Figure 4-54. NC Residential Income and Age Qualifying Home Improvement Program Gross Annualized Energy Savings by Dwelling Type and Year (kWh/year)

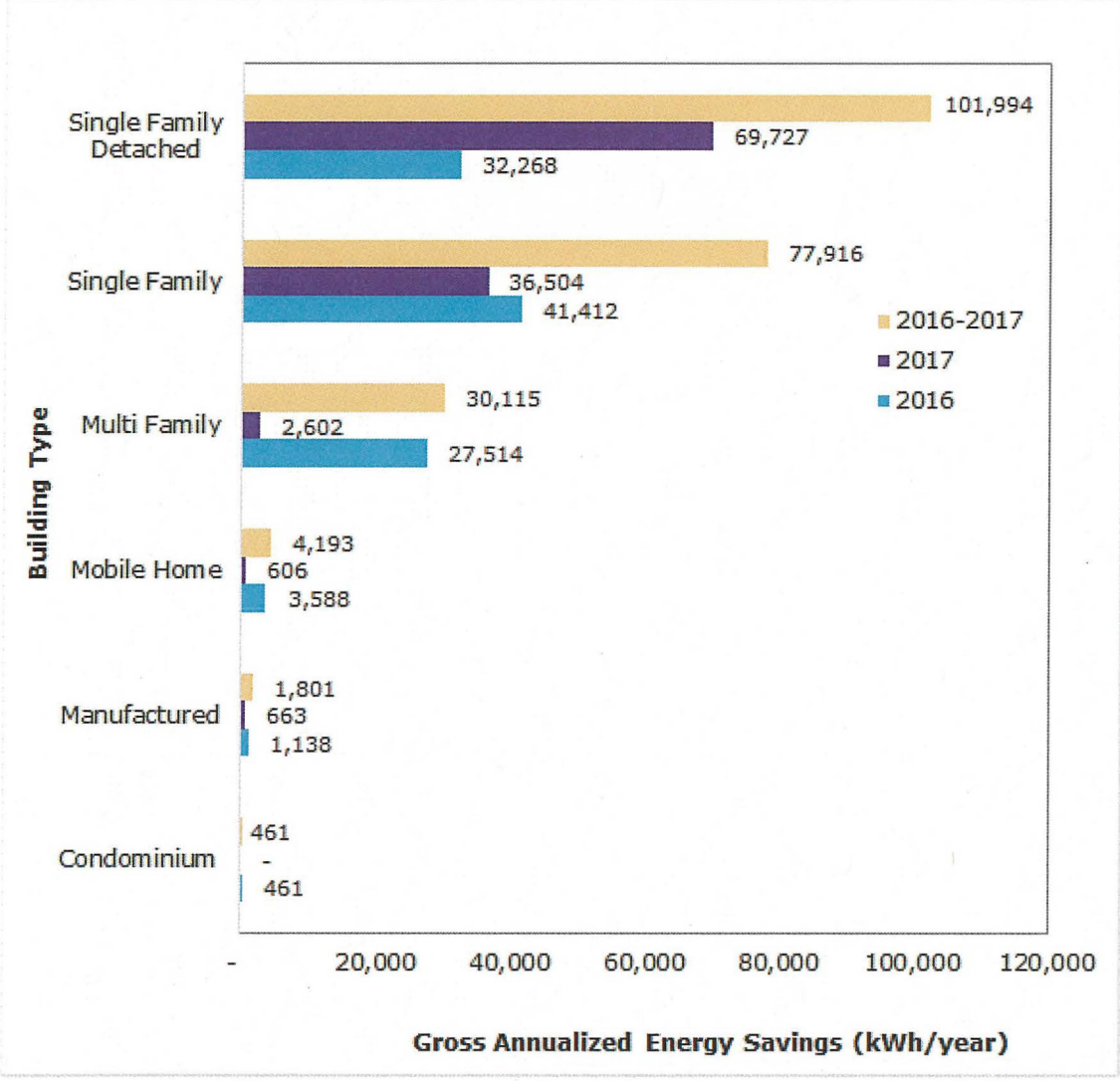
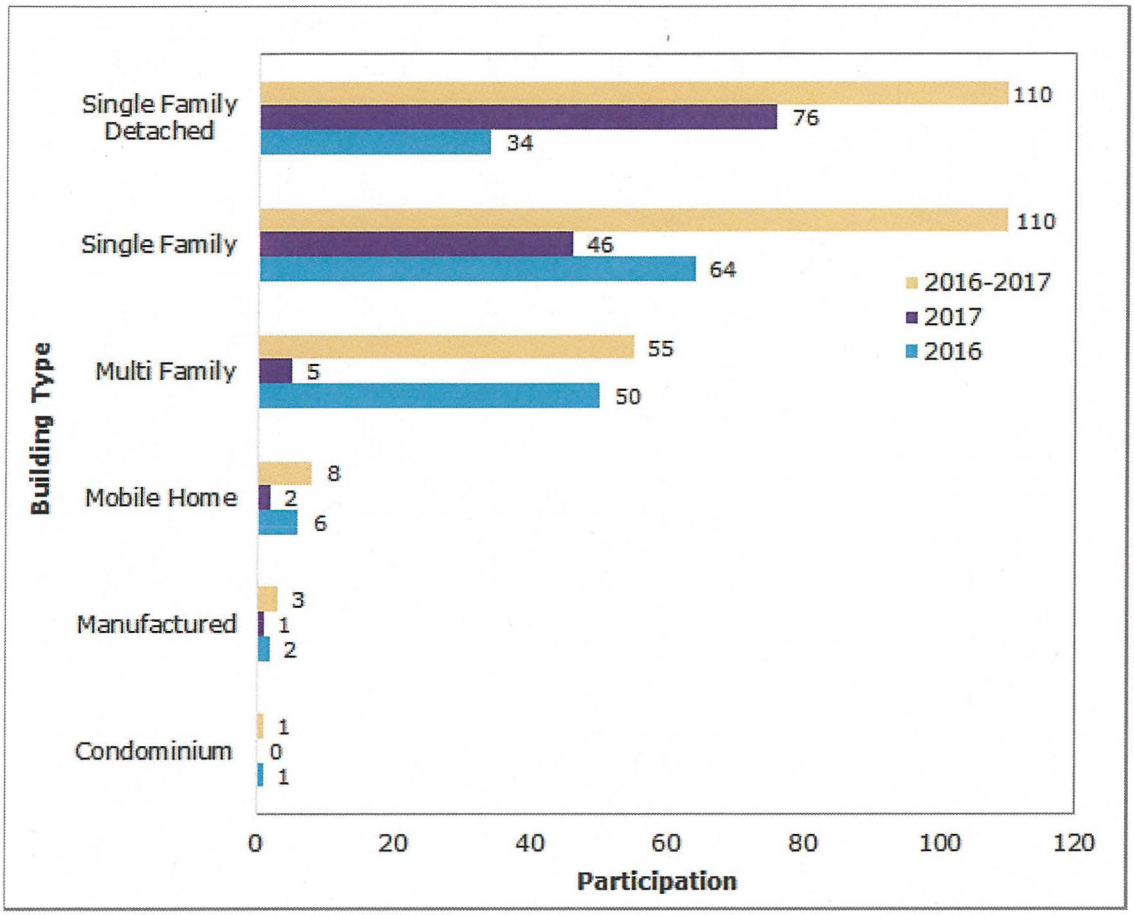


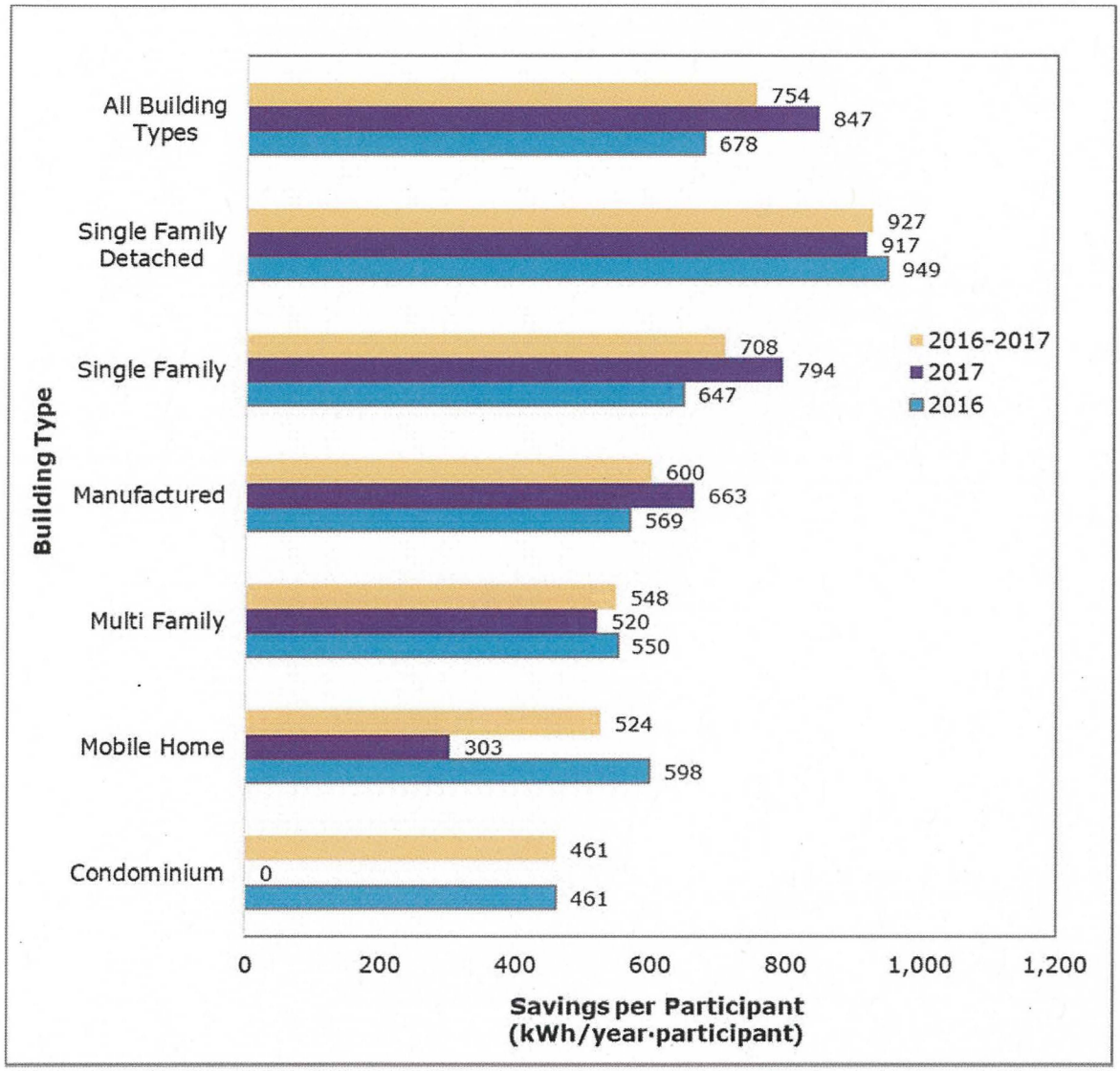
Figure 4-55. NC Residential Income and Age Qualifying Home Improvement Program Participation by Dwelling Type and Year



However, similar to what was observed in Virginia, single family and single-family detached homes had greater gross average savings per participant than all other home types (Figure 4-56).

Single family and single-family detached homes had gross average savings per participant ranging between approximately 600 kWh/year·participant to 950 kWh/year·participant; whereas all other home types had average per participant savings ranging from approximately 450 kWh/year·participant to 600 kWh/year·participant.

Figure 4-56. NC Residential Income and Age Qualifying Home Improvement Program Average Gross Annualized Energy Savings per Participant (kWh/year·participant) by Dwelling Type and Year



4.6 Residential Appliance Recycling – Virginia

The Residential Appliance Recycling Program was approved by the SCC for three years in April 2015 and was launched in Virginia in July 2015. The program provides an incentive to residential customers in Virginia to recycle a maximum of two eligible refrigerators and freezers that are at least 10 years old. Savings are achieved through efficiency improvements in replacement refrigerators and also through the decommissioning of secondary refrigerators.

4.6.1 Methods for the Current Reporting Period

For the current period, the approach included reviewing the tracking data and then estimating gross energy savings and peak demand reductions using STEP Manual calculations.

Table 4-18 outlines Dominion Energy's initial program planning assumptions used to design the program. These assumptions are compared against actual program performance in Section 4.6.2. In the absence of evaluation results to verify the NTG factor, DNV GL used the planned NTG factor to compute net energy savings and peak demand reductions from the gross estimates.

Table 4-18. Residential Appliance Recycling Program Planning Assumptions

Item	Description
Target Market	Residential customers
NTG Factor	77%
Measure Life	8 years
Average Energy Savings (kWh) per Participant per Year	1,002 kWh per participant per year
Average Coincident Peak Demand Reduction (kW) per Participant	0.18 kW per participant per year
Average Rebate (US $) per Participant	$55 per participant

4.6.2 Assessment of Program Progress Towards Plan

The next section describes the program's progress towards planned participants, energy savings, and peak demand reductions.

4.6.2.1 Key Virginia Program Data

Key program indicators describing program progress toward planned goals are provided in Table 4-19 below. Detailed program indicators by year and month are provided for Virginia in Appendix A.6.

