-use (0.76;  $n = 42$ ) than white respondents (0.40;  $n = 510$ ).
- Respondents between the ages of 18 and 34 were more likely to say that they had no tube televisions in-use in their household (79.5%;  $n = 172$ ) than those 65 years of age or older (67.1%;  $n = 130$ ).
- Respondents from the Northwest Region were more likely to say that they had more than one tube television in-use in their household (23.0%;  $n = 43$ ) than those in the Southeast Region (8.0%;  $n = 242$ ).
- There were no other significant reportable differences by demographic sub-group.

**Respondents reported having a mean of 0.13 CRT computer monitors in-use ( $n = 605$ ) and 0.18 out-of-use ( $n = 606$ ), on average.** Nearly nine out of 10 respondents had no CRT computer monitors in-use (88.6%) or out-of-use (88.0%).

- Respondents over the age of 65 reported having a higher number of CRT computer monitors in-use (mean = 0.23;  $n = 130$ ) than those between the ages of 18 and 34 (mean = 0.10;  $n = 172$ ) and those between the ages of 35 and 64 (mean = 0.11;  $n = 304$ ).
- There were no other significant reportable differences by demographic sub-group.

**Respondents had more flat screen televisions in-use (mean = 2.41; n = 605) than any other type of device.** They also indicated having more laptop computers out-of-use (mean = 0.39; n = 606) than any other type of device, as shown in the next figure.



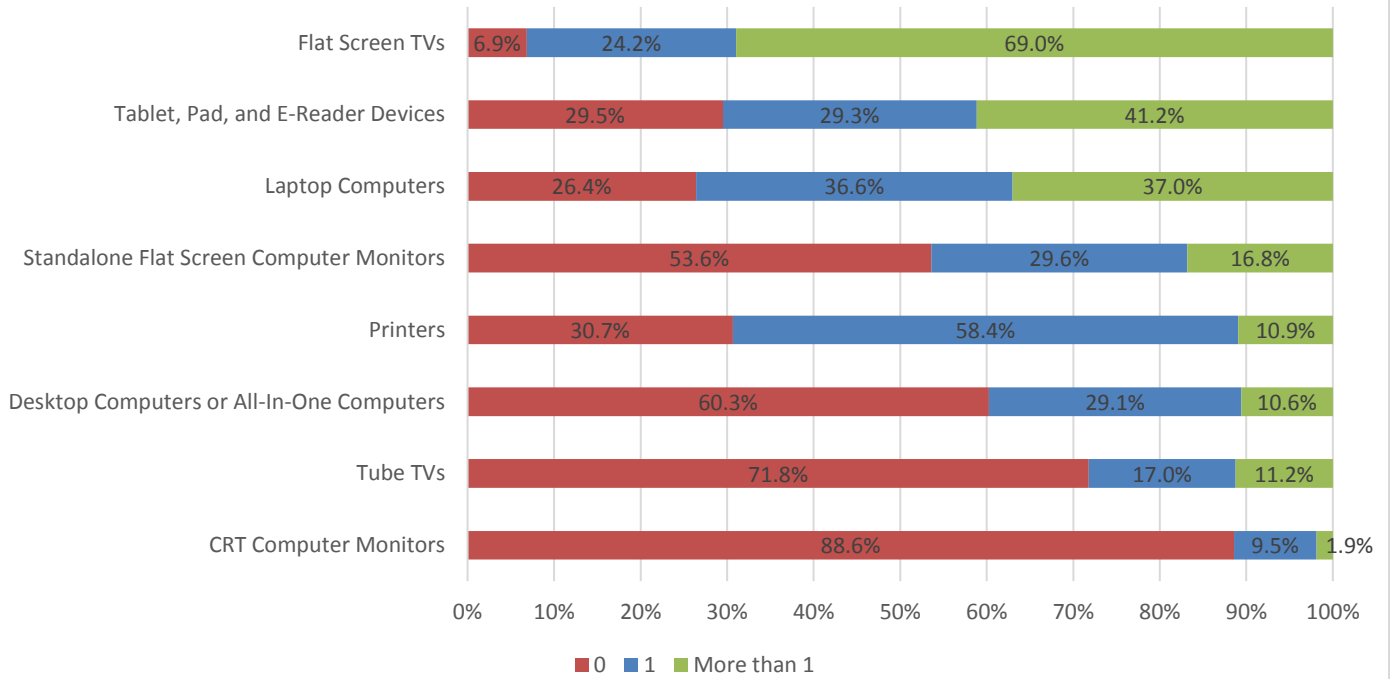
- As with the 2016 survey, respondents over the age of 65 were more likely to report lower numbers of devices in their households, as were those with household incomes of less than \$60,000.

- Those with more flat screen televisions in-use in their households tended to be under the age of 65, white or black, and live in households with higher levels of annual income.
- Those with more standalone flat screen computer monitors in-use tended to be male, white or black, college- or graduate-level educated, and in households with annual incomes of \$100,000 or more.
- Those with standalone flat screen computer monitors out-of-use tended to be under the age of 65 and some race other than white or black/African American.
- Those with more desktop computers or all-in-one computers in-use tended to be male and live in households with annual incomes of \$100,000 or more.
- Respondents under the age of 65 tended to have more laptop computers both in-use and out-of-use. They also tended to have more tablets, pads, and e-reader devices in-use.
- Those with more laptop computers in-use also tended have more education than a high school diploma and live in households with annual incomes of \$30,000 or more.
- Those reporting more tablets, pads, and e-reader devices in their households tended to have graduate work in terms of education and live in households with annual incomes of \$60,000 or more.
- Respondents who reported more printers in-use tended to be white, have more than high school diploma, and live in households with annual incomes of \$30,000 or more.

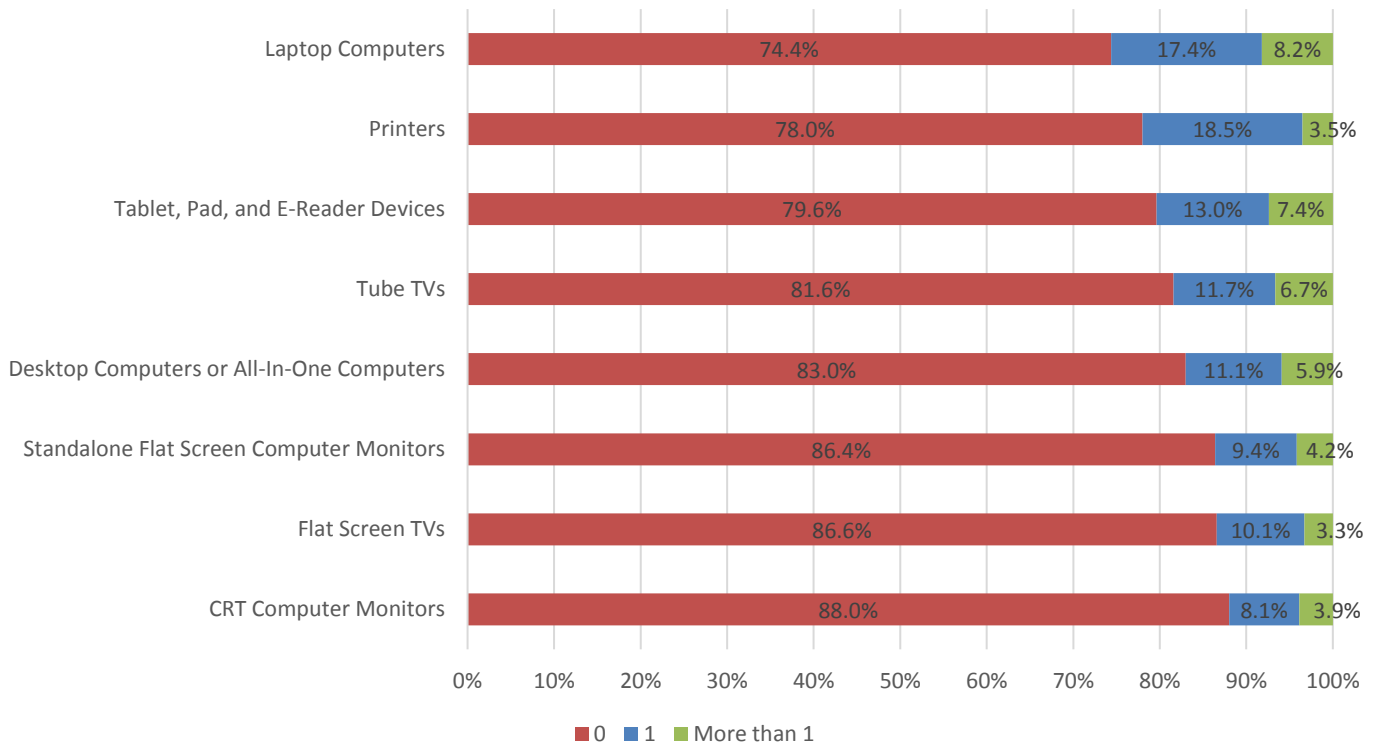
There was much variation in those who said that they had no electronic devices of a particular type in-use in their households. Such responses ranged from 6.9% of respondents saying that they had no flat screen televisions in-use in their households to 88.6% who said that they had no CRT computer monitors in-use. About seven out of 10 respondents (69.0%;  $n = 606$ ) had more than one flat screen television in use, while about four out of five (41.2%;  $n = 607$ ) had more than one tablet, pad, or e-reader device in-use.

All of the electronic items asked about in the survey had three-quarters or more respondents indicate that there were none of such items out-of-use in their households. Respondents reporting that no such items were out-of-use in their households ranged from 74.4% for laptop computers ( $n = 606$ ) to 88.0% for CRT computer monitors ( $n = 606$ ), as shown in the next figures.

### Number of Devices in Household that Are In-Use



### Number of Devices in Household that Are Out-of-Use



# **SPRING 2016 PENN STATE POLL**

**Report of Methods and Findings**

**Submitted to:**

**Pennsylvania Recycling Markets Center, Inc.**

**Prepared by:**

**Center for Survey Research**

**Penn State Harrisburg**

**June 2016**



**PennState**  
**Harrisburg**

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## EXECUTIVE SUMMARY

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The Penn State Poll (Poll) is an omnibus survey conducted by the Center for Survey Research (CSR) at Penn State Harrisburg. Due to the large number of submitted questions, two separate omnibus surveys that used identical methodologies were fielded. For this report, the project's methodology and statistics are provided for questions submitted by researchers from the Penn State Harrisburg School of Public Affairs and the Pennsylvania Recycling Markets Center, Inc.

A total of 606 telephone interviews with adult Pennsylvanians were conducted between March 12 and May 19, 2016. The Penn State Poll used a dual-frame design consisting of a representative landline sample with a cell phone sample supplement. Project activity was directed by Stephanie L. Wehnau, Director of the Center for Survey Research at Penn State Harrisburg.

### **Data Analysis Notes**

A set of data frequencies and cross-tabulation tables is available in Appendix D of the report. The following notes should be taken into account when reviewing the Key Findings:

1. Key findings include discussion for relationships that are statistically significant (chi-square or z-test statistics are significant at the .05 level).
2. Data are weighted as a function of each respondent's age and sex. All reported numbers and percentages reflect the weighted data.
3. Percentages may not total to 100% due to rounding in the weighting process.
4. Cross-tabulations and frequencies may not add up to the sample size reported due to rounding in the weighting process and the exclusion of "Don't know" and "Declined to answer" responses.
5. See Appendices B and C of the report for a map and list of the Penn State Poll Regions.

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## KEY FINDINGS

*NOTE: Complete frequencies and cross-tabulations can be found in Appendix D.*

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**Less than half of Pennsylvanians (44.5%;  $n = 606$ ) indicated that they knew where they could recycle electronic products.**

- Men were more likely than women (51.5% versus 38.4%) to say that they knew where to recycle electronic products.
- Black/African American respondents were less likely (22.2%) than white respondents (46.6%) to report having such knowledge.
- Generally, respondents with higher levels of formal education were more likely to have knowledge about where to recycle electronic products.
- There were no significant reportable differences by age, ethnicity, household income, or region.