In 2017, the program exceeded planned participation, energy savings and peak demand reduction goals at 104%, 173% and 173%, respectively. From program implementation in 2015 through 2017, the program enrolled 99% of planned participants, achieved 94% of planned energy savings, and 83% of planned peak demand reduction.

Each year since program implementation, annual participation, energy savings, and peak demand reductions have trended up.

Table 4-19. VA Residential Appliance Recycling Program Performance Indicators (2015–2017)

Category	Item	Virginia			
		2015	2016	2017	Program Total (2015-2017)
Operations and Management Costs ($)	Direct Rebate				
	Direct Implementation				
	Direct EM&V				

Category	Item	Virginia			
		2015	2016	2017	Program Total (2015-2017)
	Indirect Other (Administrative)	$21,660	$65,648	$38,635	$125,943
Total Costs ($)	Total				
	Planned				
	Variance				
	Cumulative % of Planned	84%	104%	90%	96%
Participants	Total (Gross)	3,206	7,735	3,131	14,072
	Planned (Gross)	3,750	7,500	3,000	14,250
	Variance	-544	235	131	-178
	Cumulative % of planned (Gross)	85%	103%	104%	99%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	3,618,359	7,552,110	3,016,432	14,186,901
	Realization Rate Adjustment (100%)	0	0	0	0
	Adjusted Gross Savings	3,618,359	7,552,110	3,016,432	14,186,901
	Net-to-Gross Adjustment (77%)	-832,223	-1,736,985	-693,779	-3,262,987
	Net Adjusted Savings	2,786,136	5,815,125	2,322,653	10,923,914
	Planned Savings (Net)	6,564,000	3,736,801	1,346,206	11,647,008
	Cum. % Toward Planned Savings (Net)	42%	156%	173%	94%
	Avg. Savings per Participant (Gross)	1,129	976	963	1,008
	Avg. Savings per Participant (Net)	869	752	742	776
Installed Demand Reduction	Total Gross Deemed Demand	542	1,130	451	2,123
	Realization Rate Adjustment (100%)	0	0	0	0
	Adjusted Gross Demand	542	1,130	451	2,123
	Net-to-Gross Adjustment (77%)	-125	-260	-104	-488
	Net Adjusted Demand	417	870	348	1,635
	Planned Demand (Net)	1,221	559	202	1,982
	Cum. % Toward Planned Demand (Net)	34%	156%	173%	83%
	Avg. Demand per Participant (Gross)	0.17	0.15	0.14	0.15
	Avg. Demand per Participant (Net)	0.13	0.11	0.11	0.12

Category	Item	Virginia			
		2015	2016	2017	Program Total (2015-2017)
Program Performance	Cum. $Admin. per Cum. Participant (Gross)	$7	$8	$12	$9
	Cum. $Admin. per Cum. kWh/year (Gross)	$0	$0	$0	$0
	Cum. $Admin. per Cum. kW (Gross)	$40	$58	$86	$59
	Cum. $EM&V per Cum. Total Costs ($)	1%	4%	7%	$0
	Cum. $Rebate per Cum. Participant (Gross)				

4.6.2.2 Additional Virginia Program Participant Data

The graphs in this subsection show the estimated gross energy savings for each program year aggregated by appliance type. The key tracking data either determine or correlate to the estimated energy savings.

Figure 4-57 below shows the percentage of refrigerators and freezers that were recycled each year. Each year, the number of recycled refrigerators increased while the number of recycled freezers decreased to a ratio of 85% refrigerators to 15% freezers in 2017.

Figure 4-57. VA Residential Appliance Recycling Program Gross Energy Savings by Appliance Type Recycled as % of Total Recycled Appliances for each Program Year

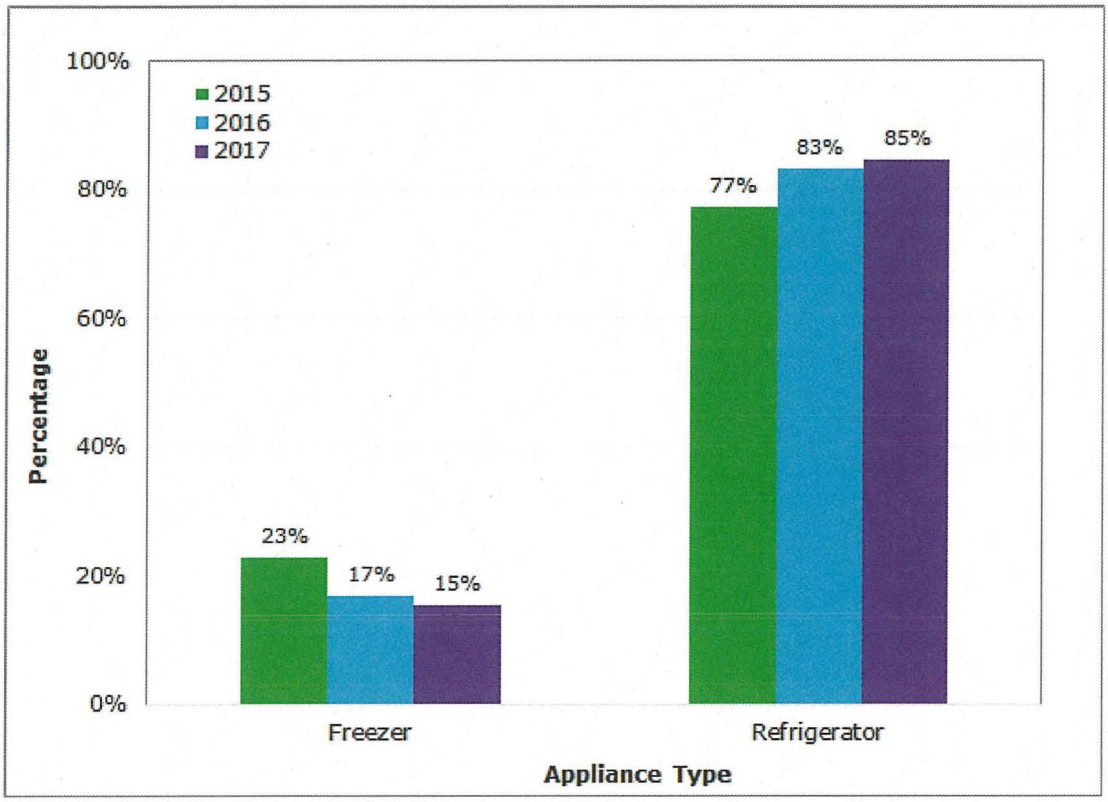


Figure 4-58 below shows the age of the refrigerators and freezers recycled each year. In 2017, the majority (56%) of refrigerators and freezers recycled were 10-19 years old.

Figure 4-58. VA Residential Appliance Recycling Program Gross Energy Savings by Appliance Age as % of Total for each Program Year

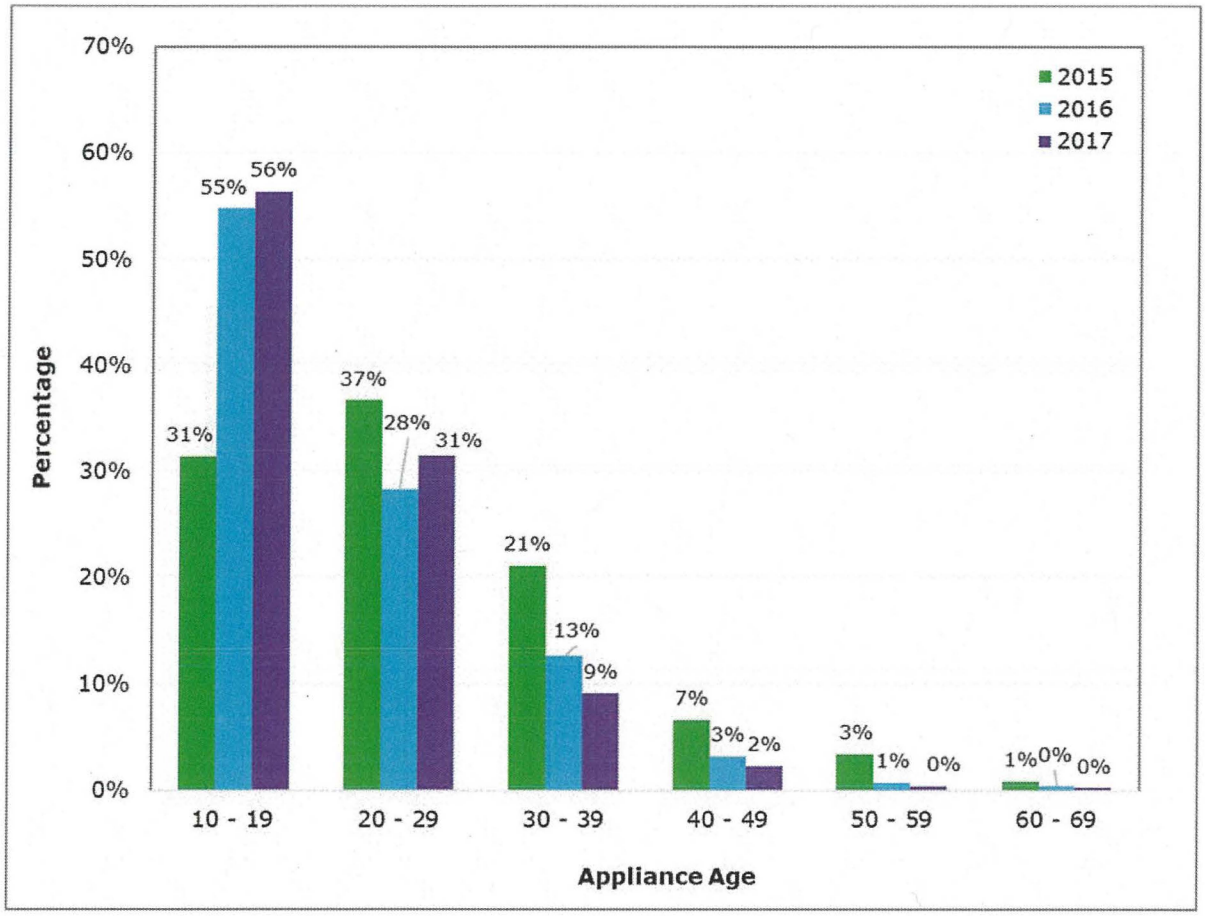


Figure 4-59 below shows the location of operation for the recycled refrigerators and freezers, at pickup, by year. Almost identical to 2016, 56% of refrigerators and freezers were recycled from location "Other" in 2017. The next most frequent location was the "1st floor," accounting for 25% (22% in 2016).

Figure 4-59. VA Residential Appliance Recycling Program Gross Energy Savings by Appliance Location as % of Total for each Program Year

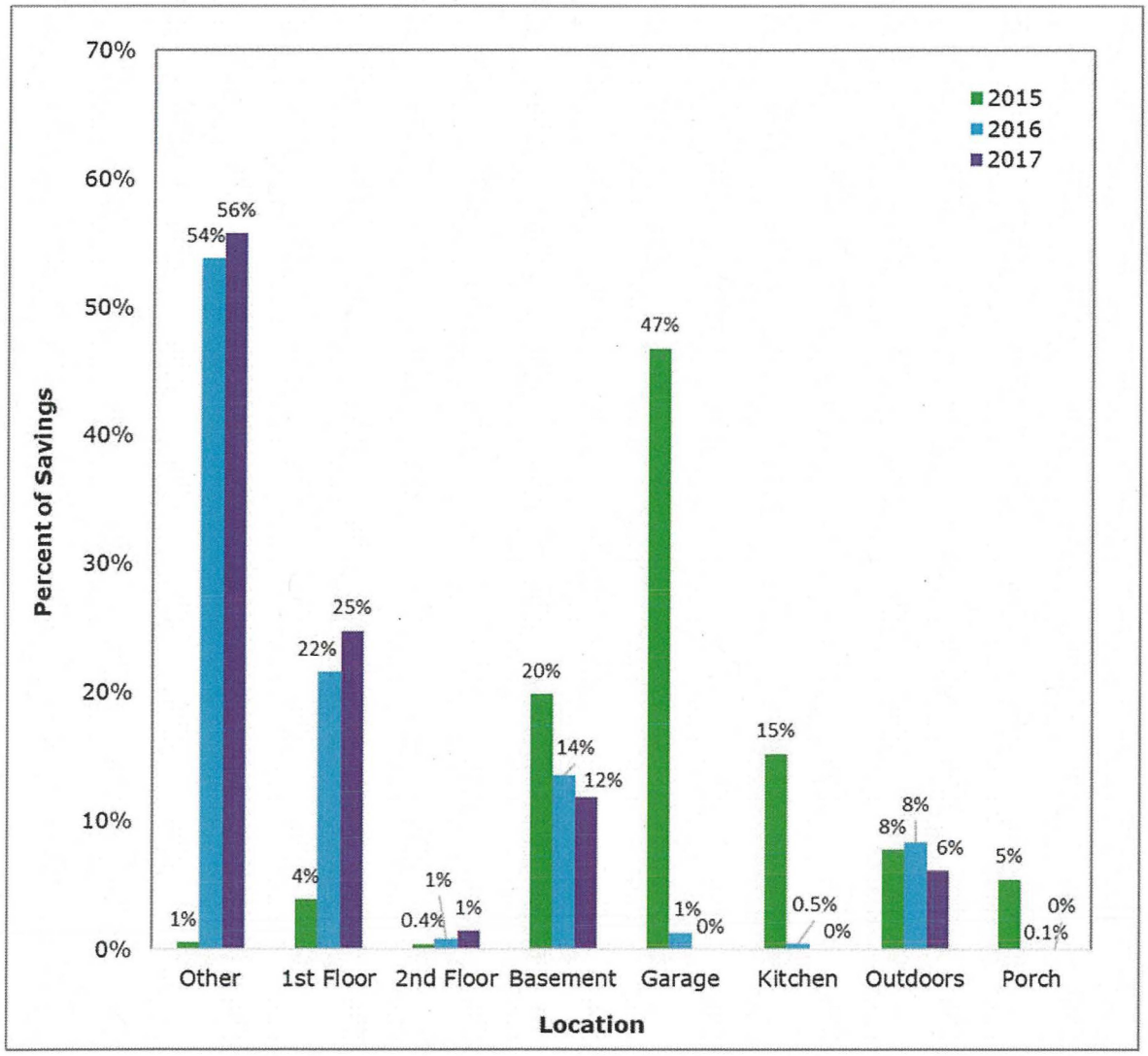


Figure 4-60 below shows the size of the replacement appliance relative to the recycled unit. Customer's most frequently replaced their unit with one of equal size (41%) in 2017.