**Just over half of respondents (57.5%;  $n = 603$ ) said that they would be willing to travel one to 10 miles to recycle an electronic product. About one-quarter (27.0%) were willing to travel 11-20 miles, while 7.5% said that they would not be willing to travel.**

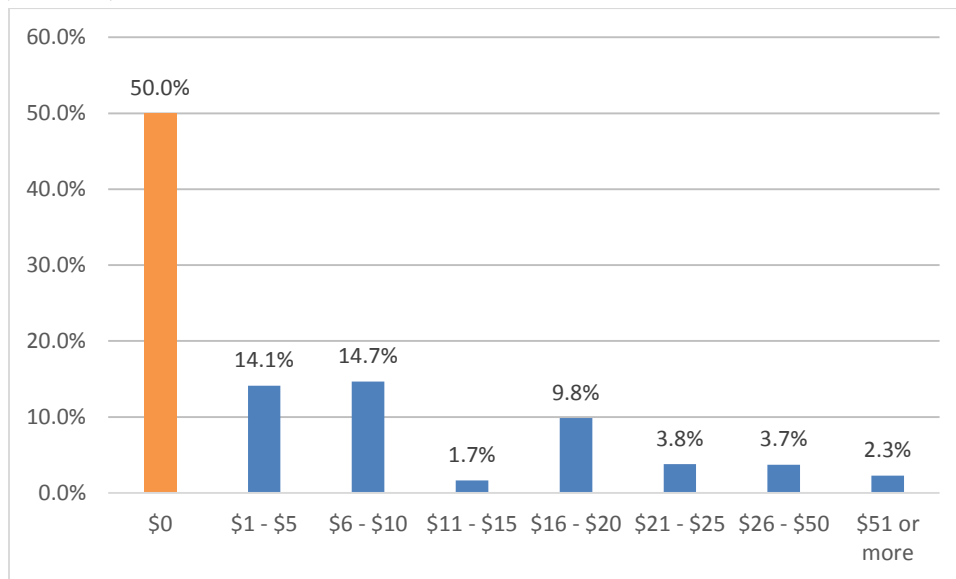
- Men were more likely than women (63.8% versus 51.6%, respectively) to say that they would be willing to travel 1-10 miles to recycle electronic products.
- Individuals who were 75 years of age or older were more likely than those under the age of 75 to say that they were unwilling to travel to recycle electronic products, with 21.2% of those respondents indicating so.
- Black/African American respondents were also more likely to say that they were unwilling to travel (21.6%) than white respondents (6.3%). Conversely, white respondents were more likely than black/African American respondents to be willing to travel 11-20 miles (29.5% versus 12.9%, respectively).
- Individuals who said that they were unwilling to travel to recycle were also more likely to have lower levels of formal education (high school diploma/GED or less) and live in the Northwest Region.
- There were no significant reportable differences by ethnicity or income.



As shown in the following figure, half of respondents (50.0%;  $n = 558$ ) were unwilling to spend any money to recycle tube televisions and computer monitors. An additional 14.1% were willing to spend between \$1 and \$5, 14.7% were willing to spend between \$6 and \$10, 11.5% would spend between \$11 and \$20, 4.8% would be willing to spend between \$21 and \$49, and 5.0% were willing to spend more than \$50. Respondents were willing to spend an average of \$9 (including ten respondents who said \$100 and an additional 17 respondents who said \$50 to \$75).

- Respondents with lower levels of formal education were more likely to say that they were not willing to spend any money on electronics recycling.
- There were no significant reportable differences by gender, age, race, ethnicity, income, or region.

### Amount Respondents Are Willing to Spend to Recycle Tube Televisions and Computer Monitors ( $n = 602$ )



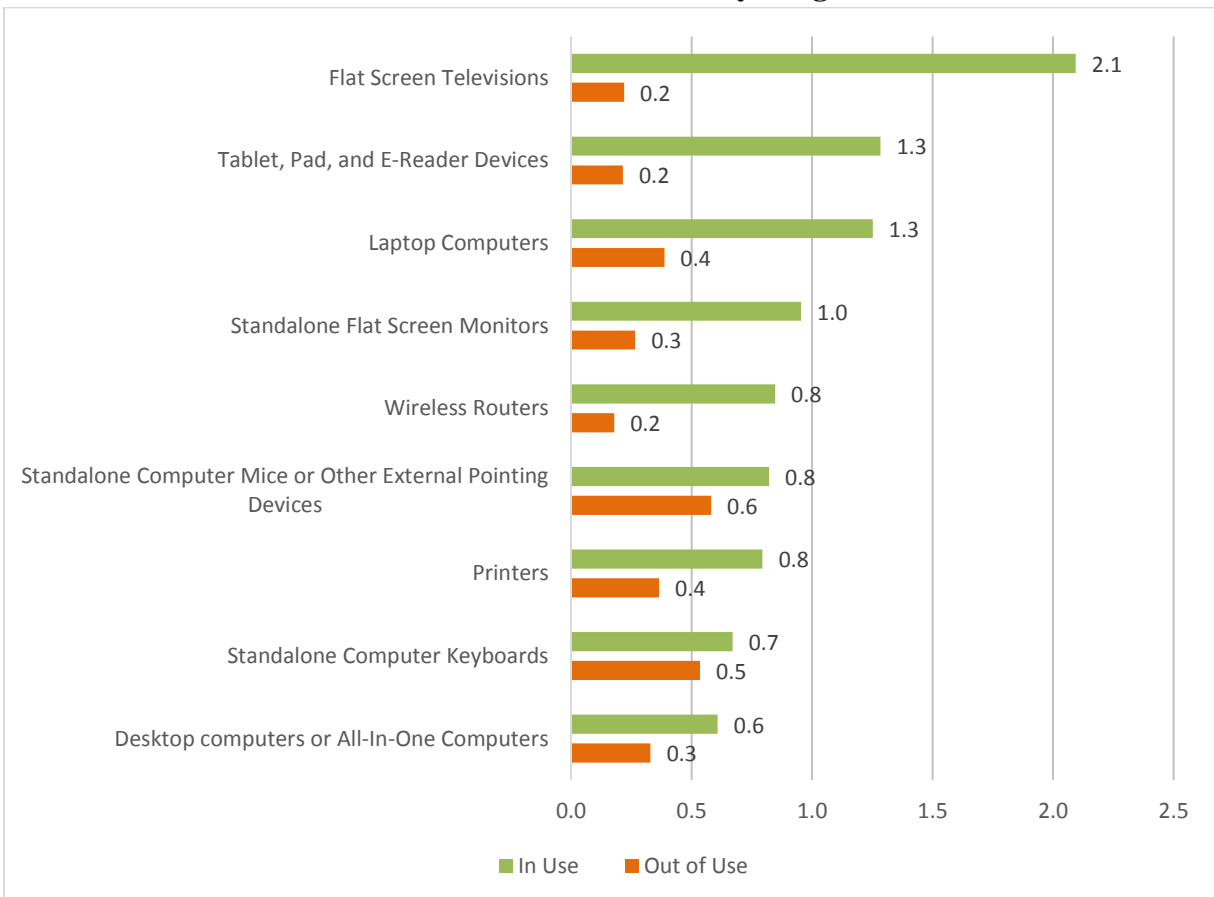
On average, households had 1.37 tube televisions and computer monitors. One respondent reported that they had 30 such televisions or monitors in their household; however, this outlier was removed from all calculations and subsequent analyses. Over two-fifths of respondents (43.5%;  $n = 602$ ) said that they had zero tube televisions and computer monitors in their possession. About one out of five (20.2%) had one tube television or computer monitor, 15.5% had two, and 9.9% had three. About one out of ten (10.9%) had four or more in their possession.

- There were no significant reportable differences by demographic sub-groups.

**Respondents were also asked how many of a variety of electronic products they had both in-use and out-of-use in their households; the average numbers of devices reported per household are shown in the following figure.**

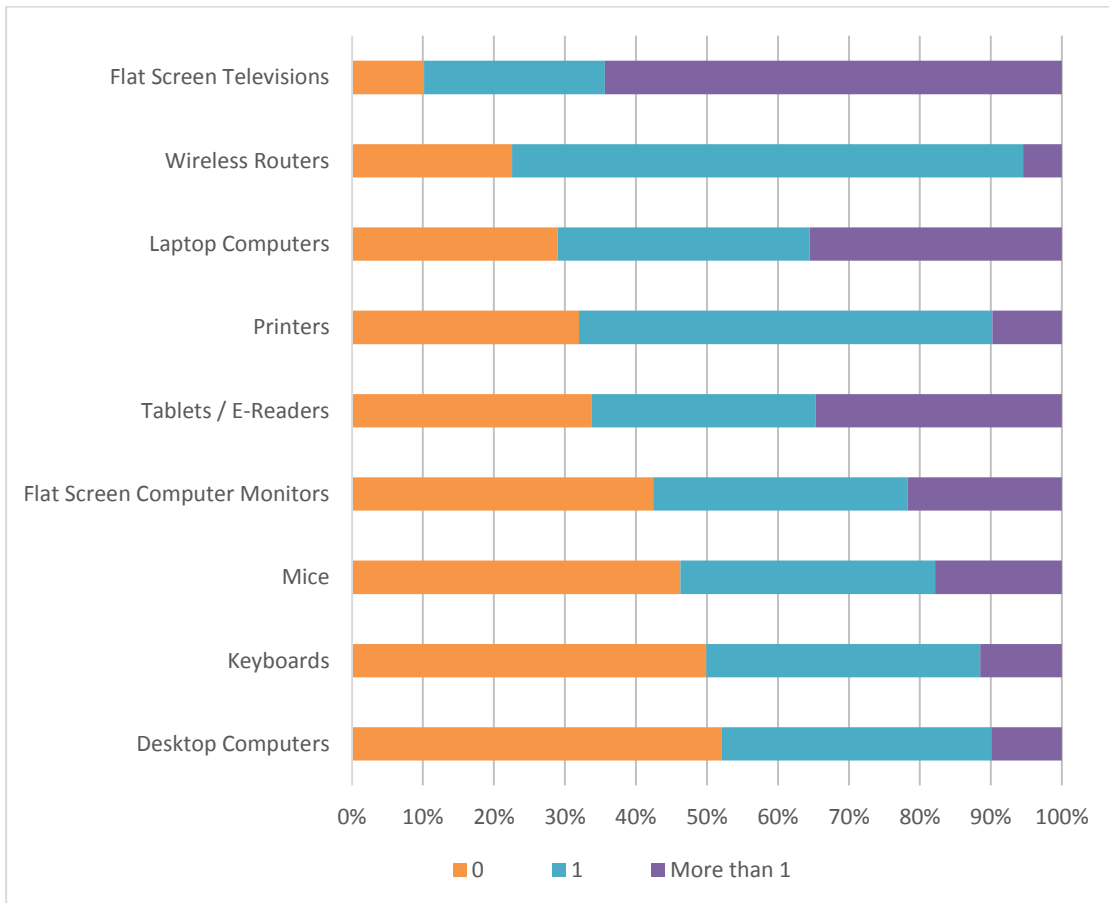
- Generally, respondents over the age of 65 were more likely to report lower numbers of devices in their households, as were those who lived in households with annual incomes of less than \$40,000 and individuals who had not pursued post-secondary education.
- Individuals between the ages of 18 and 24 were more likely to report that they had a laptop in their household than those over the age of 24.
- Men reported a slightly higher average number of devices in their household for flat screen computer monitors in use, desktop computers in use, and keyboards and mice that are both in and out of use.
- White individuals reported having more printers in their household on average than non-white individuals while those who were some race other than white or black reported having more laptops out of use than white individuals.

**Mean Number of Electronic Products Per Household by Usage Status**

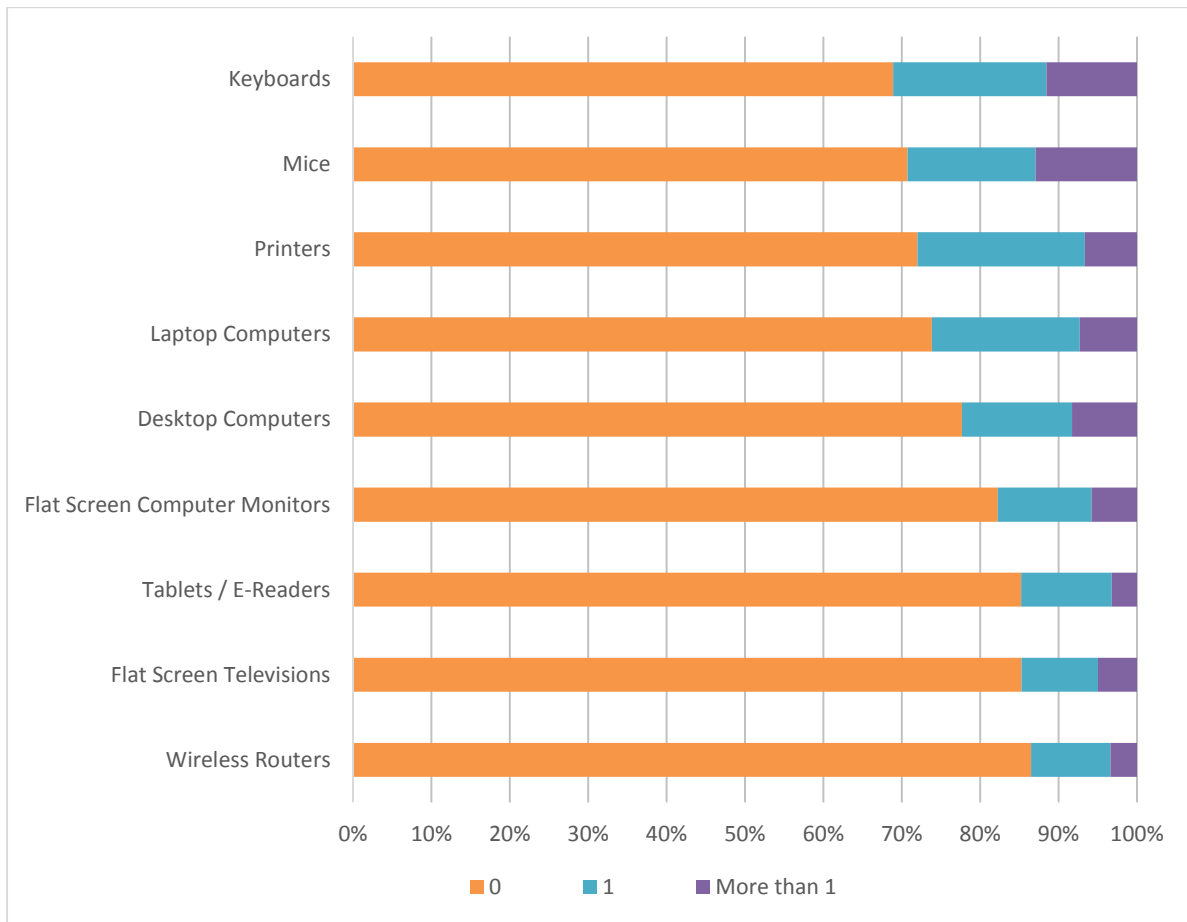


Just 10.2% of respondents ( $n = 602$ ) reported having no flat screen televisions in use in their households. In contrast, 14.7% of respondents reported having at least one flat screen television that was out of use in their household. Nearly one-third of respondents reported having at least one standalone computer mouse or other external pointing device (29.0%;  $n = 602$ ) or at least one standalone computer keyboard (31.1%;  $n = 603$ ) in their household that was out of use. About one out of seven respondents (14.7%;  $n = 604$ ) said that they have a tablet, pad, or e-reader device that is out of use. See the following figures for the percentages of respondents that indicated that they had zero, one, or more than one of each kind of device in use and out of use in their household.