Figure 4-60. VA Residential Appliance Recycling Program Gross Energy Savings by Replacement Size Relative to the Recycled Appliance as % of Total for each Program Year

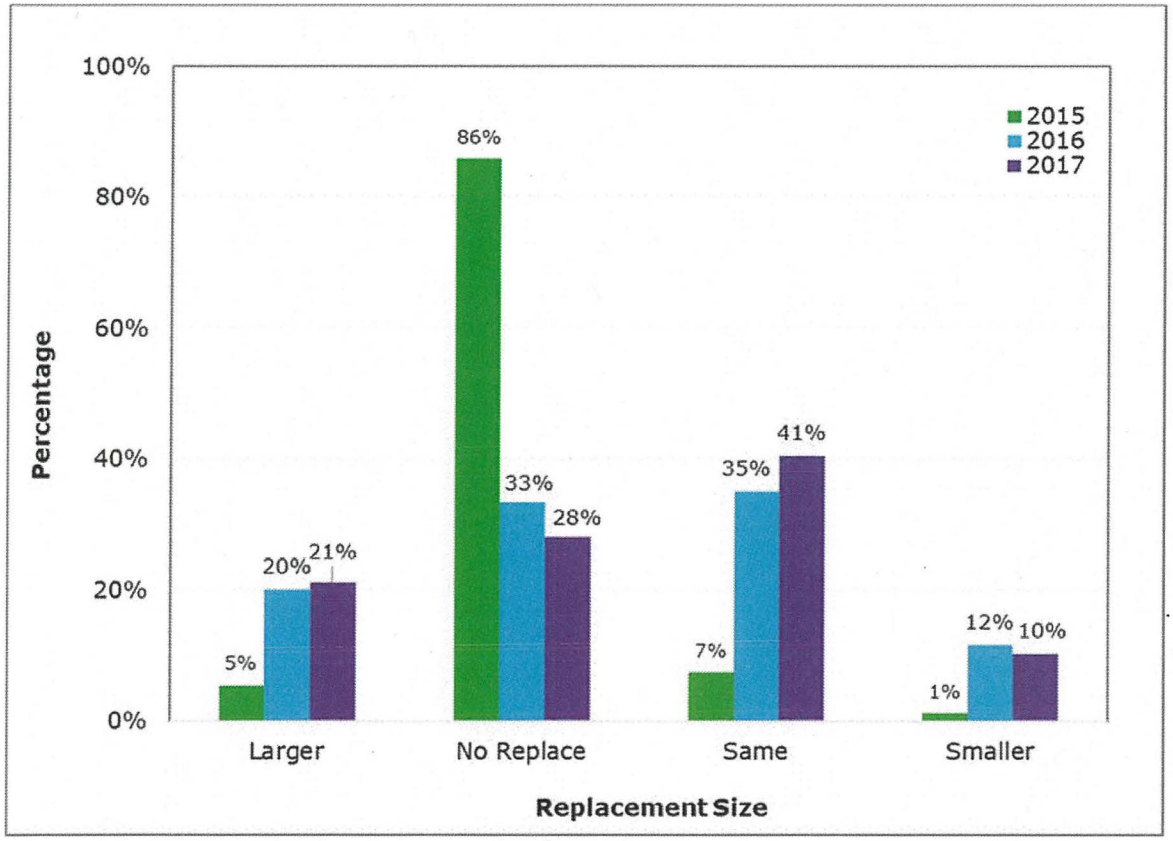
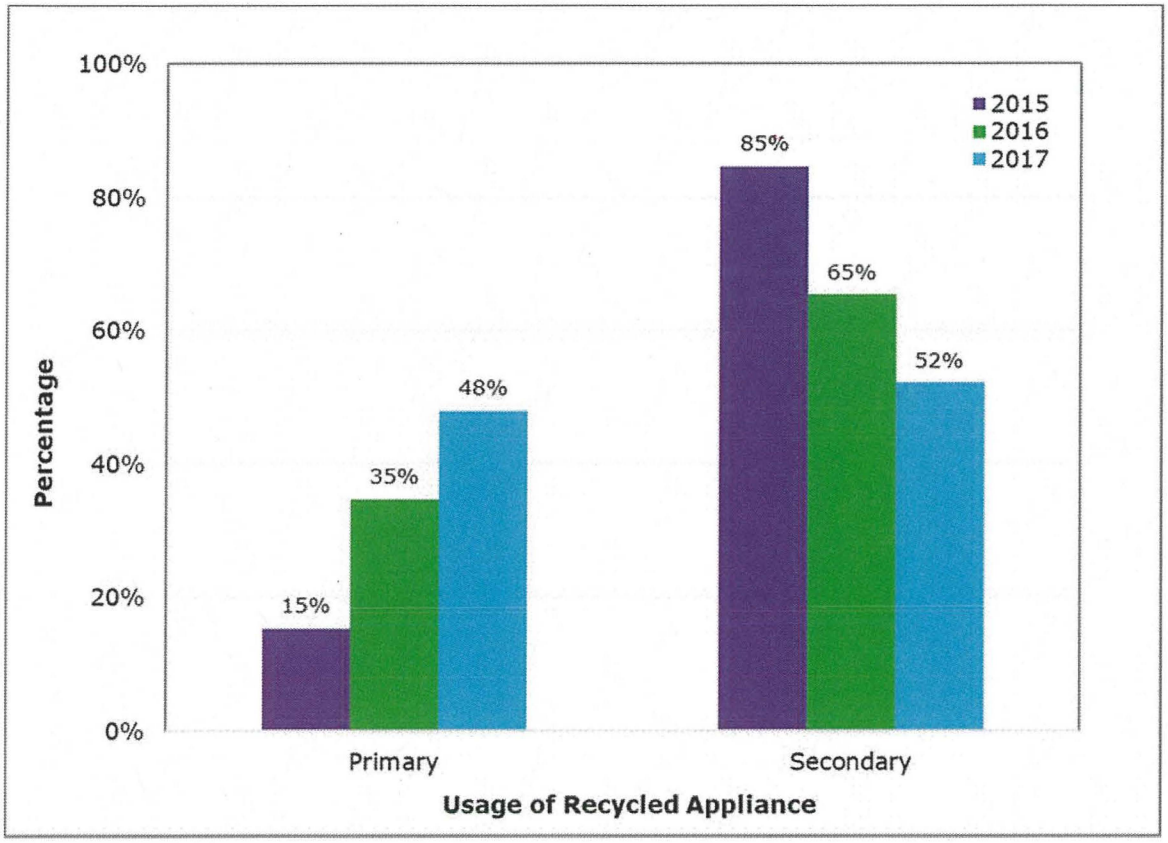


Figure 4-61 below shows whether the recycled appliance were primary or secondary units, by year. Each year since program inception the proportion of primary units being recycled increased, from 15% in 2015 to 48% in 2017.

Figure 4-61. VA Residential Appliance Recycling Program Gross Energy Savings by Primary and Secondary Appliances as % of Total for each Program Year



4.7 Residential Retail LED Lighting – North Carolina

This program provides residential customers in the Company's North Carolina service territory with an instant discount for qualifying light-emitting diode (LED) light bulb purchases from a participating retailer. Qualifying bulbs will be those types that are commonly used, including general service (A-line) bulbs, specialty bulbs (candelabra base, globe, reflector) and small fixtures meeting ENERGY STAR® and Underwriters Laboratories standards. The instant rebates are marketed using a combination of in-store point-of purchase, direct mail, social media, and online communications.

The program limits customers to purchase no more than 12 packages of participating LED light bulbs.

This is the first year the program is offered. It is a two-year program, approved by the North Carolina Commission in Docket E-22, Sub 539 issued on December 20, 2016.

4.7.1 Methods for the Current Reporting Period

DNV GL developed an EM&V Plan for this program, which is included in Appendix I. For the current period, the approach included reviewing the tracking data and then estimating gross energy savings and peak demand reductions using STEP Manual calculations with the assumed realization rate and NTG rate from the program design.

Table 4-20 outlines Dominion Energy's initial program planning assumptions that were used to design the program

Table 4-20. Residential LED Lighting Program Planning Assumptions in North Carolina

Item	Description
Target Market	Residential, retail customers
NTG Factor	85%
Measure Life	20 years
Average Energy Savings (kWh) per Participant per Year	27.9 kWh per participant per year
Average Peak Demand Reduction (kW) per Participant	0.004 kW per participant per year
Average Rebate (US $) per Participant	$2.86 per participant

4.7.2 Assessment of Program Progress Towards Plan

The next section describes the program's progress towards planned participants, energy savings, and peak demand reductions.

4.7.2.1 Key North Carolina Program Data

Table 4-21 summarizes key indicators of progress in 2017. Detailed program indicators by year and month are provided for North Carolina in Appendix B.6.

Table 4-21. NC Residential LED Lighting Program Performance Indicators (2017)

Category	Item	North Carolina 2017
Operations and Management Costs ($)	Direct Rebate	[redacted]
	Direct Implementation	
	Direct EM&V	
	Indirect Other (Administrative)	$26,160
Total Costs ($)	Total	[redacted]
	Planned	
	Variance	
	Cumulative % of Planned	61%
Participants	Total (Gross)	70,261
	Planned (Gross)	165,000
	Variance	-94,739
	Cumulative % of planned (Gross)	43%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	2,549,741
	Realization Rate Adjustment (100%)	0
	Adjusted Gross Savings	2,549,741
	Net-to-Gross Adjustment (85%)	-178,482
	Net Adjusted Savings	2,371,259
	Planned Savings (Net)	2,250,789
	Cum. % Toward Planned Savings (Net)	105%
	Avg. Savings per Participant (Gross)	36
	Avg. Savings per Participant (Net)	34
Installed Demand Reduction	Total Gross Deemed Demand	242
	Realization Rate Adjustment (100%)	0
	Adjusted Gross Demand	242
	Net-to-Gross Adjustment (85%)	-17
	Net Adjusted Demand	225
	Planned Demand (Net)	331
	Cum. % Toward Planned Demand (Net)	68%
	Avg. Demand per Participant (Gross)	0.003
	Avg. Demand per Participant (Net)	0.003
Program Performance	Cum. $Admin. per Cum. Participant (Gross)	$0.37
	Cum. $Admin. per Cum. kWh/year (Gross)	$0.01
	Cum. $Admin. per Cum. kW (Gross)	$108
	Cum. $EM&V per Cum. Total Costs ($)	7%

Category	Item	North Carolina 2017
	Cum. $Rebate per Cum. Participant (Gross)	

For this program, a participant is counted as one individual LED lamp. In this first year, the program achieved 43% of its goal and incentivized 70,261 lamps, achieving 105% of its net annualized energy savings goals and 68% of its net demand reduction goals.

On average, a single lamp in the program saved 36 kWh/year of gross annualized energy in 2017 and 34 kWh/year of net annualized energy. Compared to program design assumptions, on average, each lamp is saving approximately 21% more net annualized energy than initially anticipated. Compared to initial program design, an average lamp was designed to have an incentive of $2.86. The EM&V results show the rebate per participant was $1.87, which is approximately 35% less than initially assumed. This means that, on average, the program is saving more and spending less, in rebate costs, than initially anticipated.