### Number of Devices in Household that Are In-Use



## Number of Devices in Household that Are Out of Use



# **SPRING 2015 PENN STATE POLL**

**Report of Methods and Findings**

**Submitted to:**

**Pennsylvania Recycling Markets Center, Inc.**

**Prepared by:**

**Center for Survey Research**

**Penn State Harrisburg**

**May 2015**



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## EXECUTIVE SUMMARY

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The Spring 2015 Penn State Poll (Poll) is an omnibus survey conducted by the Center for Survey Research (CSR) at Penn State Harrisburg. A total of 605 telephone interviews with adult Pennsylvanians were conducted between March 7 and May 2, 2015. The Penn State Poll used a dual-frame design consisting of a representative landline sample with a cell phone sample supplement. Project activity was directed by Stephanie L. Wehnau, Director of the Center for Survey Research at Penn State Harrisburg.

The purpose of the Penn State Poll is to provide timely and accurate data to agencies, organizations, and researchers with statewide interests and responsibilities. Sponsors of past Penn State Polls have used the results of the survey to track public policy issues; measure general attitudes, awareness, and knowledge of their organizations; and measure satisfaction with organizational services and performance.

### **Data Analysis Notes**

A set of data frequencies and cross-tabulation tables is available in Appendix D of the report. The following notes should be taken into account when reviewing the Key Findings:

1. Key findings include discussion for relationships that are statistically significant (chi-square or z-test statistics are significant at the .05 level).
2. Data are weighted as a function of each respondent's age and sex. All reported numbers and percentages reflect the weighted data.
3. Percentages may not total to 100% due to rounding in the weighting process.
4. Cross-tabulations and frequencies may not add up to the sample size reported due to rounding in the weighting process and the exclusion of "Don't know" and "Declined to answer" responses.
5. See Appendices B and C of the report for a map and list of the Penn State Poll Regions.

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## KEY FINDINGS

*NOTE: Complete frequencies and cross-tabulations can be found in Appendix D.*

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### **Just over three-fourths of Pennsylvania residents surveyed (77.5%) knew that they could recycle electronic products in Pennsylvania.**

- Respondents in Southwest Pennsylvania were more likely to indicate that they did not know they could recycle electronic products in Pennsylvania than those living in other regions.
- White respondents were more likely to say that they knew they could recycle electronic products than black respondents (80.1% vs. 47.7%, respectively).
- Individuals living in households with annual incomes of \$125,000 or more were more likely to know about recycling in Pennsylvania than those living in households with lower incomes.
- In terms of education, those with less than a high school diploma or GED were more likely to say that they did not know they could recycle electronic products in Pennsylvania, while those with a graduate-level education were more likely to say that they did know they could do so than those with other levels of education.
- There were no significant reportable differences by gender, ethnicity, or age.

### **Of those who said that they knew they could recycle electronic products in Pennsylvania (n = 469), about three-fifths (61.6%) indicated that they knew where they could recycle electronic products.**

- Individuals who said that they did not know where to recycle electronic products were more likely to be between the ages of 18 and 24 and to live in Northwest Pennsylvania.
- Individuals who said that they knew where to recycle electronic products were more likely to be four-year college graduates and to live in Southeast Pennsylvania.
- There were not significant reportable differences by gender, race, ethnicity or income.

### **When asked how they first heard about the availability of electronic products recycling (n = 469), the most-mentioned sources were internet or newspaper articles (26.7%); friends, family members, or neighbors (21.5%); and television news broadcasts (15.7%).**

- Younger individuals (between the ages of 18 and 34) were more likely to say that they learned about it through friends, family members, or neighbors than those over the age of 34. These respondents were also more likely to say that they learned about it in a retail store than those in other age groups. Those between the ages of 35 and 44 were more likely to say that they heard about it on a television news broadcast than those in other age groups.

- White respondents were more likely than non-white respondents to say that they first learned about electronic products recycling through an internet or newspaper article.
- There were no significant reportable differences by gender, ethnicity, household income, education, or region.

**Respondents were also asked to select all of the types of electronic products they would most like to be able to recycle. Only 3.4% of respondents said that they were not willing to recycle. Respondents were slightly less likely to indicate that they wanted to be able to recycle a tablet or pad device than other listed products (72.1%), but there were no significant differences among the other options provided: Mobile/Cell phones (83.3%); televisions (83.5%); desktop computers/monitors (81.9%); printers, keyboards, and mice (79.1%); and laptop computers (77.5%). (Note: This question allowed respondents to select all that apply, so the percentages represent the proportion of respondents who chose a response out of the number of respondents who were asked the question.)**

- Individuals between the ages of 25 and 34 and over the age of 65 selected fewer items than those in other age ranges and were less likely to have selected each item than those in other age groups; in contrast, those between the ages of 35 and 44 selected more items than those in other age ranges. Those between the ages of 18 to 24 and 35 to 44 were more likely to want to be able to recycle a tablet or pad device than those in other age groups. In addition, respondents between the ages of 35 and 64 were more likely to say that they would like to be able to recycle desktop computers and monitors.
- Hispanic/Latino individuals were more likely to say that they wanted to be able to recycle laptops than non-Hispanics, but ethnicity was found to be statistically correlated with age, with Hispanics tending to be younger in the sample.
- Individuals living in households with annual incomes of less than \$20,000 were less likely to select all of the options given than those who lived in households with higher incomes, even after accounting for age. In addition, those who live in households with annual incomes of \$10,000 to \$19,999 were more likely to say that they were not willing to recycle.
- Respondents who had a high school diploma or GED or less in terms of their education were significantly less likely to select each electronic product option given.
- Those living in Northwest Pennsylvania were less likely to say that they would like to be able to recycle televisions; desktop computers and monitors; printers, keyboards, and mice; laptop computers; and tablets or pad devices than those in other regions.
- Other responses provided included video game systems, stereos, MP3 players, landline telephones, DVD players and VCRs, batteries, and various appliances.
- There were no significant reportable differences by gender or race.



**About half of respondents (49.5) said that they would be willing to travel one to 10 miles to recycle an electronic product. Nearly one-third (31.3%) were willing to travel 11-20 miles, while 8.5% said that they would not be willing to travel.**

- Younger individuals (those between the ages of 18 and 34) were more willing to travel 11-20 miles than those in other age groups, while those between the ages of 35 and 44 were more willing to travel more than 20 miles to recycle electronic products. This could suggest that younger individuals are more willing to invest their time in recycling. In addition, nearly one-third of those over the age of 75 (30.4%) said that they were not willing to travel at all.
- Individuals who said that they were unwilling to travel to recycle were also more likely to be black or African American, live in households with annual incomes of less than \$20,000, and have less than a high school diploma or GED in terms of education.
- There were no significant reportable differences by gender, ethnicity, or region.

**When asked to describe the best reason that would cause them to not recycle their electronic products, over one-quarter of respondents (26.6%) said that nothing would stop them from recycling them. An additional 23.4% said that they were concerned about their files or data, and 15.0% said that they do not know where to go to recycle the electronic products. Another one out of eight respondents (12.5%) said that an inconvenient recycling location would prevent them from recycling electronic products.**

- Men were more likely than women to say that an inconvenient location or not knowing where to go might prevent them from recycling. Women were more likely to say that being unable to physically lift an item might prevent them from recycling.
- Individuals between the ages of 18 and 24 were slightly more likely to say that they do not want to recycle than those over the age of 24, with 8.9% giving this answer. Those over the age of 75 and those living in households with incomes between \$10,000 and \$19,999 were more likely to say that being unable to physically lift the products could stop them; these items were correlated.
- Respondents with a two-year technical degree or higher were more likely to say that they had concerns about their files or data than those with some college or less education.
- Those who live in the Southwest Region were more likely to say that not knowing where to go could stop them from recycling than those in the rest of the Commonwealth, while those living in Southeast Pennsylvania were slightly more likely to say that an inconvenient location could stop them, as compared to others in Pennsylvania.
- Of those who provided another reason (n = 23), half (50.2%) said that they did not have anything to recycle.
- There were no significant reportable differences by race or ethnicity.

**When asked to indicate all of the ways in which electronic products were handled by respondents over the last 2 years, over one-third of respondents (37.5%) said that they gave them to someone else or donated them, 31.3% recycled them, 28.5% said that they put them into storage, and 19.8% repaired them or kept using them. An additional 19.1% said that they have not disposed of or recycled any electronic products over the last two years. (Note: This question allowed respondents to select all that apply, so the percentages represent the proportion of respondents who chose a response out of the number of respondents who were asked the question.)**

- Women were more likely to say that they donated them or gave them to someone else.
- Younger individuals (18 to 34 years of age) were less likely to indicate that they recycled the products. So me of this can be explained by the fact that those between the ages of 25 and 34 were significantly more likely to say that they put their products into storage than those in other age groups. Respondents between the ages of 55 and 64 were more likely to say that they recycled the products than those younger than 55 and older than 64, while those over the age of 65 were less likely to say that they repaired the products or put them into storage.
- White individuals were much more likely than non-white individuals to have recycled the products. In addition, those who were some other race than white or black were more likely to say that they repaired the products or took them apart and recycled pieces themselves.
- Non-Hispanics were much more likely than Hispanics to have recycled the products, while Hispanics were slightly more likely to say that they attempted to recycle them, but ended up throwing them away.
- Individuals who live in households with annual incomes of less than \$10,000 were less likely to say that they recycled these products than those who lived in households with incomes of over \$10,000. Generally, proportions of those who indicated that they recycled the products increased with household income. Those who lived in households with incomes of \$100,000 or more were also much more likely to say that they put these products into storage than those who lived in households with lower incomes, as were those had a two-year technical degree or higher in terms of education. Education and income were moderately positively correlated, as expected.
- Respondents in South Central Pennsylvania were much less likely to say that they repaired and kept using these electronic products. Those in the North Central Region were also slightly more likely to say that they took the items apart.
- Other responses included returning the products to a retailer, selling the products, and trading them in.
- Respondents who had not disposed of or recycled any electronic products over the last two years were more likely to be over the age of 75 and living in households with annual incomes between \$10,000 and \$19,999.

**Respondents who said that they had recycled electronic products or took them apart and recycled pieces themselves (n = 206) were asked to select all of the places to which they had taken the products during the last two years. A plurality of respondents reported that they took the electronic products to a place that recycles them all year (42.0%), took them to a one-day collection event (39.0%), or took the products to a retail store (25.1%). About one in 10 respondents said that they took them to a junk yard or scrap yard (10.7%), mailed them to a recycling program or manufacturer (9.9%), or recycled the products at the curb (9.7%). (Note: This question allowed respondents to select all that apply, so the percentages represent the proportion of respondents who chose a response out of the number of respondents who were asked the question.)**

- Respondents between the ages of 25 and 34 were less likely to have said that they took the products to a one-day collection event than those who were younger than 25 or older than 34, but they were more likely to have said that they mailed the products to a recycling program or manufacturer.
- Individuals with graduate-level education were more likely to have taken the products to a retail store than those with other levels of education.
- There were no significant reportable differences by gender, race, ethnicity, income, or region, mostly due to small cell sizes where analysis was not possible.

**When asked what has happened when they put an electronic product out with their trash, most (79.7%) said that they had not put an electronic product out with their trash in the last year. An additional 10.2% said that the trash company took it away and 8.6% said that someone driving along took it. Very small proportions of respondents said that they do not have trash collection (3.8%), no one picked it up (3.0%), or the trash company left them a note saying that they could not take it (1.5%).**

- Respondents living in households with annual incomes of less than \$10,000 per year and those living in Northwest Pennsylvania were more likely to say that they do not have trash collection in their area.
- White individuals were more likely than those reporting some other race (including 2 or more races) to say that they have not put an electronic product out in the last year.
- There were no significant reportable differences by gender, ethnicity, education, or region, mostly due to small cell sizes where analysis was not possible.

**In the last five years, half of respondents (50.9%) had not recycled or disposed of a television or computer monitor. Another 22.3% said one time, 15.4% did so twice, 4.7% three times, and 6.7% more than three times.**

- Individuals between the ages of 25 and 34 were more likely to say that they had not recycled or disposed of a television or computer monitor in the last five years than those

younger than 25 or older than 34, but this is consistent with overall recycling habits reported.

- Those living in households with higher levels of income (\$75,000 a year or more) were more likely to have recycled or disposed of a television or computer monitor in the last five years, as were those with graduate-level education. (Again, this is correlated with income.)
- Respondents living in Northwest Pennsylvania were more likely to say that they did not recycle or dispose of any televisions or computer monitors in the last five years as compared to the rest of the Commonwealth.
- There were no significant reportable differences by gender, race, or ethnicity.

**Nearly one-third of respondents (32.4%) said that they had zero tube televisions and computer monitors in their possession. Nearly one out of five (19.8%) had one tube television or computer monitor, 17.5% had two, and 11.6% had three. Nearly one out of five (18.2%) had four or more in their possession.**

**Nearly two-thirds of respondents (65.6%) were unwilling to spend any money to recycle tube televisions and computer monitors. An additional 17.7% were willing to spend between \$1 and \$10, another 10.9% were willing to spend between \$11 and \$30, and 5.8% were willing to spend more than \$30. Respondents were willing to spend an average of \$2 (including six respondents who said \$100 and 23 respondents who said \$50), and a median amount of \$0.**

**Finally, respondents were asked to rate how much an electronics manufacturers' recycling efforts would influence them on the brands they purchase. On a scale from 1 through 5, where 1 represented least influential and 5 represented most influential, respondents averaged a mean score of 2.7, with about one-third (34.4%) providing a score of 1 and 10.9% giving a score of 2, indicating that these efforts would not be influential to them. An additional 29.7% provided scores of 4 or 5, indicating moderate to significant influence.**

- White individuals were more likely to provide a score of 1, while those reporting some other race (including more than one race), were more likely to give a score of 5.
- Those with a two-year technical degree were more likely to give a score of 5, while those who were four-year college graduates were much less likely to do so.
- Respondents from Southeast Pennsylvania were more likely to give higher scores.
- There were no significant reportable differences by gender, age, ethnicity, or household income.

# **SPRING 2017 PENN STATE POLL**

**Report of Methods**

**Submitted to:**

**Pennsylvania Recycling Markets Center, Inc.**

**Prepared by:**

**Center for Survey Research  
Penn State Harrisburg**

**May 2017**



**PennState**  
Harrisburg

Center for Survey Research

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## INTRODUCTION

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The Penn State Poll (Poll) is an omnibus survey conducted by the Center for Survey Research (CSR) at Penn State Harrisburg. A total of 609 telephone interviews with adult Pennsylvanians were conducted between March 8 and April 18, 2017. The Penn State Poll used a dual-frame design consisting of both landline and cell phone samples. Project activity was directed by Stephanie L. Wehnau, Director of the Center for Survey Research at Penn State Harrisburg.

The purpose of the Penn State Poll is to provide timely and accurate data to agencies, organizations, and researchers with statewide interests and responsibilities. Sponsors of past Penn State Polls have used the results of the survey to track public policy issues; measure general attitudes, awareness, and knowledge of their organizations; and measure satisfaction with organizational services and performance.

### **Data Analysis Notes**

The following notes should be taken into account when reviewing the final dataset:

1. Data are weighted as a function of each respondent's age and sex.
2. Percentages may not total to 100% due to rounding in the weighting process.
3. See Appendices A and B of the report for a map and list of the Penn State Poll Regions.
4. See Appendix C for the sponsored survey questions and standard demographics that were used in data collection.

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## METHODOLOGY

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### **Instrument Development**

During February 2017, the CSR project team worked in consultation with the various Poll sponsors to develop and refine survey questions for use in data collection.

The instruments were programmed using Voxco computer-assisted telephone interviewing (CATI) software. The CATI program's interface allows for complex questioning patterns and automatic skipping when appropriate to create a seamless flow from one question to the next during the interviews.

### **Sample Design**

The sample drawn for the Penn State Poll used a dual-frame approach consisting of both a representative RDD (random-digit-dial) landline telephone sample and a RDD cell phone sample. Marketing Systems Group (MSG) of Horsham, Pennsylvania constructed the sample frames.

### **RDD Landline Telephone Sample**

The landline sample consisted of telephone numbers selected at random from all zip codes throughout Pennsylvania using a random-digit-dial sampling procedure.<sup>1</sup> This type of sample frame is a single stage EPSEM (equal probability of selection method). Although this sampling technique includes working, non-working, unassigned, and business telephone numbers, it guarantees that every residential landline telephone number (listed, unlisted, and non-published) in Pennsylvania has an equal chance of being selected. This allows for generalizability to the Pennsylvania population with landline telephones.

Moreover, a randomized respondent selection technique (the "last birthday method") ensured that every adult age 18 or older within each sampled household had an equal probability of being

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<sup>1</sup> For this survey, CSR purchased the most comprehensively-screened type of random sample from Marketing Systems Group. All dedicated and ported wireless numbers were identified and removed from the RDD sample. CSR abides by the federal Telephone Consumer Protection Act of 1991.



interviewed. Second-stage sampling is required to eliminate biases that arise from interviewing the person who answers the telephone and helps to enhance the generalizability of the survey data. The sampling methodologies employed at both the exchange and household levels ensured that every landline telephone household in Pennsylvania had an equal chance of selection and that every adult within each sampled household had an equal probability of being interviewed. This procedure is a rigorous methodology that plays a key role in producing sample estimates that accurately reflect true population values.

### **RDD Cell Phone Sample**

The proportion of Americans who rely solely on a cell phone for their telephone service continues to grow, as does the share of those who still have a landline phone but do most of their calling on their cell phone. According to recent government statistics on this phenomenon, nearly one-half, or 49.3%, of households had only cell phones during the first half of 2016.<sup>2</sup> In addition, approximately one in every seven American homes, or 15.0%, received all or almost all calls on cell phones despite having a landline phone in the home. State-level estimates indicate that 35.2% of Pennsylvania households are cell phone-only and that 16.5% receive all or almost all calls on cell phones despite having a landline phone in the home.<sup>3</sup>

Additionally, cell phones are often used more frequently by certain demographic groups. A Cell Phone Task Force Report conducted by the American Association for Public Opinion Research (AAPOR) reiterates the importance of including cell phone sample to assist with reaching young adults (18-34 years), renters, non-whites, Hispanics, and individuals with lower incomes.<sup>4</sup>

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<sup>2</sup> Blumberg, SJ, Luke JV. Wireless substitution: Early release of estimates from the National Health Interview Survey, January-June 2016. National Center for Health Statistics. December 2016. Available from: <http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201612.pdf>

<sup>3</sup> Blumberg SJ, Ganesh N. Wireless substitution: Early release of state-level estimates from the National Health Interview Survey, 2011-2015. NORC at the University of Chicago and the National Center for Health Statistics. August 2016. Available from: [https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless\\_state\\_201608.pdf](https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless_state_201608.pdf)

<sup>4</sup> Lavrakas, PJ, Blumberg, S, Battaglia, M, et al. New Considerations for Survey Researchers When Planning and Conducting RDD Telephone Surveys in the U.S. with Respondents Reached via Cell Phone Numbers. Deerfield, IL: American Association for Public Opinion Research (AAPOR) Cell Phone Task Force. 2010. Available from: <http://www.aapor.org/Education-Resources/Reports/Cell-Phone-Task-Force-Report.aspx>

Based on this documentation, there is an increased concern that polls conducted only on landline phones may not accurately measure public opinion. The inability to reach households with only cell phones (or with no telephone service) has potential implications on results from surveys, polls, and other research conducted using random-digit-dial sampling frames. Coverage bias may exist if there are differences between persons with and without landline phones on the substantive variables of interest.

To minimize this potential bias, CSR completed interviews with respondents from both RDD landline and RDD cell sample frames. Working, non-working, and unassigned cell phone numbers were included in the sample to ensure that all cell phone numbers had an equal chance of being selected. The geographic characteristics associated with cell phone numbers are broad due to the portability of numbers and a subscriber's ability to choose an area code regardless of their location of residence. Because of these circumstances, there is geographic uncertainty when the sample is pulled. As a result, CSR screened for geography to ensure that all participants actually resided in Pennsylvania. A respondent selection technique was not used because most cell phones are personal communication devices that are typically not actively shared among household members. All telephone numbers in the cell sample were hand-dialed by telephone interviewers in accordance with FTC/FCC restrictions on auto-dialing wireless numbers.

## **Data Collection**

Data for this project were collected by approximately 20 telephone interviewers using Voxco computer-assisted telephone interviewing (CATI) software. The CATI system accommodated 20 concurrent interviewers in addition to quality control supervisors assisted by Voxco's monitoring and productivity tools. Before starting to interview, each telephone interviewer was trained to become familiar with the survey instrument. CSR's Project Manager and field supervisors were responsible for training, supervising, monitoring, and evaluating the interviewer staff throughout the data collection period.

A working draft of the survey instrument was pre-tested with small samples of respondents before full-field interviewing began. The pre-test process ensured that the skipping patterns of the programmed survey instrument were functioning as intended. Pre-testing increases the likelihood that the questions provide accurate data while decreasing the likelihood of collecting unusable data; therefore, it is an integral component of questionnaire design. The pre-test findings were reviewed, found to be error-free, and incorporated into the final dataset.

Production interviewing for the Poll took place from CSR's call center on the Penn State Harrisburg campus between March 8 and April 18, 2017. Hours for interviewing for the project were Mondays through Thursdays from 6:00 p.m. to 9:00 p.m., Saturdays from 10:00 a.m. to 4:00 p.m., and Sundays from 4:00 p.m. to 8:00 p.m.

CSR used a rigorous callback strategy to contact households and cell phones that were not reached on the initial call attempt. Follow-up calls to households and cell phones that did not answer or where busy signals or answering machines were reached were scheduled for subsequent attempts at varying days of the week and times of day. Further, in an effort to include every possible respondent, a team of CSR's most-experienced telephone interviewers conducted refusal conversions, a technique used to gain cooperation from individuals who had initially been hesitant to participate. Because these callbacks and refusal conversions are the principal means by which outcome rates are increased, CSR interviewers attempted a maximum of seven contacts and an average of 1.77 call attempts per landline number that was not determined to be out of

service, and a maximum of seven contacts and an average of 1.27 call attempts per cell phone number that was not determined to be out of service.

Telephone interviewers screened each call to ensure that potential respondents were at least 18 years of age and resided in Pennsylvania. Calls continued until a total of 609 interviews had been completed.

### **Data Preparation and Analysis Notes**

All completed survey data were extracted from the CATI system into Statistical Package for the Social Sciences (SPSS) software. Data were verified for accuracy of variable coding, and verbatim text was edited for consistency in formatting before final review by the senior staff of the Center for Survey Research. A survey dataset was created in SPSS for Windows version 24.0.

The following notes should be taken into account when reviewing the final dataset:

1. Data are weighted as a function of each respondent's age and sex.
2. Percentages may not total to 100% due to rounding in the weighting process.
3. See Appendices A and B of the report for a map and list of the Penn State Poll Regions.
4. See Appendix C for the sponsored survey questions and standard demographics that were used in data collection.

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## PROJECT STATISTICS

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The final dataset includes cases from 609 adult Pennsylvania residents. The average length of a completed interview was approximately 13.9 minutes. A total of 25,505 different phone numbers (6,886 landline numbers and 18,619 cell phone numbers) were dialed during the data collection. The margin of error for this survey is plus or minus 4.0 percentage points with the conventional 95% degree of desired confidence. This means that in a sample of 600 respondents where the distribution of responses is within the vicinity of 50%, there is a 95% chance that if all households and individuals with telephones in Pennsylvania are surveyed, the results will not differ from the survey findings by more than 4.0 percentage points. A more extreme distribution of question responses has a smaller error range. Suppose that 80% of the respondents answer “Yes” and 20% answer “No;” then the sampling error in this case is 3.2 percentage points. That is, each percentage has a sampling error of plus or minus 3.2 percentage points. Table 1 below displays a summary of project statistics.

**Table 1. Project Statistics**

<b>Spring 2017 Penn State Poll</b>	<b>Landline Numbers</b>	<b>Cell Phone Numbers</b>
Number of completed interviews	180	429
Total calls placed	10,732	23,075
Number of different phone numbers dialed	6,886	18,619
	<b>hrs/min/sec</b>	<b>hrs/min/sec</b>
Total connection time of all calls	217:11:57	463:54:26
Average length of one completed interview	00:13:26	00:14:01
Average phone time to obtain one completed interview	01:12:24	01:04:53

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## OUTCOME RATE

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Calculating dual-frame outcome rates is challenging due to the difficulty of determining final dispositions and eligibility statuses for cell phone numbers.<sup>5</sup> When researchers try to reach respondents on cell phones, it is important to remember that the potential respondents can be doing any number of things, including driving, flying, walking in a noisy environment, etc. Because respondents may be temporarily unavailable and may not be able to be screened for eligibility or be invited to participate in the study, it may be difficult to determine the numbers' final dispositions. Further, it can be difficult to interpret cell phone operator messages. Until this situation is resolved, the number of cases with unknown eligibility will be higher as compared to landline samples.

The survey's outcome rate was calculated through a series of steps. First, separate rates were calculated for each of the sample frames (landline and cell) using the American Association of Public Opinion Research's Cooperation Rate 3 (COOP3) formula. The COOP3 rate is obtained by dividing the number of completed interviews by the sum of the number of completed interviews, the number of partially completed interviews, and the number of respondents who refused to participate. AAPOR sets an industry standard for consistent reporting across the survey research field. For more information, see AAPOR's "Standard Definitions report" at [http://www.aapor.org/Standards-Ethics/Standard-Definitions-\(1\).aspx](http://www.aapor.org/Standards-Ethics/Standard-Definitions-(1).aspx). The survey cooperation rate for the landline portion of the sample was 68.7%, and the cooperation rate for the cell portion of the sample was 62.1%. See Table 2 for a list of call outcomes by sample type.