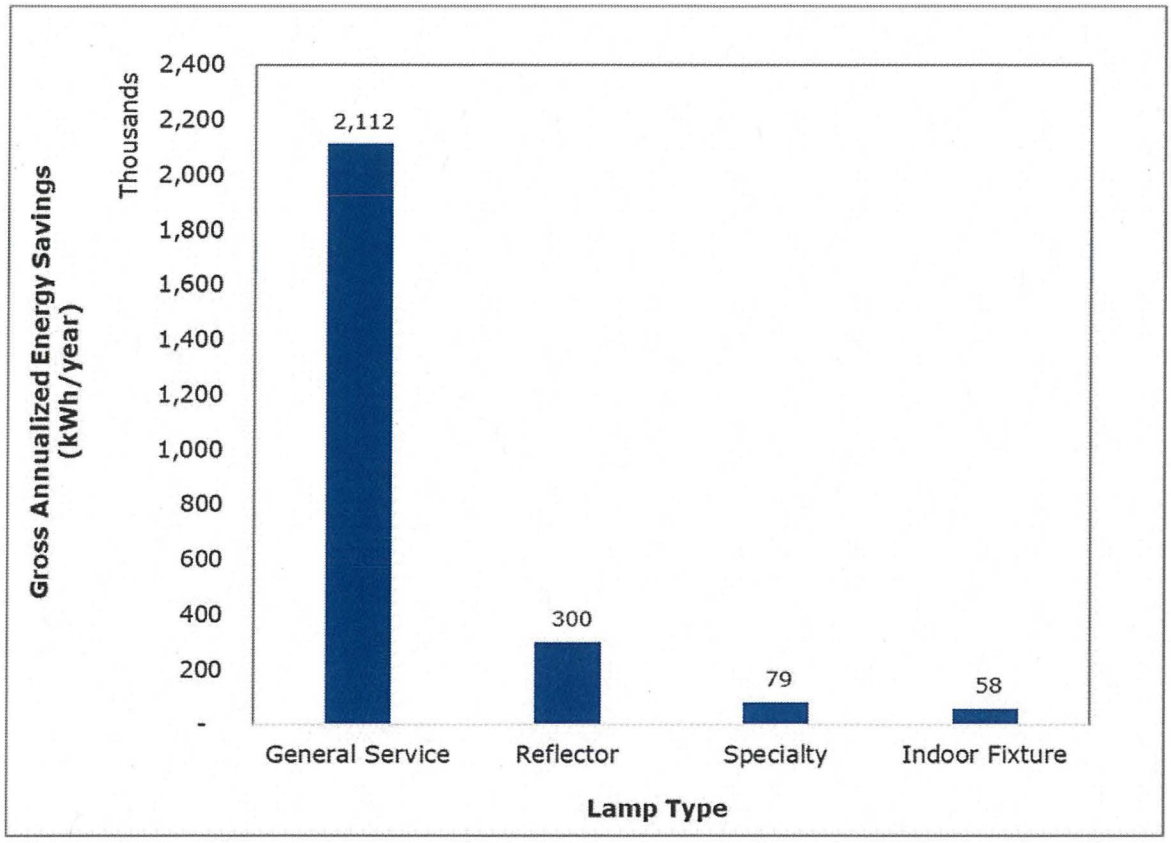
These differences between the initial program planned results and the EM&V results may be due to differences in the assumed mixture of lamp types (e.g., general service, globe, reflector) that would be purchased versus the actual lamp types that were purchased. It is also worth noting that this is the program's first year, where participation is ramping up. Based on experience with other historical programs, first-year participants often make different choices than participants entering the program after it has been established.

4.7.2.2 Additional North Carolina Program Participant Data

The figures in this section (Figure 4-62 through Figure 4-63) show that this program offers a variety of LED lighting options, and by a number of manufacturers and retailers.

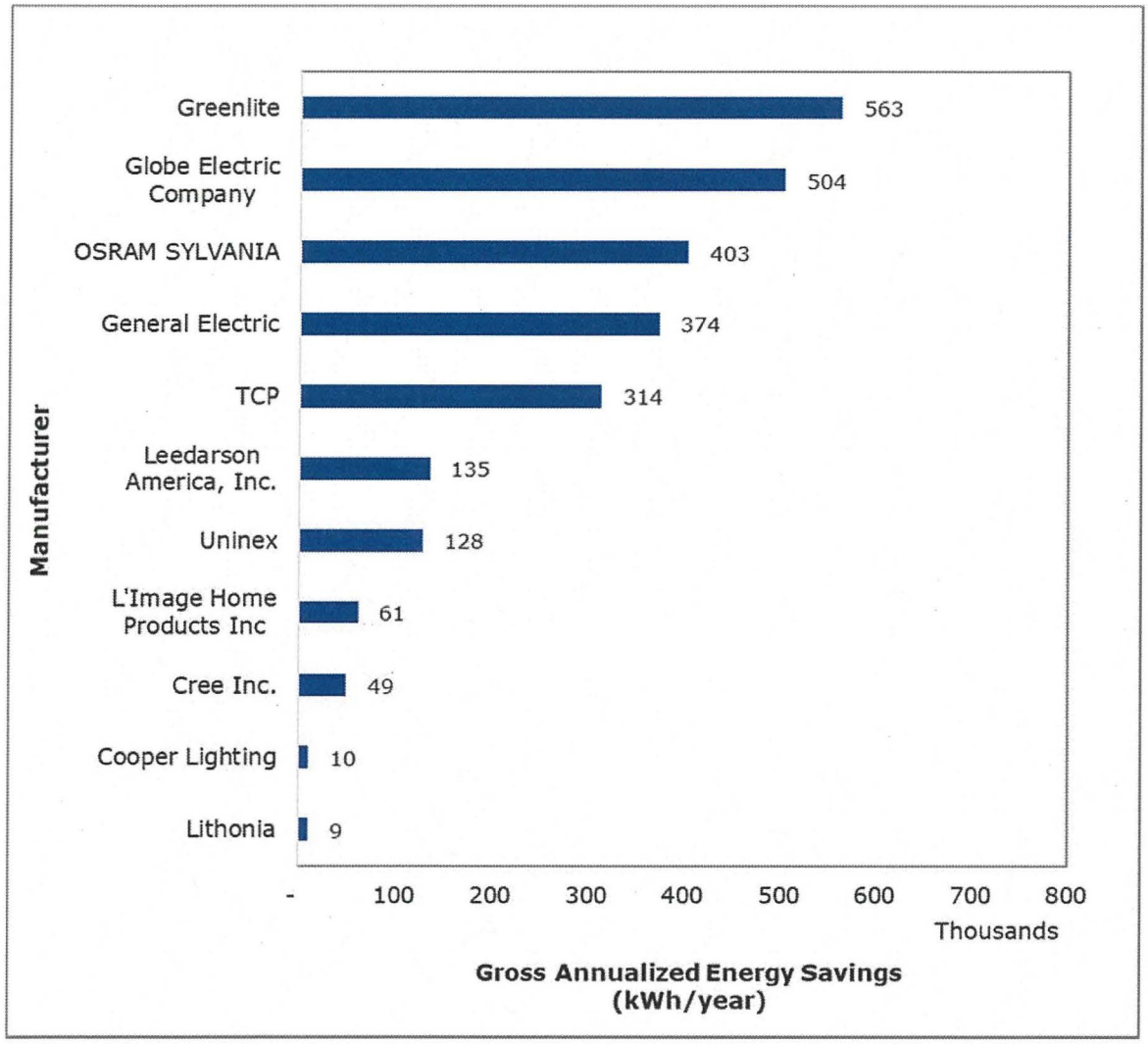
The LED lamp type that produced the highest savings for this program in 2017 was the general service lamp, which accounted for 2,112,161 kWh gross annualized energy savings and 83% of all program savings. The lamp type that gives the second highest gross annualized savings was reflectors, which accounted for 12% of all program savings.

Figure 4-62. NC Residential LED Lighting Program Gross Annualized Energy Savings (kWh/year) by Lamp Type



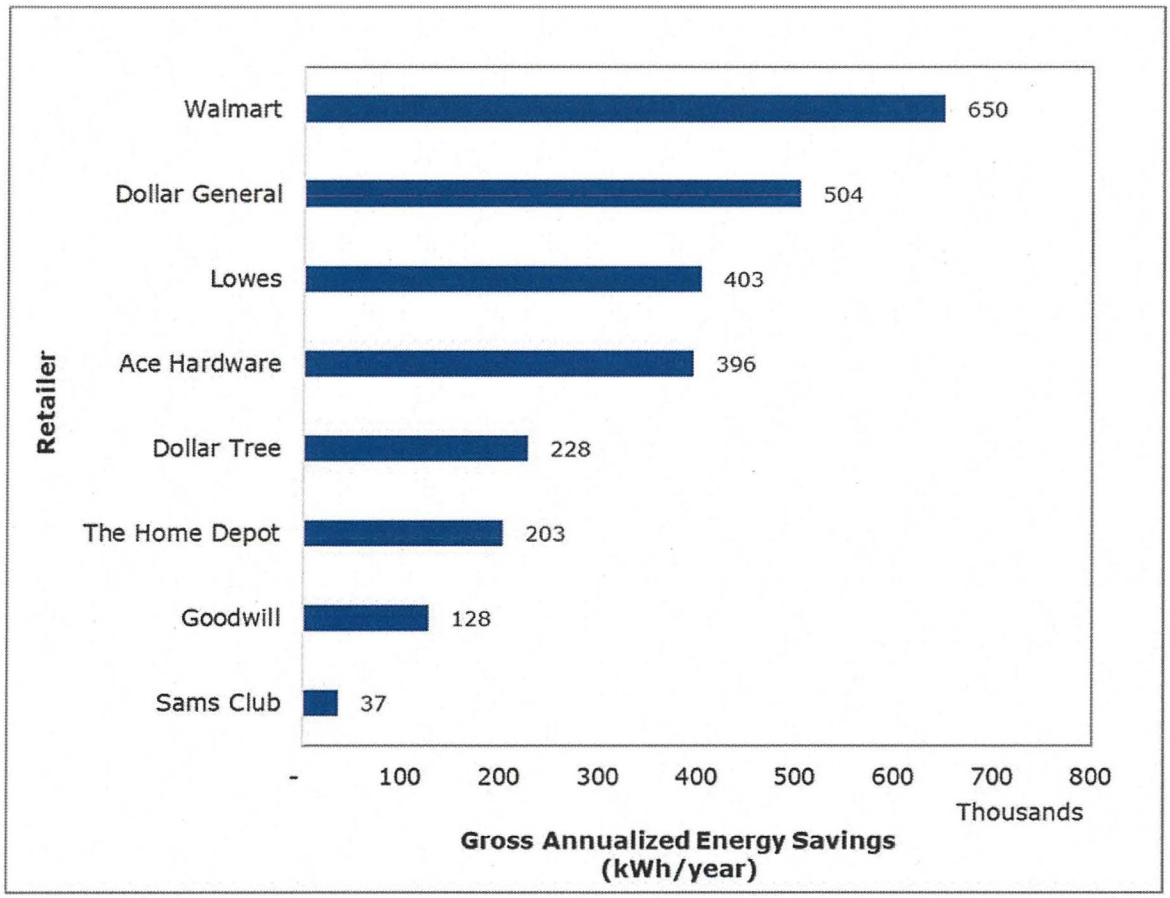
In 2017, customers purchased incentivized LED lamps made by 11 different manufacturers shown in Figure 4-63. The top five of them, Greenlite, Globe Electric Company, Osram Sylvania, General Electric, and TCP accounted for 2,158,334 kWh energy savings per year, which translates to approximately 85% of total program savings.

Figure 4-63. NC Residential LED Lighting Program Gross Annualized Energy Savings (kWh/year) by Lamp Manufacturer



Customers purchased program incentivized LED lamps from eight different retailers in 2017, as shown in Figure 4-64. The top four of them (Walmart, Dollar General, Lowes, and Ace Hardware) accounted for approximately 77% of the total program savings.

Figure 4-64. NC Residential LED Lighting Program Gross Annualized Energy Savings (kWh/year) by Retailer



5 ENERGY EFFICIENCY PROGRAMS – NON-RESIDENTIAL

This section reports on non-residential EE program progress in 2017 for a total of seven non-residential EE programs, all are available in both states. They are:

1. Non-residential Duct Testing and Sealing (DSM Phase II)
2. Non-residential Energy Audit (DSM Phase II)
3. Non-residential Lighting Systems & Controls (DSM Phase III)
4. Non-residential Heating and Cooling Efficiency (DSM Phase III)
5. Non-residential Window Film (DSM Phase III)
6. Non-residential Small Business Improvement (DSM Phase V)
7. Non-residential Prescriptive (DSM Phase VI)

This is the last EM&V report that will show new participants for the DSM Phase II programs listed above, because those programs have discontinued as intended. Those programs operated in Virginia for five years, and for three years in North Carolina. The DSM Phase II program data in this report are from services that were completed by participating contractors by December 24, 2016 with all rebate applications received by Dominion Energy by February 7, 2017.

As of the end of 2017, there have been 11,436 participants across all non-residential programs reported in this EM&V report, or 6% of all residential and non-residential DSM program participants.[44] The cumulative net annualized energy savings from these programs was 294,755,242 kWh/year, or 78% of all DSM program energy savings.

Figure 5-1 and Figure 5-2 show the cumulative count of non-residential EE program participation and gross annualized energy savings in Virginia and North Carolina at the county level. The increased color intensity represents higher participation and gross annualized energy savings.

Figure 5-1 shows participation is greatest in the areas of Henrico, Fairfax, and Chesterfield (in decreasing order). In North Carolina, the jurisdictions with the highest participation are Dare County, Currituck, and Halifax counties (in decreasing order).

Unlike the residential maps, Figure 5-2 shows that the jurisdictions with the highest gross annualized energy savings are Fairfax, Henrico, and Chesterfield (in decreasing order). In North Carolina, the jurisdictions with the highest savings are Dare, Halifax, and Pasquotank.