Since households with both landlines and cell phones could be included in both sample frames, the calculation of the final cooperation rate must take this overlap into account. Based on telephone estimates from the National Center for Health Statistics, it was estimated that the landline-only frame covered 7.4% of the population, the cell-only frame covered 35.2% of the population, and the overlap (households with both a landline and cell phone) covered 55.1% of

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<sup>5</sup> Lavrakas, PJ, Blumberg, S, Battaglia, M, et al. New Considerations for Survey Researchers When Planning and Conducting RDD Telephone Surveys in the U.S. with Respondents Reached via Cell Phone Numbers. Deerfield, IL: American Association for Public Opinion Research (AAPOR) Cell Phone Task Force. 2010. Available from: <http://www.aapor.org/Education-Resources/Reports/Cell-Phone-Task-Force-Report.aspx>

the population. Those without telephone service (2.3%) were excluded. The overall cooperation rate equals the sum of 0.361 times the landline cooperation rate and 0.639 times the cell phone cooperation rate. Therefore, the overall cooperation rate for the Spring 2017 Penn State Poll was 64.5%

**Table 2. Call Outcomes by Sample Type**

<b>Disposition Codes Used for COOP3 Calculation</b>	<b>Number of Landline Records</b>	<b>Number of Cell Records</b>	<b>Total Number of Records</b>
Interview (Category 1) <sup>6</sup>	184	436	620
Eligible, non-interview (Category 2)	986	4,071	5,057
Unknown eligibility, non-interview (Category 3)	3,825	11,010	14,835
Not eligible (Category 4)	1,891	3,102	4,993
Total number of different phone numbers dialed	6,886	18,619	25,505

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### **REPRESENTATIVENESS OF SAMPLE**

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In order to ensure that the results of the Poll were not biased toward any demographic group, the results of the survey were checked against the known occurrences of the demographic characteristics of the population. The data source used to make this comparison was the July 1, 2015 State Population Estimates, U.S. Census Bureau, Population Division.

Weighting was utilized to better represent the population as a whole for certain groups who were over- or under-represented in the survey's final dataset. The weights applied gave each case a value so that the percentage of responses in the sample approximated the known percentage in the population. For the Spring 2017 Penn State Poll, cases were weighted as a function of each respondent's age and sex.

Table 3 displays the age and sex categories that were used for the weighting schema, the number of respondents interviewed within these categories, the number of expected interviews according to Census data, and the resulting weights applied to norm the survey data to known population demographics.

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<sup>6</sup> This includes a total of 609 completed interviews and 11 partially completed interviews.

**Table 3. Weights Applied to Survey Data**

<b>Spring 2017 Penn State Poll Data Weights</b>			
	<b>Interviewed</b>	<b>Expected</b>	<b>Weight Factor</b>
<b>Male</b>			
<b>18-24 years</b>	29	37	1.3124210
<b>25-34 years</b>	42	51	1.1791433
<b>35-44 years</b>	43	45	1.0458841
<b>45-54 years</b>	63	53	0.8363389
<b>55-64 years</b>	74	52	0.7088557
<b>65-74 years</b>	55	34	0.6120095
<b>75 years and over</b>	27	23	0.8555950
<b>Female</b>			
<b>18-24 years</b>	20	36	1.7897070
<b>25-34 years</b>	27	49	1.8316137
<b>35-44 years</b>	32	45	1.4162961
<b>45-54 years</b>	47	54	1.1516452
<b>55-64 years</b>	63	55	0.8803025
<b>65-74 years</b>	47	38	0.8171348
<b>75 years and over</b>	40	36	0.9027218

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### **STUDY LIMITATIONS**

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The research team acknowledges the following limitation for the Spring 2017 Penn State Poll:

As in all public opinion surveys, the results are subject to error inherent in the survey process. Despite utilizing a rigorous follow-up strategy with all potential respondents, CSR did not interview every eligible participant in the sample. Because the answers from these non-respondents could be different from those who did participate, non-response bias exists. Generally, higher outcome rates suggest a lower likelihood of non-response bias. The telephone survey had a cooperation rate of 64.5%, which is the proportion of all cases interviewed out of the sum of those interviewed, those who partially completed the survey, and those who refused to participate. The cooperation rate is not the same as a response rate and does not consider cases in which eligibility was not determined.



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## WEIGHTED DEMOGRAPHIC PROFILE OF SURVEY RESPONDENTS

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The following table displays the frequencies and percentages of survey respondents by key demographic characteristics.

**Table 4. Weighted Demographic Profile of Respondents<sup>7</sup>**

	Number	Percent
<b>Gender</b>		
Male	294	48.3%
Female	315	51.7%
<b>Age Category</b>		
18-34 years	173	28.4%
35-64 years	305	50.1%
65 years of age or older	131	21.6%
<b>Ethnicity</b>		
Hispanic	24	4.0%
Non-Hispanic	581	96.0%
<b>Race</b>		
White	512	86.0%
Black - African American	42	7.0%
Some other race (includes 2+ races)	42	7.0%
<b>Education</b>		
High school diploma/GED or less	135	22.2%
Some college (includes Two-year degree, technical degree, and Associate's degree)	217	35.6%
College degree (Four-year college graduate)	145	23.8%
Graduate work	112	18.4%

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<sup>7</sup> Numbers may not add up to 609 due to rounding, as well as the exclusion of “don’t know” and “declined to answer” responses.

**Table 4 (Continued). Weighted Demographic Profile of Respondents<sup>s</sup>**

	Number	Percent
<b>Income</b>		
Less than \$30,000	100	18.7%
\$30,000 to \$59,999	117	22.0%
\$60,000 to \$99,999	152	28.4%
\$100,000 or more	165	31.0%
<b>Region</b>		
Northwest	43	7.1%
North Central	47	7.8%
Northeast	64	10.6%
Southwest	100	16.3%
South Central	112	18.3%
Southeast	243	39.9%
<b>Political Affiliation</b>		
Republican	192	32.9%
Democrat	216	37.0%
Other (including Independent, Libertarian, and No Affiliation)	176	30.1%

<sup>s</sup> Numbers may not add up to 609 due to rounding, as well as the exclusion of “don’t know” and “declined to answer” responses.



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**APPENDIX B – LIST OF PENN STATE POLL SURVEY REGIONS**

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<b>Northwest</b>	<b>North Central</b>	<b>Northeast</b>
Cameron	Bradford	Carbon
Clarion	Centre	Lackawanna
Clearfield	Clinton	Lehigh
Crawford	Columbia	Luzerne
Elk	Lycoming	Monroe
Erie	Montour	Northampton
Forest	Northumberland	Pike
Jefferson	Snyder	Schuylkill
Lawrence	Sullivan	Susquehanna
McKean	Tioga	Wayne
Mercer	Union	Wyoming
Potter		
Venango		
Warren		

<b>Southwest</b>	<b>South Central</b>	<b>Southeast</b>
Allegheny	Adams	Berks
Armstrong	Bedford	Bucks
Beaver	Blair	Chester
Butler	Cumberland	Delaware
Cambria	Dauphin	Lancaster
Fayette	Franklin	Lebanon
Greene	Fulton	Montgomery
Indiana	Huntingdon	Philadelphia
Somerset	Juniata	
Washington	Mifflin	
Westmoreland	Perry	
	York	

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## APPENDIX C – SURVEY INSTRUMENT

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### INTRO - Landline

Hello, my name is \_\_\_\_\_, and I am calling from Penn State University. We are conducting the Penn State Poll, a survey to understand the views of Pennsylvania residents on important issues. This is NOT a political poll. May I please speak to the person 18 years of age or older who last celebrated a birthday?

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### INTRO - Cell

Hello, my name is \_\_\_\_\_, and I am calling from Penn State University. We are conducting the Penn State Poll, a survey to understand the views of Pennsylvania residents on important issues. This is NOT a political poll. I know that I am calling you on a cell phone, so if you are driving a car or doing any activity requiring your full attention, I need to call you back later. Is this a good time for you?

---

### INFOR

Your participation is voluntary, and the survey takes about 10 minutes. All of your answers will remain confidential. No one has access to your personal information and your phone number was chosen randomly. You may refuse to answer any of the questions I ask, and you have the right to terminate the interview at any time. Your voluntary participation indicates your consent to participate in this research. Are you still willing to participate?

---

### AGREE

Thank you for agreeing to participate! If you have any questions about the survey, please feel free to contact the Center for Survey Research toll-free at 888-988-2572 or [csr@psu.edu](mailto:csr@psu.edu).

---

Before we begin, I need to make sure that you live in Pennsylvania. What county do you live in?

Adams.....	1	=> AGE
Allegheny .....	2	=> AGE
Armstrong.....	3	=> AGE
Beaver.....	4	=> AGE
Bedford.....	5	=> AGE
Berks.....	6	=> AGE
Blair.....	7	=> AGE
Bradford.....	8	=> AGE
Bucks .....	9	=> AGE
Butler .....	10	=> AGE
Cambria .....	11	=> AGE
Cameron .....	12	=> AGE
Carbon .....	13	=> AGE
Centre .....	14	=> AGE
Chester.....	15	=> AGE
Clarion .....	16	=> AGE
Clearfield.....	17	=> AGE
Clinton .....	18	=> AGE
Columbia .....	19	=> AGE
Crawford.....	20	=> AGE
Cumberland .....	21	=> AGE
Dauphin .....	22	=> AGE
Delaware.....	23	=> AGE
Elk .....	24	=> AGE
Erie .....	25	=> AGE
Fayette .....	26	=> AGE
Forest.....	27	=> AGE
Franklin.....	28	=> AGE
Fulton.....	29	=> AGE
Greene .....	30	=> AGE
Huntingdon.....	31	=> AGE
Indiana .....	32	=> AGE
Jefferson .....	33	=> AGE
Juniata.....	34	=> AGE
Lackawanna .....	35	=> AGE
Lancaster.....	36	=> AGE
Lawrence .....	37	=> AGE
Lebanon .....	38	=> AGE
Lehigh.....	39	=> AGE
Luzerne .....	40	=> AGE
Lycoming.....	41	=> AGE
McKean .....	42	=> AGE
Mercer .....	43	=> AGE
Mifflin .....	44	=> AGE
Monroe .....	45	=> AGE
Montgomery .....	46	=> AGE
Montour .....	47	=> AGE
Northampton.....	48	=> AGE
Northumberland.....	49	=> AGE
Perry .....	50	=> AGE
Philadelphia .....	51	=> AGE
Pike.....	52	=> AGE

Potter .....	53	=> AGE
Schuylkill.....	54	=> AGE
Snyder.....	55	=> AGE
Somerset .....	56	=> AGE
Sullivan.....	57	=> AGE
Susquehanna .....	58	=> AGE
Tioga.....	59	=> AGE
Union .....	60	=> AGE
Venango.....	61	=> AGE
Warren .....	62	=> AGE
Washington.....	63	=> AGE
Wayne.....	64	=> AGE
Westmoreland.....	65	=> AGE
Wyoming .....	66	=> AGE
York.....	67	=> AGE
Does NOT reside in PA.....	77	=> INT96
Don't know .....	88	=> INT97
Declined to Answer .....	99	=> INT97

**AGE**

*Please enter 888 for don't know or 999 for declined to answer.*  
 What is your age?

**GEND**

Enter respondent's gender:  
 Male..... 1  
 Female .....

**TRMC1**

Thank you for that information. Now, I would like to ask you about electronic products. Electronic products include: Desktop and laptop computers, computer monitors, computer peripherals (like mouse devices), tablets, televisions, and e-readers that have a browser and internet connectivity.  
 Continue ..... 1 D

**RMC1**

Do you know where you can recycle your electronic products?  
 Yes..... 1  
 No .....

(DNR) Don't know ..... 8  
 (DNR) Declined to answer ..... 9





**RMC5**

What is the greatest distance you traveled one-way to get rid of or recycle an electronic product

=> RMC5  
sinon => RMC6  
si RMC3=2 OR RMC3=3

- 1 to 10 miles ..... 1
- 11 to 20 miles ..... 2
- 21 to 49 miles ..... 3
- More than 50 miles ..... 4
- You did not travel anywhere; you attempted curbside pickup..... 5
- (DNR) Don't know ..... 8
- (DNR) Decline to answer ..... 9

**RMC6**

Which of the following prevented you from getting rid of or recycling your electronic products? Please select all that apply. Definition for Area, as needed: Area could relate to your county, township, town, borough, or city.

=> RMC6  
sinon => RMC7  
si RMC3=3

- rotation -> 9 .....
- You were limited to a maximum number of TVs or computer monitors..... 1
- You were limited to a maximum size of TV or computer monitor..... 2
- You could not get rid of a projection TV..... 3
- You could not get rid of a floor model or console TV..... 4
- You were not able to get rid of or recycle items because you found out that you needed to live in a certain area to participate..... 5
- You arrived at a drop off location and were turned away due to a long line or cancelled collection ..... 6
- You arrived at a drop off location to find that the hours of operation had ended early ..... 7
- You did not know where to go or how to get rid of or recycle the electronic products ..... 8
- You were too busy ..... 9
- Other, please specify..... 10 O
- (DNR) Don't know ..... 88
- (DNR) Decline to answer ..... 99

**RMC7**

Did you not attempt to get rid of or recycle them because you refused to pay a cost?