[44] Including Non-residential Window Film program participants

Figure 5-1. VA and NC Non-residential Energy Efficiency Program Participation Map, by County, Inception to December 31, 2017

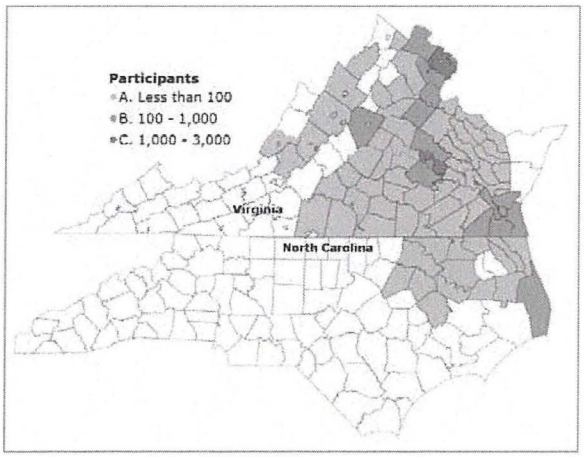
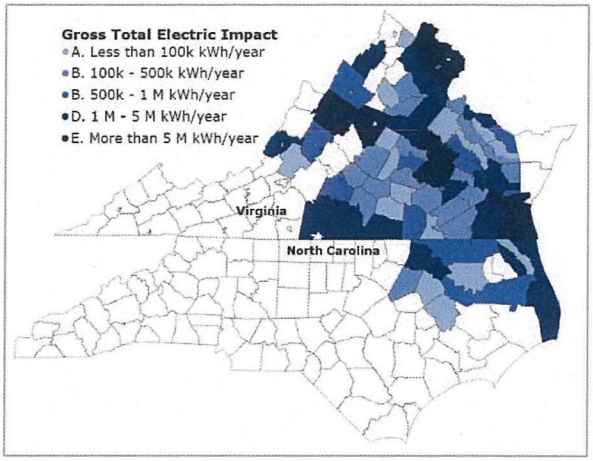


Figure 5-2. VA and NC Non-residential Energy Efficiency Program Gross Annualized Energy Savings Map, by County, Inception to December 31, 2017



5.1 Non-residential Duct Testing and Sealing – Virginia and North Carolina

The Non-residential Duct Testing and Sealing Program was designed to promote testing and general repair of poorly performing duct and air distribution systems in non-residential facilities. To qualify, customers needed to have an average monthly demand of 10 MW or less and be responsible for the electric bill. They also needed to be the owner of the facility or reasonably able to secure permission to complete the measures. The program provided incentives to qualifying customers who engaged the services of a qualified contractor to seal existing ducts in buildings using program-approved methods and materials, including aerosol sealant, mastic, or foil tape with an acrylic adhesive. System components to be sealed included air handler housings, air intake, return, and supply plenums, and all connected duct work. Rebate amounts were based on the unit size of the AC cooling equipment that served the sealed ducts.

This program was implemented through a contractor network, so customers contacted participating contractors to have their duct system(s) tested and sealed through the program. Customers were considered participants once a completed application form had been processed and the associated rebate has been issued. This process sometimes took several months since customers had 45 days to submit their rebate application and the Company had 90 days to process it.

Over the course of the program's lifetime, Dominion Energy Conservation personnel implemented one operational improvement: the program allowed participants to assign the rebate directly to the qualified contractor (effective June 2013). In 2016, 100% of participants in both states assigned their rebates to the contractor.

In 2016, Dominion Energy announced the closing of the program to new participants in both states. To be eligible for a rebate, the service must have been completed by a participating contractor by December 24, 2016 and rebate applications received by February 7, 2017. The rebate form submission and processing

time all together can add up to 135 days before a participant is registered in the tracking and reporting system. This report section shows those final enrollments in 2017 that were serviced in the last months of 2016.

5.1.1 Methods for the Current Reporting Period

For the 2017 evaluation cycle, the approach included reviewing the tracking data and then estimating gross energy savings and peak demand reduction using the following:

- The results of STEP Manual calculation methods
- An annual energy savings realization rate of 87% with a relative precision of ±10% at a 90% confidence level[45]
- A peak demand reduction realization rate of 94% with a relative precision of ±6% at a 90% confidence level[45]
- A program-wide NTG factor of 97% with a relative precision of ±2% at a 90% confidence level[45]

The above adjustment factors were applied to the 2017 gross savings to determine the net savings, as was done to determine the 2014, 2015, and 2016 net savings, because they represent the best available data regarding realized savings.

Table 5-1 outlines Dominion Energy's initial program planning assumptions that were used to design the program. These assumptions are compared against actual program performance in Section 5.1.2. In the absence of evaluation results to verify the NTG factor, DNV GL used the planned NTG factor in its deemed savings calculations.

Table 5-1. Non-residential Duct Testing and Sealing Program Planning Assumptions System-wide

Item	Description
Target Market	Non-residential customers
NTG Factor	90%
Measure Life	25 years
Average Energy Savings (kWh) per Participant	32,987 kWh per participant per year
Average Peak Demand Reduction (kW) per Participant	7.37 kW per participant per year
Average Rebate (US $) per Participant	$8,898 per participant

5.1.2 Assessment of Program Progress Towards Plan

The next two subsections provide tables and charts summarizing the key indicators of the Non-residential Duct Testing and Sealing program history in Virginia and North Carolina. The two subsections thereafter provide charts to show the types of participant buildings involved in the program as well as other participant metrics associated with the ductwork tested and sealed.

5.1.2.1 Key Virginia Program Data

Table 5-2 on the next page summarizes key indicators of progress from July 1, 2012 through February 28, 2017 in Virginia. Detailed program indicators by year and month are provided in Appendix A.7.

[45] Based upon the 2014 evaluation of the Non-residential Duct Testing and Sealing Program.

In Virginia, program enrollment was intentionally reduced after 2014 and, at the end of 2016, the program closed altogether, although applications were approved until February 28, 2017. The gross number of participants decreased from 640 in 2016 to 81 in 2017 and brought the program total to 4,444 participants (230% of those planned).

The net annual energy savings for 2017 were 3,595,098 kWh and comprised 5% of the total net annual energy savings of 68,840,057 kWh that were achieved over the life of the program in Virginia. This represents 147% of the planned lifetime savings. The net demand reductions for 2017 were 637 kW, bringing the program net total to 7,663 kW of the 11,066-kW planned (69% of planned).

Over the life of the program, the average gross annual energy savings per participant was 18,318 kWh/year (32,987 kWh/year planned). The average gross peak demand reduction per participant was 1.88 kW (7.37 kW planned). The average rebate per participant was $4,888 and the overall program costs were $26,485,324, or 108% of planned. The cumulative progress over the life of the program is shown in Figure 5-3 and Figure 5-4, which immediately follow Table 5-2.

Table 5-2. VA Non-residential Duct Testing and Sealing Program Performance Indicators (2012-2017)

Category	Item	Virginia						
		2012	2013	2014	2015	2016[46]	2017	Program Total (2012-2017)
Operations and Management Costs ($)	Direct Rebate							
	Direct Implementation							
	Direct EM&V							
	Indirect Other (Administrative)	$71,464	$202,348	$393,299	$219,936	$171,043	$69,478	$1,127,568
Total Costs ($)	Total							
	Planned							
	Variance							
	Cumulative % of Planned	34%	52%	160%	128%	94%	157%	108%
Participants	Total (Gross)	11	357	1,700	1,655	640	81	4,444
	Planned (Gross)	112	299	472	472	578	0	1,933
	Variance	-101	58	1,228	1,183	62	81	-2,511
	Cumulative % of planned (Gross)	10%	119%	360%	351%	111%	n/a	230%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	77,742	1,765,683	28,470,361	20,488,106	26,352,640	4,251,334	81,405,866
	Realization Rate Adjustment (87%)[47]	-10,106	-229,539	-3,701,147	-2,663,454	-3,425,843	-552,673	-10,582,763
	Adjusted Gross Savings	67,635	1,536,144	24,769,214	17,824,652	22,926,796	3,698,661	70,823,104
	Net-to-Gross Adjustment (97%)[48]	-1,894	-43,012	-693,538	-499,090	-641,950	-103,563	-1,983,047
	Net Adjusted Savings	65,742	1,493,132	24,075,676	17,325,562	22,284,846	3,595,098	68,840,057
	Planned Savings (Net)	3,324,000	8,826,223	15,569,864	15,569,864	3,432,339	0	46,722,290

[46] The 2016 total gross deemed savings values reported in this table differ from those provided in the May 1, 2017 EM&V report and have been refiled with the Commission. The adjustments totaled -30,849,970 kWh/year and 0 kW for 2016 reported savings. The adjustments account for corrections to STEP Manual version 7.0.0 issued on May 1, 2017, in section 12. The adjustment was made to full load heating hours (FLH_{heat}) in Tables 90 and 91 to be consistent with those in the Mid-Atlantic TRM version 6, in response to requests by the North Carolina Public Staff Utilities Commission Re: Docket No. E-22, Sub 545, on October 23, 2017. This affected multiple non-residential HVAC measures (e.g. heat pumps, variable refrigerant flow, mini split systems) that reference Table 90 and 91, in multiple non-residential programs. This adjustment is reflected in STEP Manual version 8.0.0 in this EM&V report.

[47] The realization rate adjustment was updated to 87% based on the 2015 Load Shape Study.

[48] The NTG adjustment was updated to 97% based on the 2015 Net-to-Gross Characterization Study.

Category	Item	Virginia						
		2012	2013	2014	2015	2016[46]	2017	Program Total (2012-2017)
	Cum. % Toward Planned Savings (Net)	2%	17%	155%	111%	649%	N/A	147%
	Avg. Savings per Participant (Gross)	7,067	4,946	16,747	12,380	41,176	52,486	18,318
	Avg. Savings per Participant (Net)	5,977	4,182	14,162	10,469	34,820	44,384	15,491
Installed Demand Reduction	Total Gross Deemed Demand	8	508	2,051	2,514	2,594	695	8,370
	Realization Rate Adjustment (94%)[49]	0	-29	-119	-146	-150	-40	-485
	Adjusted Gross Demand	8	478	1,932	2,368	2,444	655	7,884
	Net-to-Gross Adjustment (97%)[50]	0	-13	-54	-66	-68	-18	-221
	Net Adjusted Demand	7	465	1,878	2,301	2,375	637	7,663
	Planned Demand (Net)	737	1,963	3,479	3,479	1,409	0	11,066
	Cum. % Toward Planned Demand (Net)	1%	24%	54%	66%	169%	N/A	69%
	Avg. Demand per Participant (Gross)	0.73	1.42	1.21	1.52	4.05	8.58	1.88
	Avg. Demand per Participant (Net)	0.67	1.30	1.10	1.39	3.71	7.86	1.72
Program Performance	Cum. $Admin. per Cum. Participant (Gross)	$6,497	$567	$231	$133	$267	$858	$254
	Cum. $Admin. per Cum. kWh/year (Gross)	$0.92	$0.11	$0.01	$0.01	$0.01	$0.02	$0.01
	Cum. $Admin. per Cum. kW (Gross)	$8,904	$398	$192	$88	$66	$100	$135
	Cum. $EM&V per Cum. Total Costs ($)	11.8%	2.8%	4.1%	1.1%	2.0%	4.5%	2.9%
	Cum. $Rebate per Cum. Participant (Gross)							

[49] The realization rate adjustment was updated to 94% based on the 2015 Load Shape Study.

[50] The NTG adjustment was updated to 97% based on the 2015 Net-to-Gross Characterization Study.

Figure 5-3. VA Non-residential Duct Testing and Sealing Program Net Adjusted Annualized Savings (kWh/year)

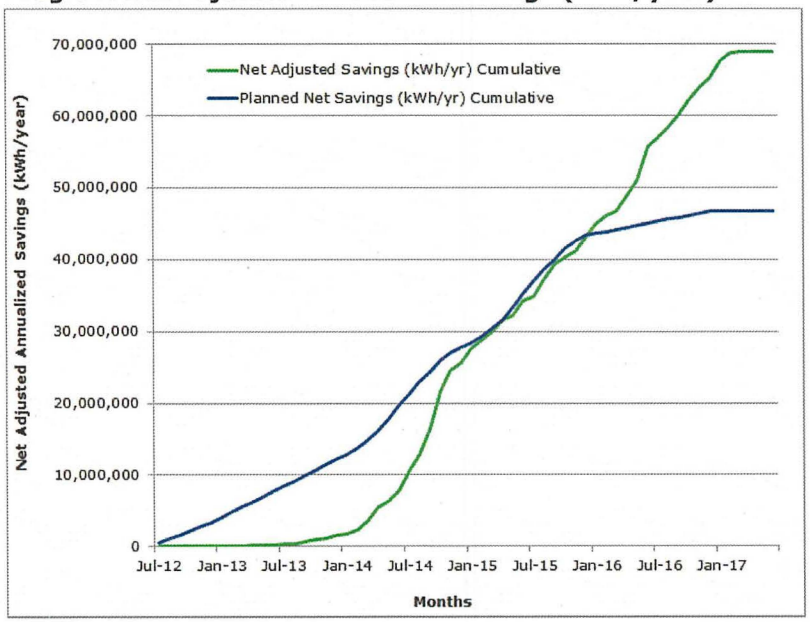
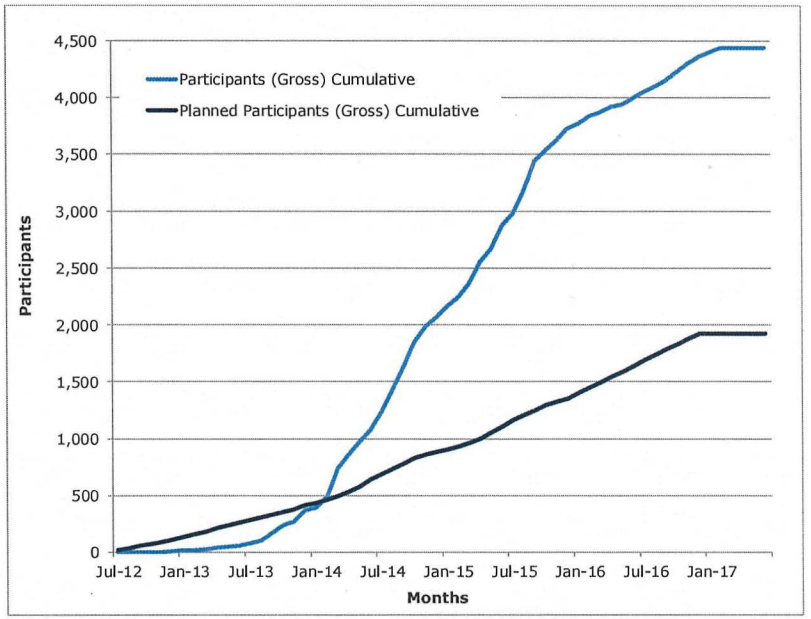


Figure 5-4. VA Non-residential Duct Testing and Sealing Program Cumulative Participants



5.1.2.2 Key North Carolina Program Data

Table 5-3 on the following page summarizes key indicators of progress from April 1, 2014 through February 28, 2017 in North Carolina. Detailed program indicators by year and month are provided in Appendix B.7.