=> RMC7  
sinon => TRMC3  
si RMC3=5

- Yes..... 1
- No ..... 2
- (DNR) Don't know ..... 8
- (DNR) Decline to answer ..... 9

**TRMC3**

Now, I would like to ask you about specific electronic equipment you have in your home. For each of the following electronic items, please tell me how many you have in your home that are in use, and how many you have in your home that are NOT in use, regardless of whether or not they are in working order.

Continue ..... 1 D

**RMC8I**

*Enter 888 for Don't know and 999 for Declined to answer.*

How many tube TVs do you have in your home that are currently in use? The TVs we are talking about are commonly referred to as tube TVs, console TVs, or CRTs. This does not include flat screen TVs. NOTE: If equipment is NOT in use, provide totals regardless of whether or not the equipment works. The "out of use" category is intended for items that the respondent does not plan to use again. If respondent gives an indication that they might continue using the items at some point, count as "in use."

\$E 0 999

**RMC8O**

*Enter 888 for Don't know and 999 for Declined to answer.*

And how many are currently out of use? If needed: How many tube TVs do you have in your home that are currently out of use?

\$E 0 999

**RMC9I**

*Enter 888 for Don't know and 999 for Declined to answer.*

How many FLAT SCREEN TELEVISIONS are currently in use? Do not include CRTs or tube TVs.

\$E 0 999

**RMC9O**

*Enter 888 for Don't know and 999 for Declined to answer.*

And how many are currently out of use? If needed: How many FLAT SCREEN TELEVISIONS do you have in your home that are currently out of use? Again, do not include CRTs or tube TVs.

\$E 0 999

**RM10I**

*Enter 888 for Don't know and 999 for Declined to answer.*

How many CRT computer monitors are currently in use? The computer monitors we are talking about are commonly referred to as CRTs. This does not include flat computer displays

\$E 0 999

**RM10O**

*888 for Don't know and 999 for Declined to answer.*

And how many are currently out of use? If needed: How many CRT computer monitors do you have in your home that are currently in use? The computer monitors we are talking about are commonly referred to as CRTs. This does not include flat computer displays

\$E 0 999

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**RM11I**

*Enter 888 for Don't know and 999 for Declined to answer.*

How many STANDALONE FLAT SCREEN COMPUTER MONITORS are currently in use? Do not include CRTs or tube monitors. NOTE: If a monitor is connected to a desktop computer, it should be counted here as a separate item. Do not count if the monitor is part of an all-in-one computer, such as an iMac, or a laptop.

\$E 0 999

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**RM11O**

*Enter 888 for Don't know and 999 for Declined to answer.*

And how many are currently out of use? If needed: How many STANDALONE FLAT SCREEN COMPUTER MONITORS do you have in your home that are currently out of use? Again, do not include CRTs or tube monitors. NOTE: If a monitor is connected to a desktop computer, it should be counted here as a separate item. Do not count if the monitor is part of an all-in-one computer, such as an iMac, or a laptop

\$E 0 999

---

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**RM12I**

*Enter 888 for Don't know and 999 for Declined to answer.*

How many DESKTOP COMPUTERS (CPU/TOWER ONLY) OR ALL-IN-ONE COMPUTERS are currently in use?

\$E 0 999

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**RM12O**

*Enter 888 for Don't know and 999 for Declined to answer.*

And how many are currently out of use? If needed: How many desktop computers (CPU/tower only) or all-in-one computers do you have in your home that are currently out of use?

\$E 0 999

---

---

**RM13I**

*Enter 888 for Don't know and 999 for Declined to answer.*

How many LAPTOP COMPUTERS are currently in use

\$E 0 999

---

---

**RM13O**

*Enter 888 for Don't know and 999 for Declined to answer.*

And how many are currently out of use? If needed: How many LAPTOP COMPUTERS do you have in your home that are currently out of use?

\$E 0 999

---

---

**RM14I**

*Enter 888 for Don't know and 999 for Declined to answer.*

How many TABLET, PAD, AND E-READER DEVICES are currently in use?

\$E 0 999

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**RM140**

*Enter 888 for Don't know and 999 for Declined to answer.*  
And how many are currently out of use? If needed: How many TABLET, PAD, AND E-READER DEVICES do you have in your home that are currently out of use  
\$E 0 999

**RM15I**

*Enter 888 for Don't know and 999 for Declined to answer.*  
How many PRINTERS are currently in use  
\$E 0 999

**RM15O**

*Enter 888 for Don't know and 999 for Declined to answer.*  
And how many are currently out of use? If needed: How many PRINTERS do you have in your home that are currently out of use?  
\$E 0 999.....

**TDEM**

Now I'm going to ask you some information about yourself to be used for statistical purposes only. Your responses will remain confidential.

**ZIP**

What is your zip code? Enter 88888 for Don't know and 99999 for Declined to answer.

**POL1**

- Generally speaking, do you consider yourself as a Republican, Democrat, Independent, Libertarian, or Other?
- Republican..... 1
  - Democrat ..... 2
  - Independent ..... 3
  - Libertarian ..... 4
  - Something else..... 5 O
  - (DNR) No affiliation ..... 0
  - (DNR) Don't know ..... 8
  - (DNR) Declined to answer ..... 9

**HISP**

- Do you consider yourself to be Hispanic or Latino?
- Yes..... 1
  - No ..... 2
  - (DNR) Don't know ..... 8
  - (DNR) Declined to answer ..... 9

**RACE**

Which of the following best describe your race? You can select all that apply.

- White ..... 1
- Black - African American..... 2
- Asian..... 3
- Native Hawaiian or Pacific Islander ..... 4
- American Indian or Native Alaskan ..... 5
- Other, please specify..... 6 O
- (DNR) Don't know ..... 8
- (DNR) Declined to answer ..... 9

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**EDU**

Which of the following categories best describes your educational level?

- Less than high school ..... 1
- High school diploma or GED ..... 2
- Some college ..... 3
- Two-year degree or technical degree..... 4
- Four-year college graduate ..... 5
- Graduate work ..... 6
- (DNR) Don't know ..... 8
- (DNR) Declined to answer ..... 9

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**INC**

What is your total annual household income, before taxes?

- Under \$10,000 ..... 0 => INT99
- \$10,000 to \$19,999 ..... 1 => INT99
- \$20,000 to \$29,999 ..... 2 => INT99
- \$30,000 to \$39,999 ..... 3 => INT99
- \$40,000 to \$49,999 ..... 4 => INT99
- \$50,000 to \$59,999 ..... 5 => INT99
- \$60,000 to \$69,999 ..... 6 => INT99
- \$70,000 to \$79,999 ..... 7 => INT99
- \$80,000 to \$89,999 ..... 8 => INT99
- \$90,000 to \$99,999 ..... 9 => INT99
- \$100,000 to \$109,999 ..... 10 => INT99
- \$110,000 to \$119,999 ..... 11 => INT99
- \$120,000 to \$129,999 ..... 12 => INT99
- \$130,000 to \$139,999 ..... 13 => INT99
- \$140,000 to \$149,999 ..... 14 => INT99
- \$150,000 or more..... 15 => INT99
- (DNR) Don't know ..... 88 => INT99
- (DNR) Declined to answer ..... 99 => INT99

---

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**INT99**

Thank you for participating in our survey. Have a great day (evening)!

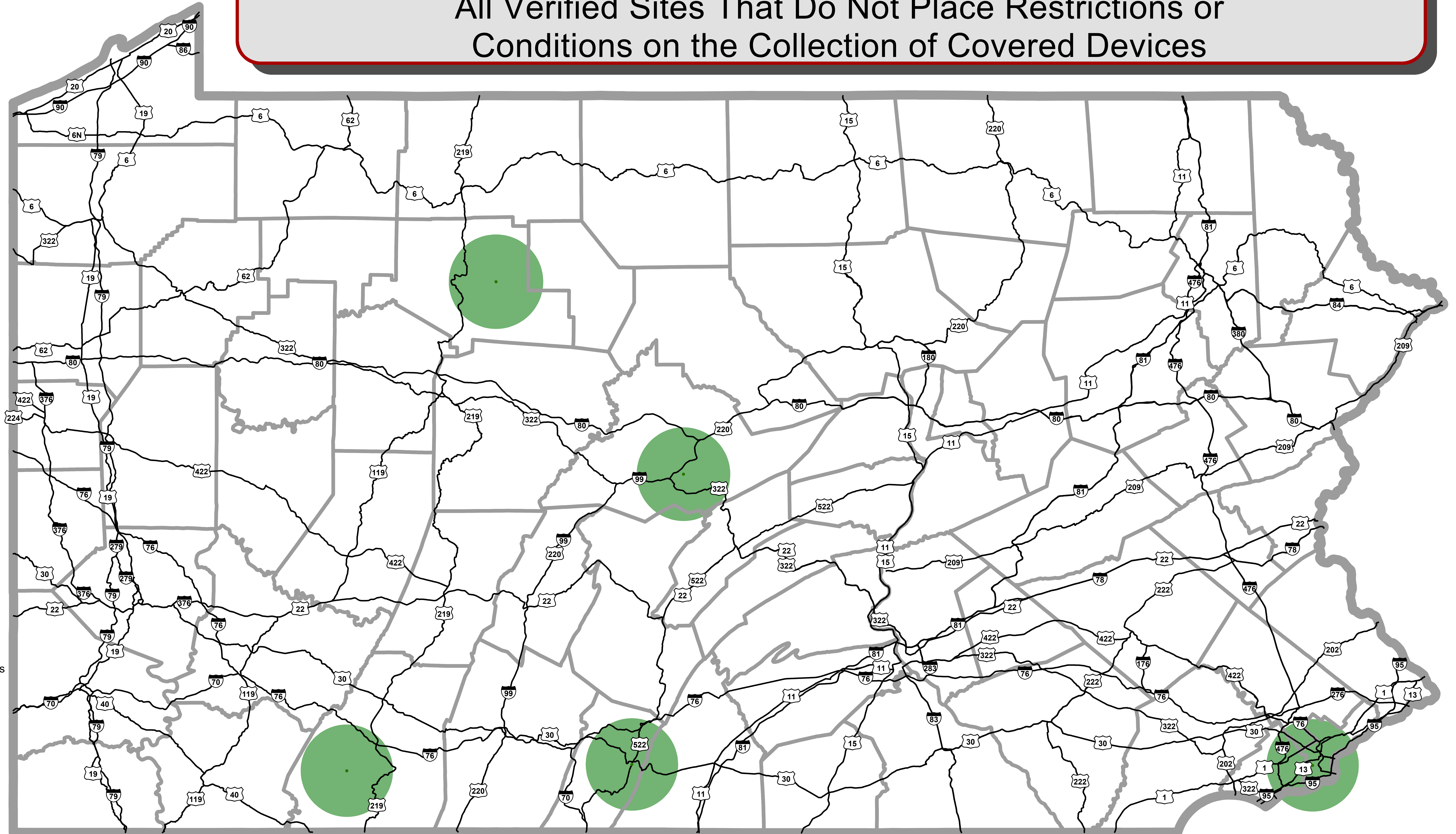
## Appendix B

### RMC Verified CDRA E-Waste Sites

# 2017 PA Covered Device Recycling Act (CDRA) Coverage Map

## Collection Sites From Recycling Plans For Electronics Manufacturers

### All Verified Sites That Do Not Place Restrictions or Conditions on the Collection of Covered Devices



### Legend

- CDRA Locations
- Interstates & US Highways
- 10-Mile Radius Coverage

### Coverage Data: OEM Sites, No Restrictions

1,488.8 Land SQ Miles (3.3%)  
1,797,640 People (14.2%)

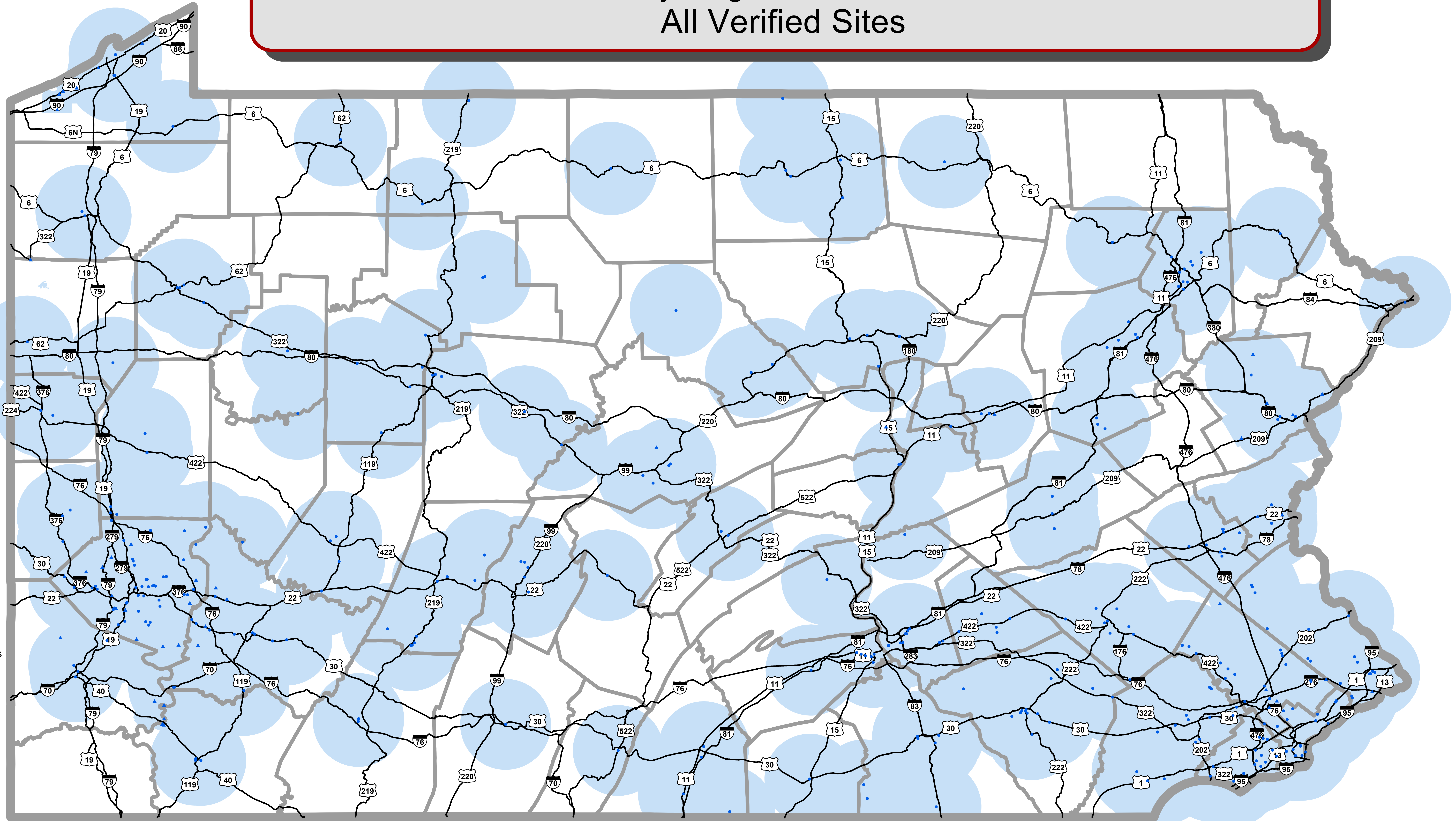
### Notes:

1. A Covered Device under the CDRA includes: desktop computers, laptop computers, computer monitors, computer peripherals, televisions, tablets and e-readers.
2. A restriction or condition on the collection of Covered Devices means that a collection site does not accept or limits the number of one or more types of Covered Devices, or does not impose a fee or cost to a consumer for the collection, transportation or recycling of a covered device, unless a financial incentive (e.g. coupon, rebate or other) of equal or greater value is provided to the consumer.

# 2017 PA Covered Device Recycling Act (CDRA) Coverage Map

## Collection Sites From Recycling Plans For Electronics Manufacturers

### All Verified Sites



#### Legend

- ▲ Municipal Locations
- CDRA Locations
- Interstates & US Highways
- ⊕ Municipalities
- 10-Mile Radius Coverage

#### Coverage Data

26,505.4 Land SQ Miles (59.2%)  
11,646,028 People (91.7%)

#### Notes:

1. A Covered Device under the CDRA includes: desktop computers, laptop computers, computer monitors, computer peripherals, televisions, tablets and e-readers.
2. A restriction or condition on the collection of Covered Devices means that a collection site does not accept or limits the number of one or more types of Covered Devices, or does not impose a fee or cost to a consumer for the collection, transportation or recycling of a covered device, unless a financial incentive (e.g. coupon, rebate or other) of equal or greater value is provided to the consumer.



# 2016 PA Covered Device Recycling Act (CDRA) Coverage Map

Collection Sites From Recycling Plans For Electronics Manufacturers  
All Verified Sites That Do Not Place Restrictions or  
Conditions on the Collection of Covered Devices

### Legend

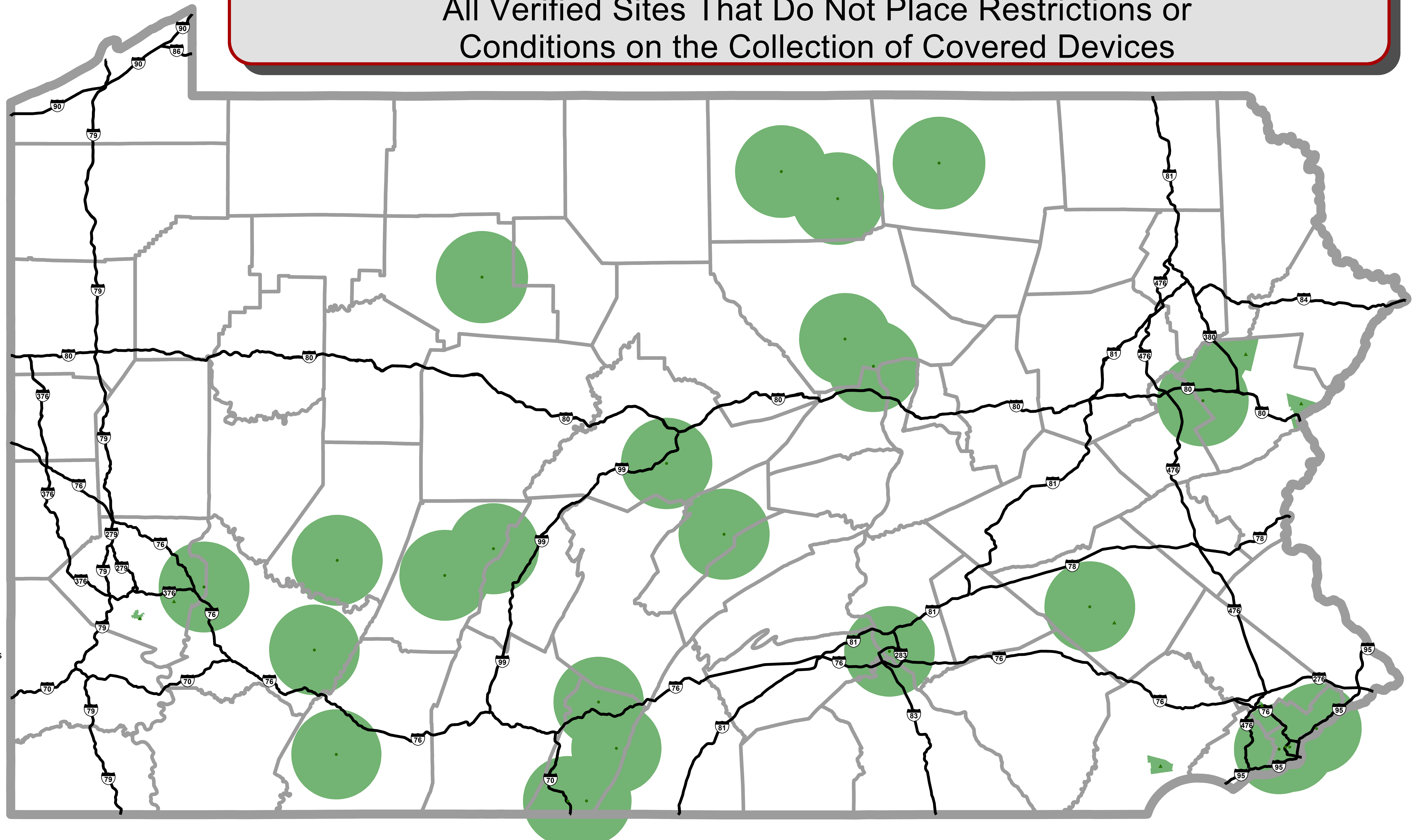
-  Municipal Locations
-  CDRA Locations
-  Interstates
-  Municipalities
-  10-Mile Radius Coverage

### Coverage Data: No Restrictions

6,084.3 Land SQ Miles (13.6%)  
3,892,403 People (30.6%)

### Notes:

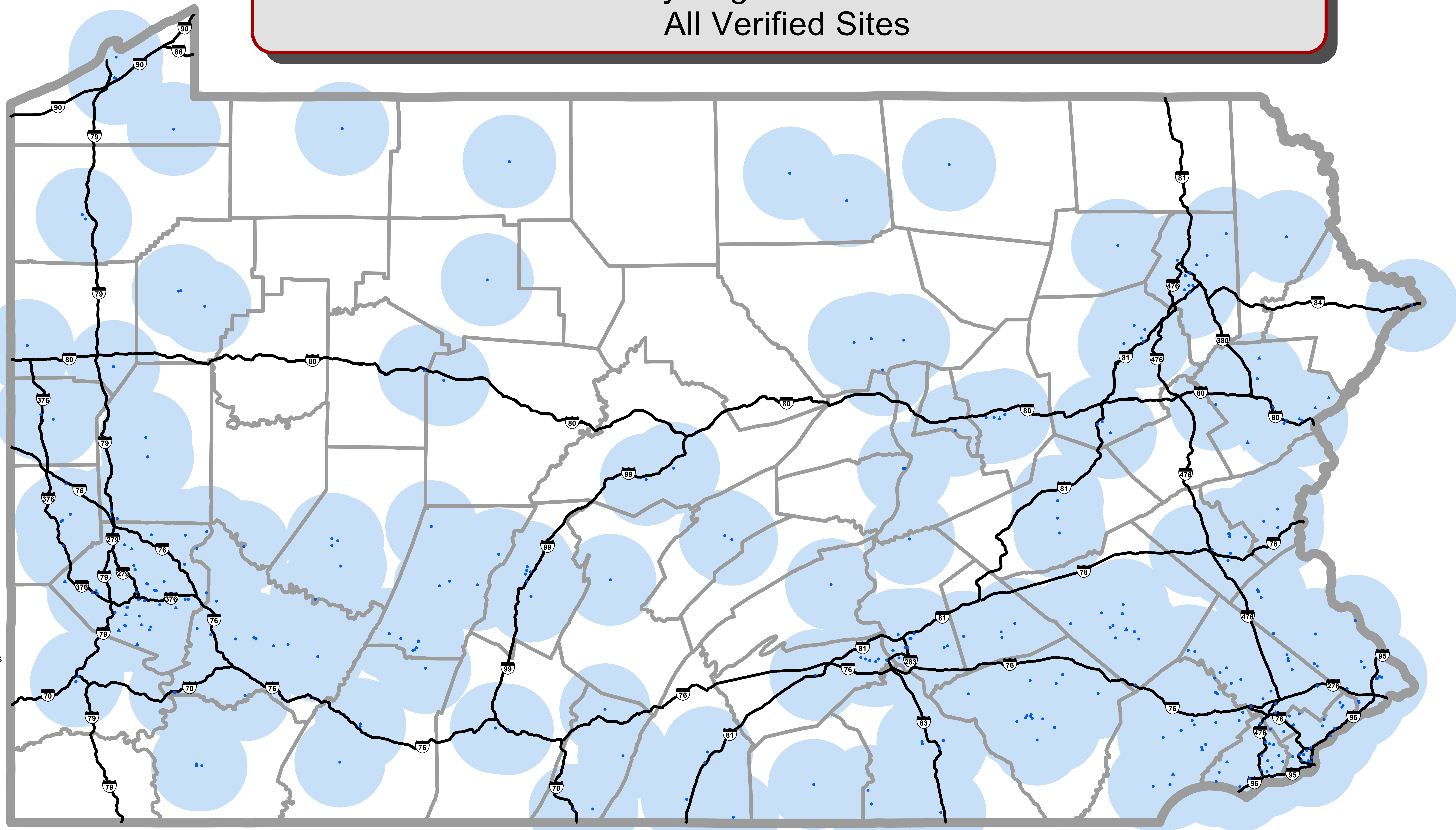
1. A Covered Device under the CDRA includes: desktop computers, laptop computers, computer monitors, computer peripherals, televisions, tablets and e-readers.
2. A restriction or condition on the collection of Covered Devices means that a collection site does not accept or limits the number of one or more types of Covered Devices, or does not impose a fee or cost to a consumer for the collection, transportation or recycling of a covered device, unless a financial incentive (e.g. coupon, rebate or other) of equal or greater value is provided to the consumer.