In North Carolina, the program completed its first full year of operation at the end of 2015, when it grew to a gross participation of 152. At the end of 2016, the program closed altogether, although applications could be approved until February 28, 2017. The gross number of participants decreased from 33 in 2016 to 5 in 2017 and brought the program total to 250 participants (253% of those planned). The net annual energy savings for 2017 were 155,813 kWh and comprised 5% of the total net annual energy savings of 3,155,166 kWh that were achieved over the life of the program in North Carolina. This represents 143% of the planned lifetime savings. The net demand reductions for 2017 were 49 kW, bringing the program total to 522 kW of the 537 kW planned (97% of planned).

Over the life of the program, the average gross annual energy savings per participant was 14,924 kWh/year (32,987 kWh/year planned). The average gross peak demand reduction per participant was 2.28 kW (7.37 kW planned). The average rebate per participant was $5,058 and the overall program costs were $1,503,010, or 123% of planned. The cumulative progress over the life of the program is shown in Figure 5-5 and Figure 5-6, immediately following Table 5-3.

Table 5-3. NC Non-residential Duct Testing and Sealing Program Performance Indicators (2014-2017)

Category	Item	North Carolina				
		2014	2015	2016[51]	2017	Program Total (2014-2017)
Operations and Management Costs ($)	Direct Rebate					
	Direct Implementation					
	Direct EM&V					
	Indirect Other (Administrative)	$8,090	$28,601	$11,032	$5,524	$53,248
Total Costs ($)	Total					
	Planned					
	Variance					
	Cumulative % of Planned	69%	196%	91%	196%	123%
Participants	Total (Gross)	60	152	33	5	250
	Planned (Gross)	30	30	39	0	99
	Variance	30	122	-6	5	149
	Cumulative % of planned (Gross)	200%	507%	85%		253%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	595,895	2,400,813	550,135	184,255	3,731,098
	Realization Rate Adjustment (87%)[52]	-77,466	-312,106	-71,518	-23,953	-485,043
	Adjusted Gross Savings	518,428	2,088,707	478,618	160,302	3,246,055
	Net-to-Gross Adjustment (97%)[53]	-14,516	-58,484	-13,401	-4,488	-90,890
	Net Adjusted Savings	503,912	2,030,224	465,216	155,813	3,155,166
	Planned Savings (Net)	989,610	989,610	230,534	0	2,209,754

[51] The 2016 total gross deemed savings values reported in this table differs from values provided in the May 1, 2017 EM&V report, and have been refiled with the Commission. Adjustments totaled -83,464 kWh/year and 0 kW for 2016 reported savings. The adjustments account for corrections to STEP Manual version 7.0.0 issued on May 1, 2017, in section 12. The first adjustment was made to full load heating hours (FLH_{heat}) in Tables 90 and 91 to be consistent with those in the Mid-Atlantic TRM version 6, in response to requests by the North Carolina Public Staff Utilities Commission Re: Docket No. E-22, Sub 545, on October 23, 2017. This affected multiple non-residential HVAC measures (e.g. heat pumps, variable refrigerant flow, mini split systems) that reference Table 90 and 91, in multiple non-residential programs. This adjustment is reflected in STEP Manual version 8.0.0 in this EM&V report.
Another adjustment was made to correct the full load cooling hours in North Carolina for this program. The code that calculated this savings did not match the STEP Manual v 7.0.0.

[52] The Realization Rate Adjustment was updated to 87% based on the 2015 Load Shape Study.

[53] The Net-to-Gross Adjustment was updated to 97% based on the 2015 Net-to-Gross Characterization Study.

Category	Item	North Carolina				
		2014	2015	2016[51]	2017	Program Total (2014-2017)
	Cum. % Toward Planned Savings (Net)	51%	205%	202%	N/A	143%
	Avg. Savings per Participant (Gross)	9,932	15,795	16,671	36,851	14,924
	Avg. Savings per Participant (Net)	8,399	13,357	14,097	31,163	12,621
Installed Demand Reduction	Total Gross Deemed Demand	65	292	160	54	570
	Realization Rate Adjustment (94%)[54]	-4	-17	-9	-3	-33
	Adjusted Gross Demand	61	275	150	51	537
	Net-to-Gross Adjustment (97%)[55]	-2	-8	-4	-1	-15
	Net Adjusted Demand	60	267	146	49	522
	Planned Demand (Net)	221	221	95	0	537
	Cum. % Toward Planned Demand (Net)	27%	121%	154%	N/A	97%
	Avg. Demand per Participant (Gross)	1.08	1.92	4.84	10.77	2.28
	Avg. Demand per Participant (Net)	0.99	1.76	4.43	9.86	2.09
Program Performance	Cum. $Admin. per Cum. Participant (Gross)	$135	$188	$334	$1,105	$213
	Cum. $Admin. per Cum. kWh/year (Gross)	$0.01	$0.01	$0.02	$0.03	$0.01
	Cum. $Admin. per Cum. kW (Gross)	$124	$98	$69	$103	$93.42
	Cum. $EM&V per Cum. Total Costs ($)	9.3%	0.7%	2.0%	3.7%	2.8%
	Cum. $Rebate per Cum. Participant (Gross)					

[54] The realization rate adjustment was updated to 94% based on the 2015 Load Shape Study.

[55] The NTG adjustment was updated to 97% based on the 2015 Net-to-Gross Characterization Study.

Figure 5-5. NC Non-residential Duct Testing and Sealing Program Net Adjusted Annualized Savings (kWh/year)

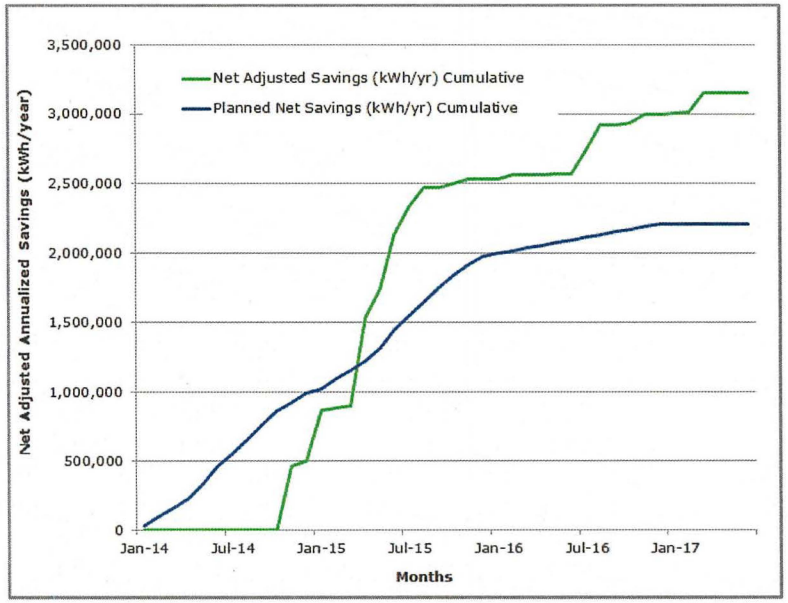
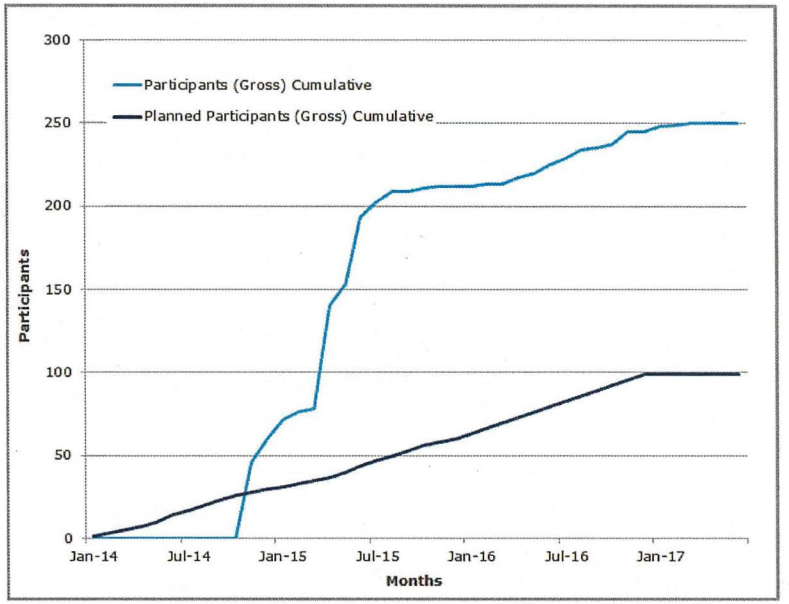


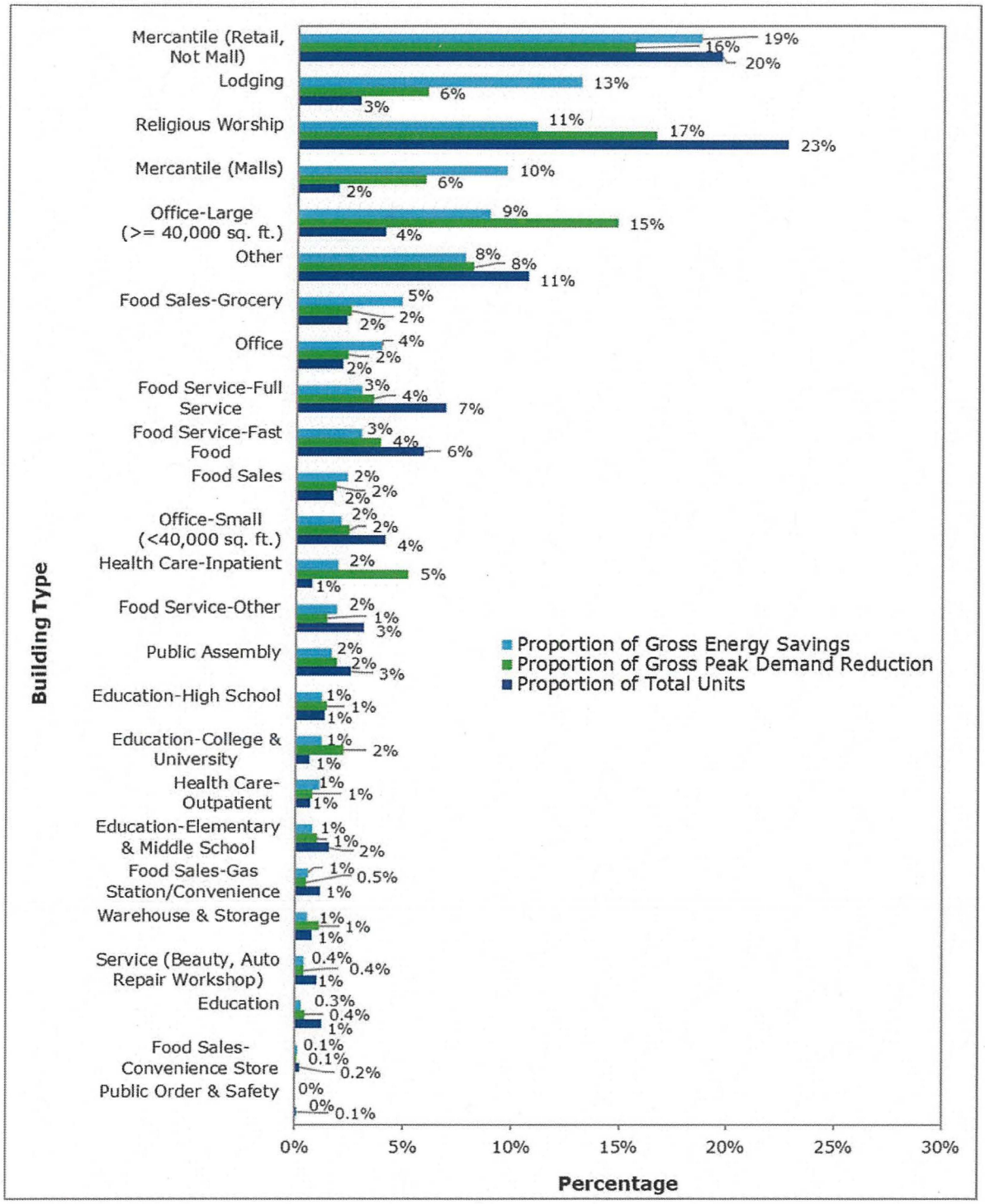
Figure 5-6. NC Non-residential Duct Testing and Sealing Program Cumulative Participants