# 2016 PA Covered Device Recycling Act (CDRA) Coverage Map

## Collection Sites From Recycling Plans For Electronics Manufacturers

### All Verified Sites



### Legend

- ▲ Municipal Locations
- CDRA Locations
- Interstates
- Municipalities
- 10-Mile Radius Coverage

### Coverage Data

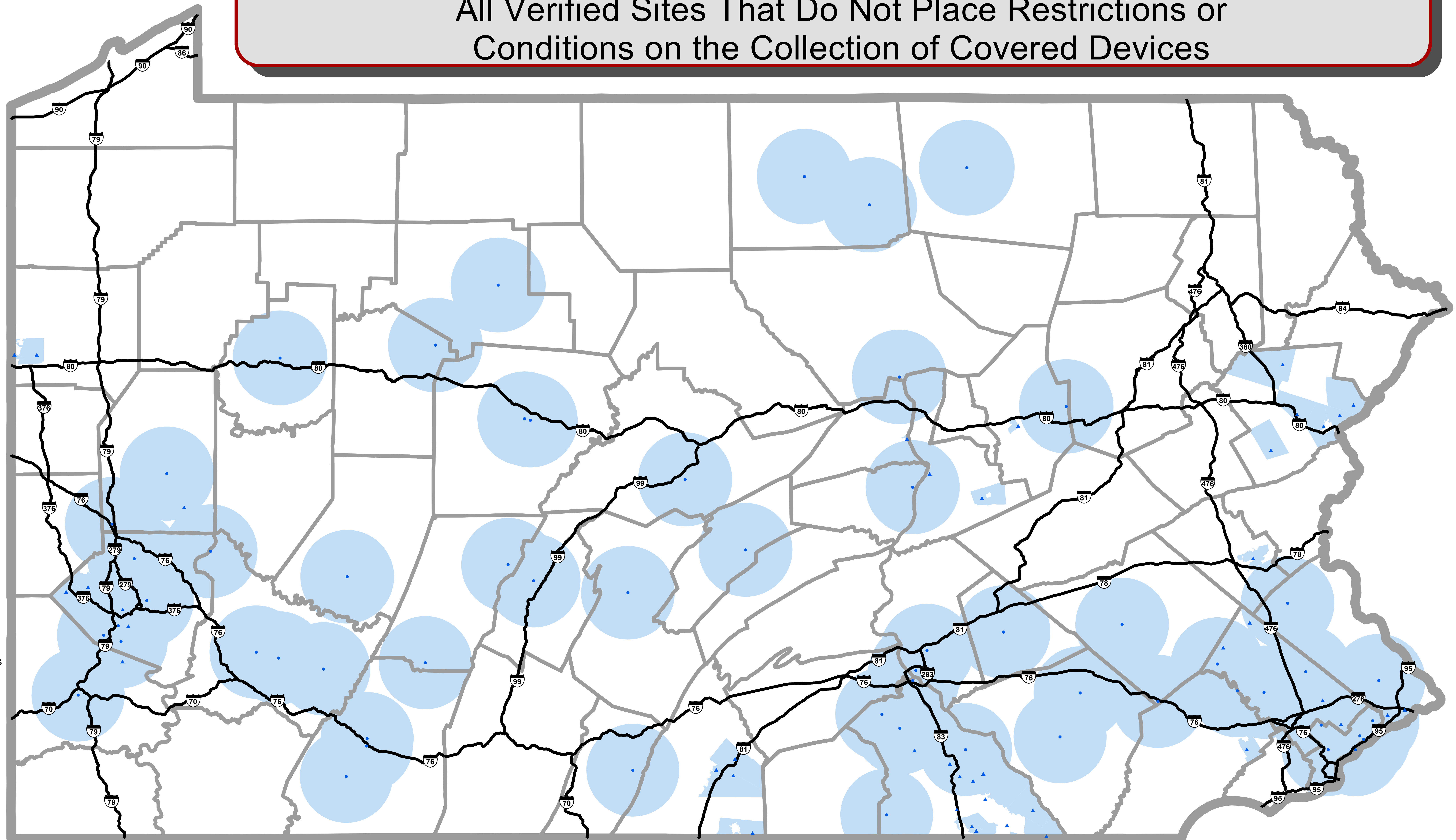
24,499.7 Land SQ Miles (54.8%)  
11,499,468 People (90.5%)

### Notes:

1. A Covered Device under the CDRA includes: desktop computers, laptop computers, computer monitors, computer peripherals, televisions, tablets and e-readers.
2. A restriction or condition on the collection of Covered Devices means that a collection site does not accept or limits the number of one or more types of Covered Devices, or does not impose a fee or cost to a consumer for the collection, transportation or recycling of a covered device, unless a financial incentive (e.g. coupon, rebate or other) of equal or greater value is provided to the consumer.

# 2015 PA CDRA Coverage Map

Collection Sites From Recycling Plans For Electronics Manufacturers  
All Verified Sites That Do Not Place Restrictions or  
Conditions on the Collection of Covered Devices



**Legend**

- ▲ Municipal Locations
- CDRA Locations
- Interstates
- ⊕ Municipalities
- 10-Mile Radius Coverage

**Coverage Data**

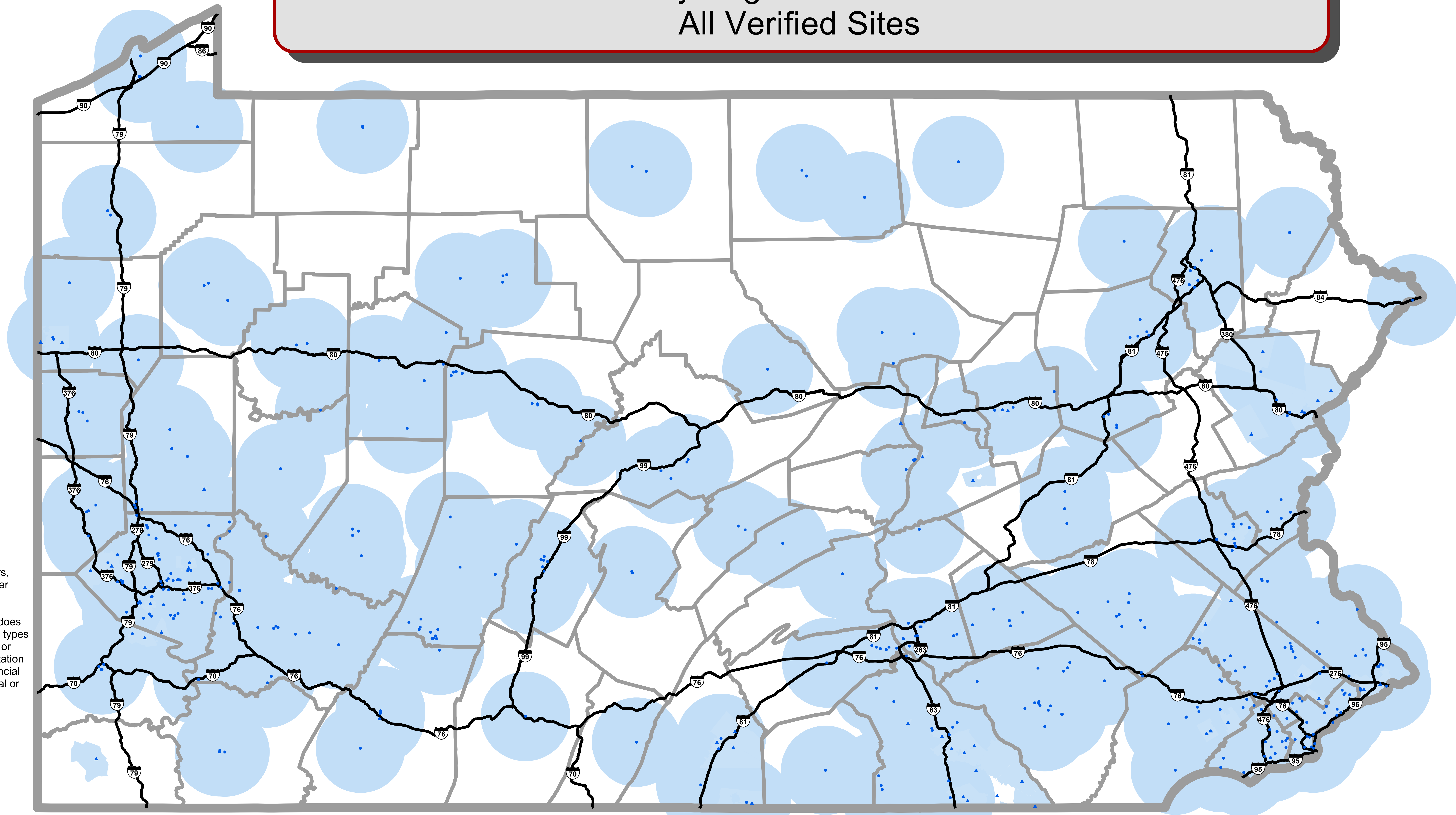
12,907.7 Land SQ Miles (28.8%)  
8,068,837 People (63.5%)

- Notes:**
1. A Covered Device includes: desktop computers, laptop computers, computer monitors, computer peripherals, televisions, tablets and e-readers.
  2. A restriction or condition on the collection of Covered Devices means that a collection site does not accept or limits the number of one or more types of Covered Devices, or does not impose a fee or cost to a consumer for the collection, transportation or recycling of a covered device, unless a financial incentive (e.g. coupon, rebate or other) of equal or greater value is provided to the consumer.

# 2015 PA CDRA Coverage Map

## Collection Sites From Recycling Plans For Electronics Manufacturers

### All Verified Sites



#### Legend

- ▲ Municipal Location
- CDRA Location
- Interstates
- Municipalities
- 10-Mile Radius Coverage

#### Coverage Data

27,049.1 Land SQ Miles (60.5%)  
11,747,953 People (92.5%)

#### Notes:

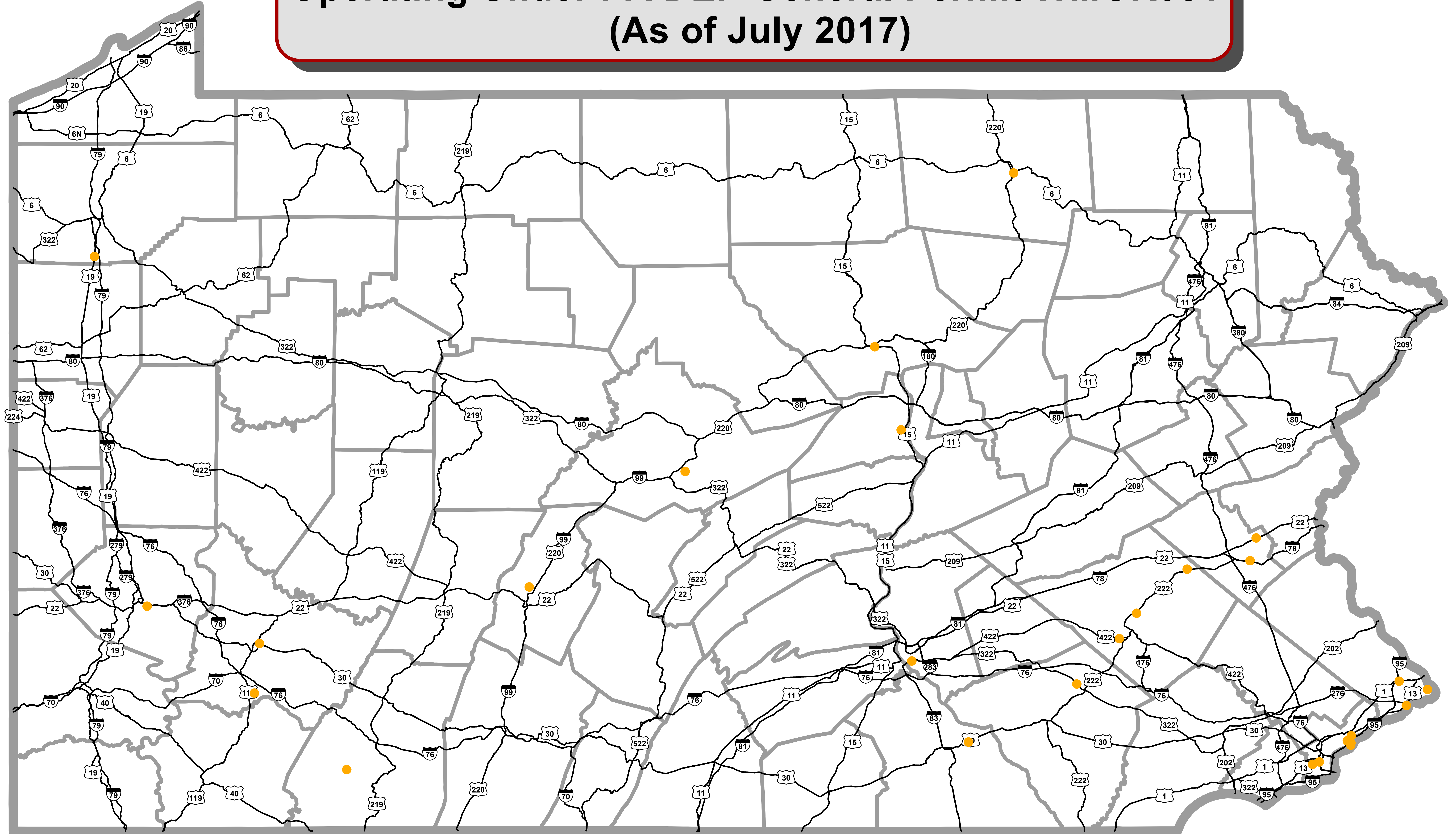
1. A Covered Device includes: desktop computers, laptop computers, computer monitors, computer peripherals, televisions, tablets and e-readers.
2. A restriction or condition on the collection of Covered Devices means that a collection site does not accept or limits the number of one or more types of Covered Devices, or does not impose a fee or cost to a consumer for the collection, transportation or recycling of a covered device, unless a financial incentive (e.g. coupon, rebate or other) of equal or greater value is provided to the consumer.

## Appendix C

### Pennsylvania E-Scrap Recycling Processors

# Electronics Recyclers

## Operating Under PA DEP General Permit WMGR081 (As of July 2017)



**Legend**

- GP81 Sites
- Interstates & US Highways

**Note:**  
A General Permit WMGR081 authorization is limited to the processing of uncontaminated and source-separated electronic devices by disassembling, mechanical processing (by sizing, shaping, separating and volume reduction only), and associated storage prior to reuse or recycling at a processing or transfer facility.