5.1.2.3 Additional Virginia Program Data

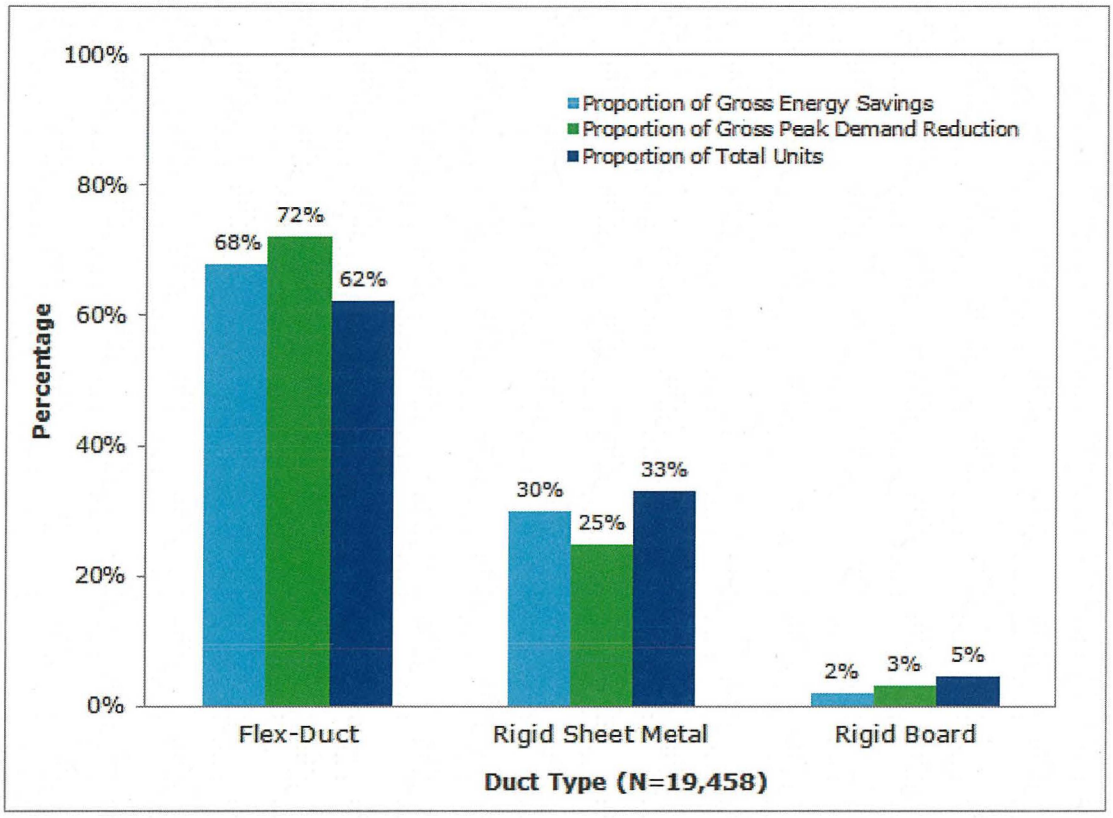
Figure 5-7 shows the distribution of gross energy savings, peak demand reductions, and program participants by building type in Virginia throughout the history of the program. More than half of the program gross energy savings occurred in four building types: mercantile (retail, not mall), lodging, religious worship, and mall spaces.

Figure 5-7. VA Non-residential Duct Testing and Sealing Program Performance Indicators by Building Type (2012-2017)



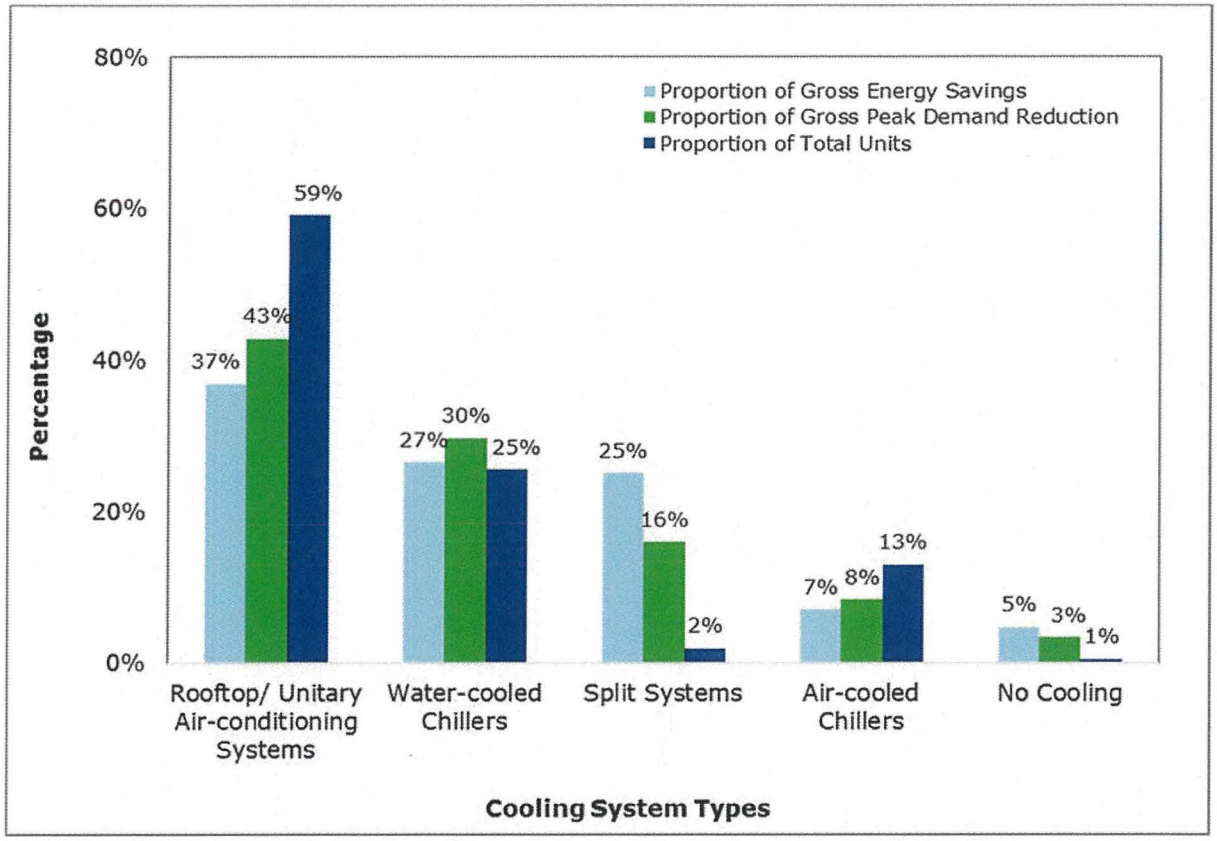
The types of ductwork that were tested and sealed in Virginia are shown in Figure 5-8. Nearly two-thirds of the units were served by flexible ductwork, one-third by sheet metal ductwork, and the balance by rigid duct board.

Figure 5-8. VA Non-residential Duct Testing and Sealing Program Performance Indicators by Ductwork Type (2012-2017)



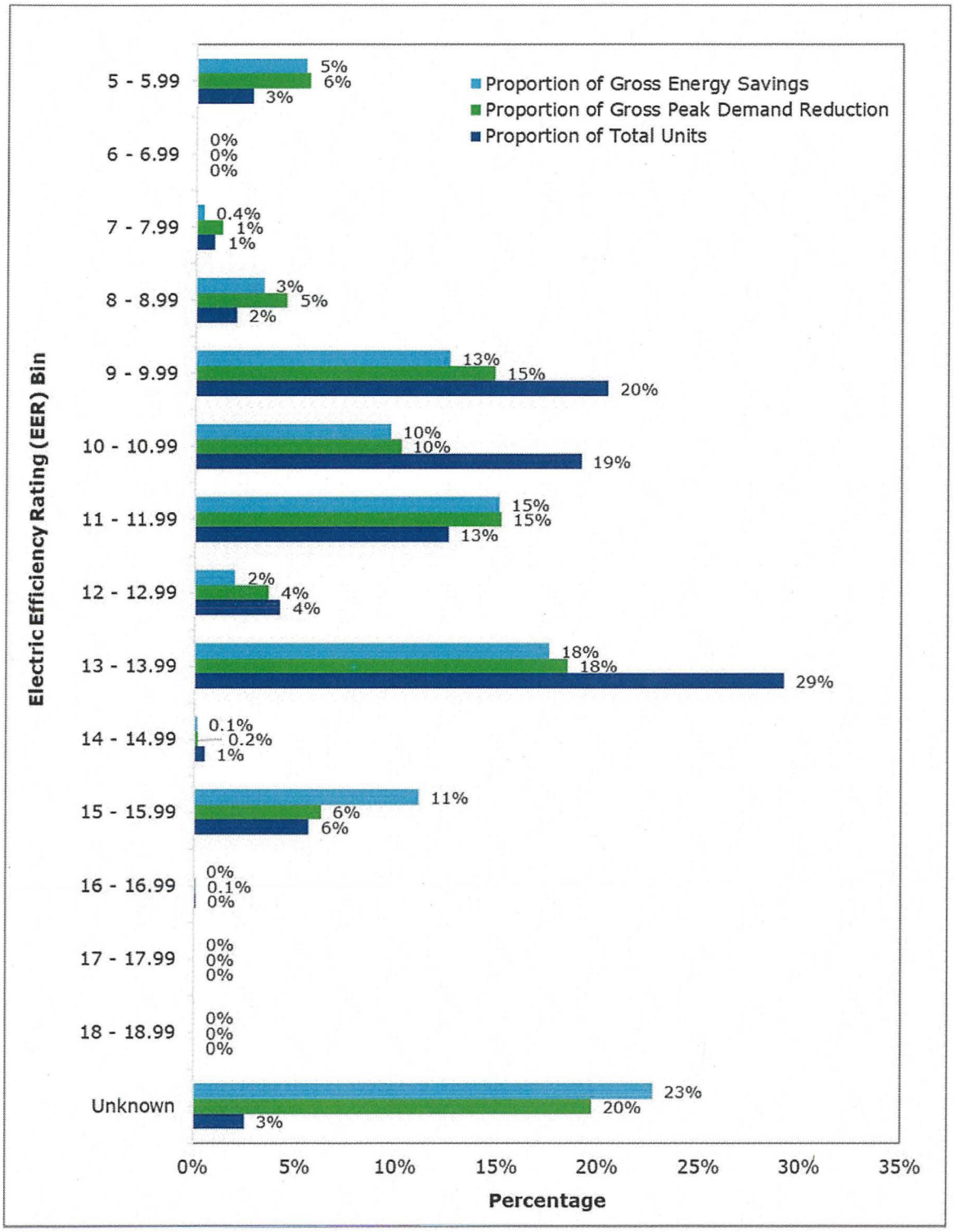
The types of space-cooling systems served by the ductwork that was tested and sealed were as shown in Figure 5-9. Over the life of the program, 59% of the HVAC systems were rooftop/unitary heat pumps, but those only yielded 37% and 43% of the annual energy savings and demand reduction, respectively. On the other hand, while only 2% of the HVAC systems were split systems, those yielded 25% and 16% of the annual energy savings and demand reduction, respectively.

Figure 5-9. VA Non-residential Duct Testing and Sealing Program Performance Indicators by Cooling System Type (2012-2017)



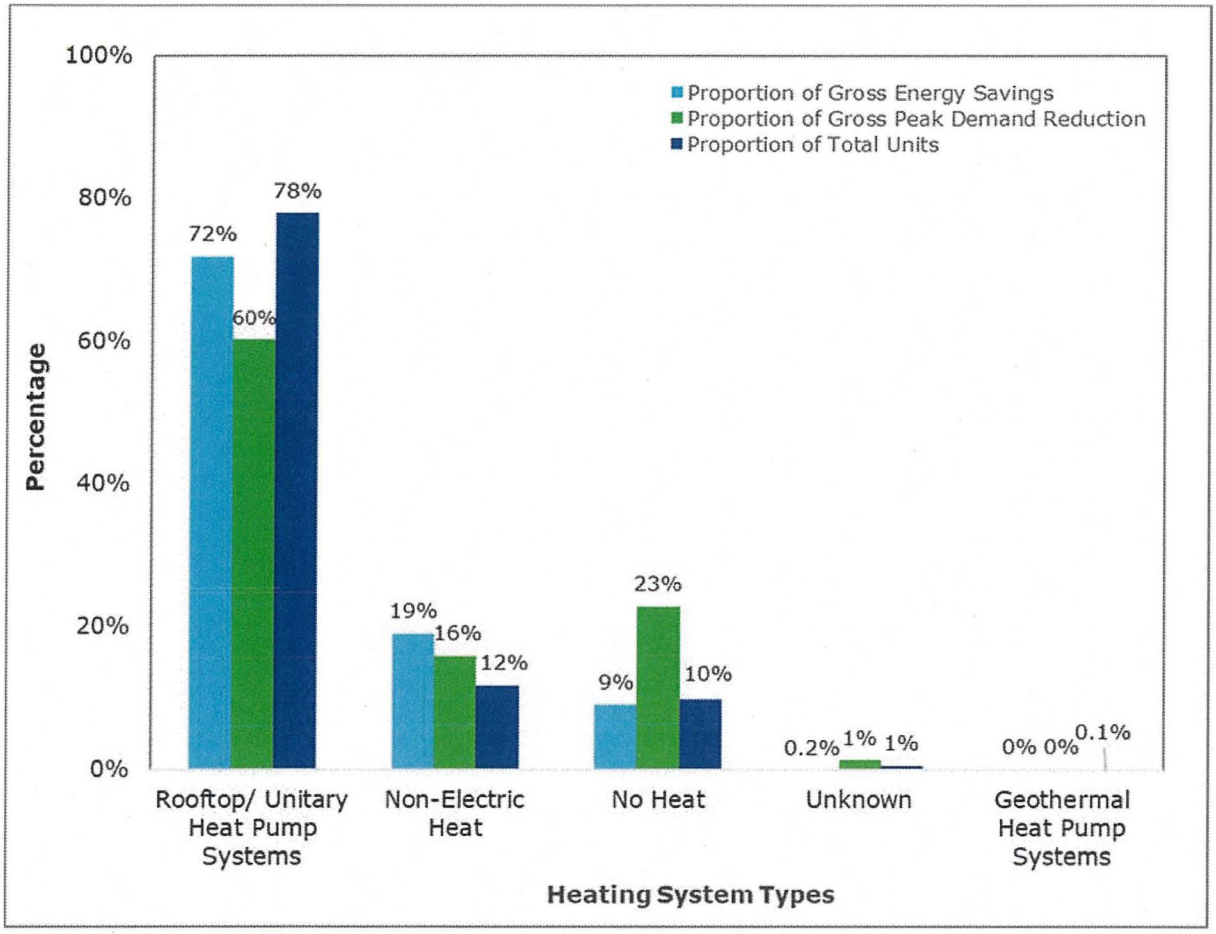
The efficiency ratings of the cooling side of the systems shown in the preceding chart are as shown, in bins, in Figure 5-10. Just over a third of the cooling systems (36%) had an EER rating of 13 or higher.

Figure 5-10. VA Non-residential Duct Testing and Sealing Program Performance Indicators by Efficiency Rating Bins (2012-2017)



The types of space-heating systems served by the ductwork that was tested and sealed were as shown in Figure 5-11. Over the life of the program, 78% of the HVAC systems were rooftop/unitary heat pumps and 22% had non-electric or no heat.

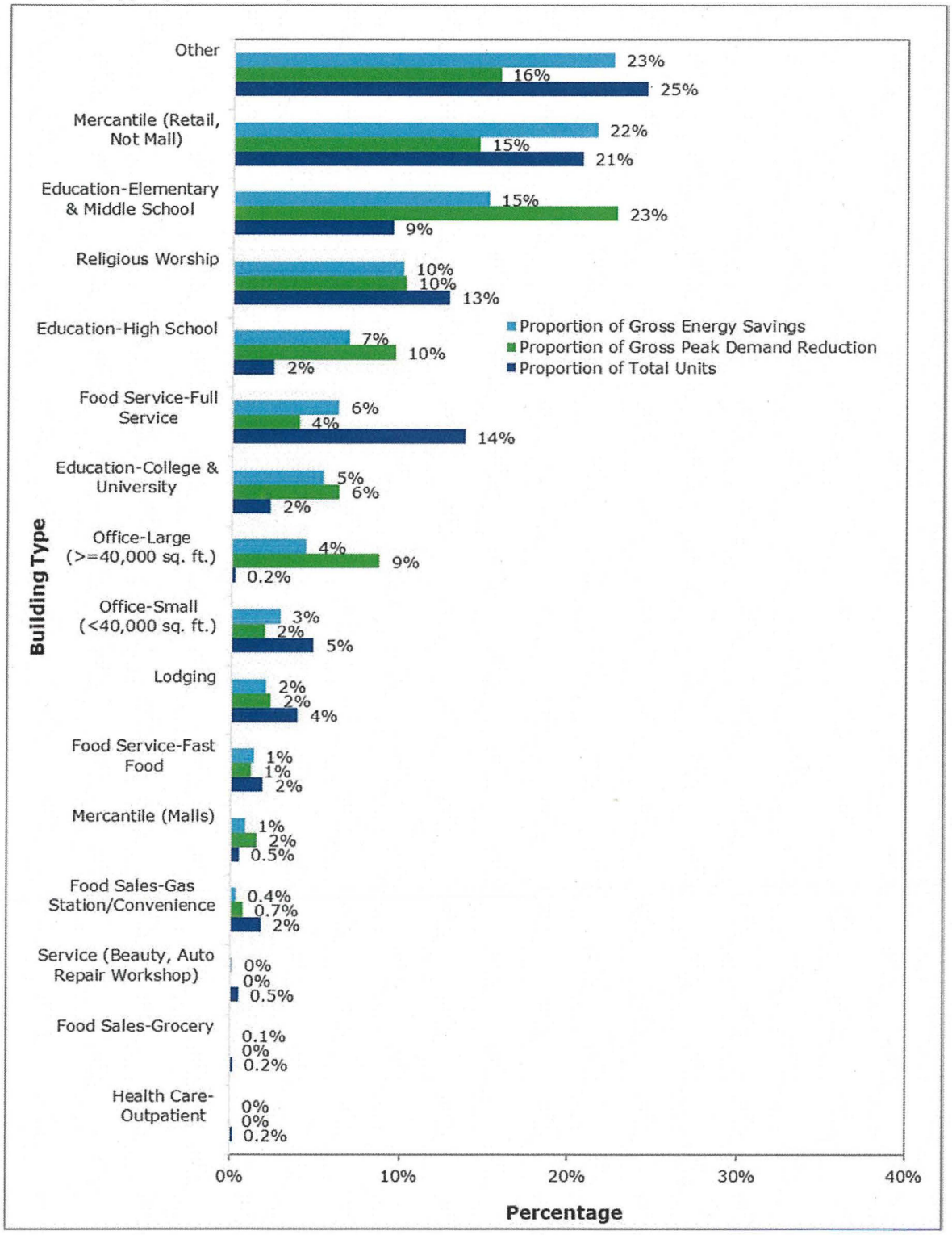
Figure 5-11. VA Non-residential Duct Testing and Sealing Program Performance Indicators by Heating System Type (2012-2017)



5.1.2.4 Additional North Carolina Program Data

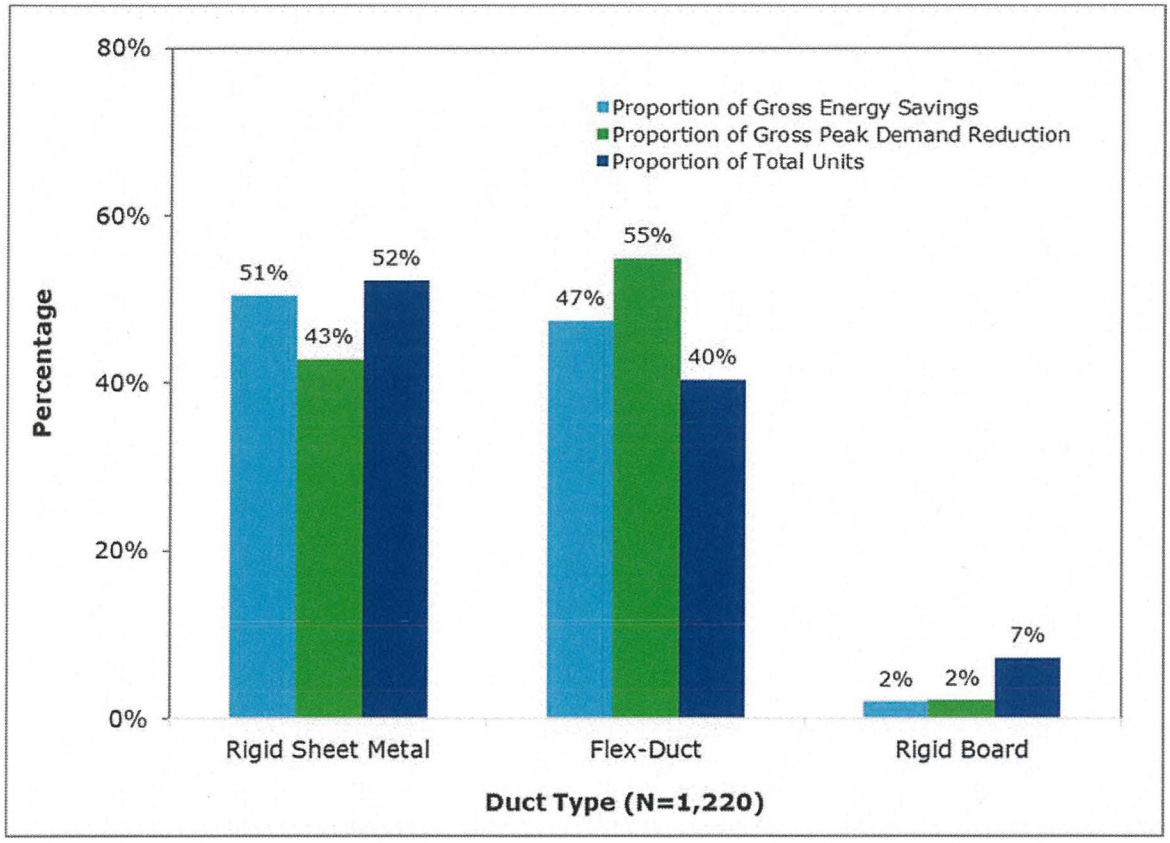
Over the lifetime of the program in North Carolina, approximately 70% of gross energy savings were realized in four building types: other, mercantile (retail, not mall), elementary and middle schools, and religious worship spaces (see Figure 5-12).

Figure 5-12. NC Non-residential Duct Testing and Sealing Program Performance Indicators by Building Type (2014-2017)



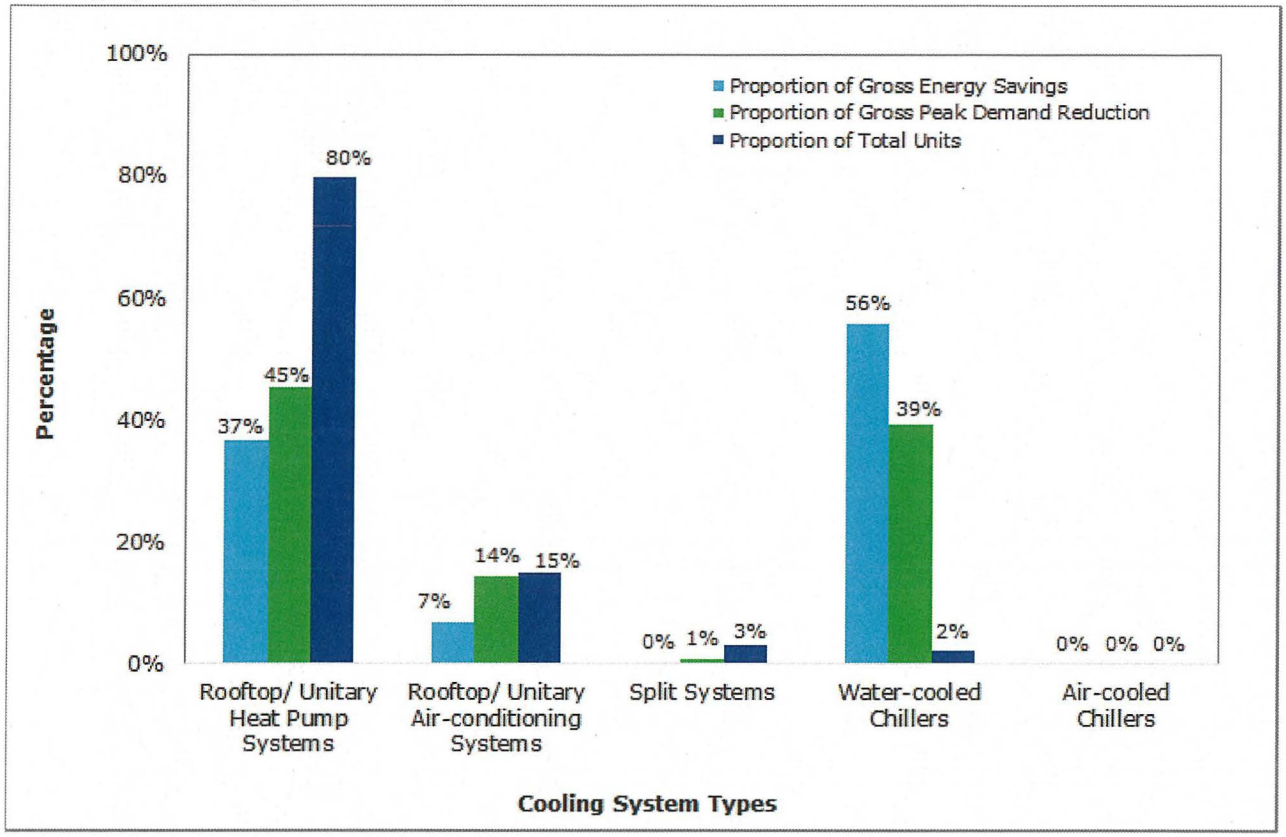
Over the lifetime of the program in North Carolina, 52% of the ducted systems sealed were comprised of sheet-metal ductwork. This is a larger proportion than among the Virginia program participants (33%).

Figure 5-13. NC Non-residential Duct Testing and Sealing Program Performance Indicators by Ductwork Type (2014-2017)



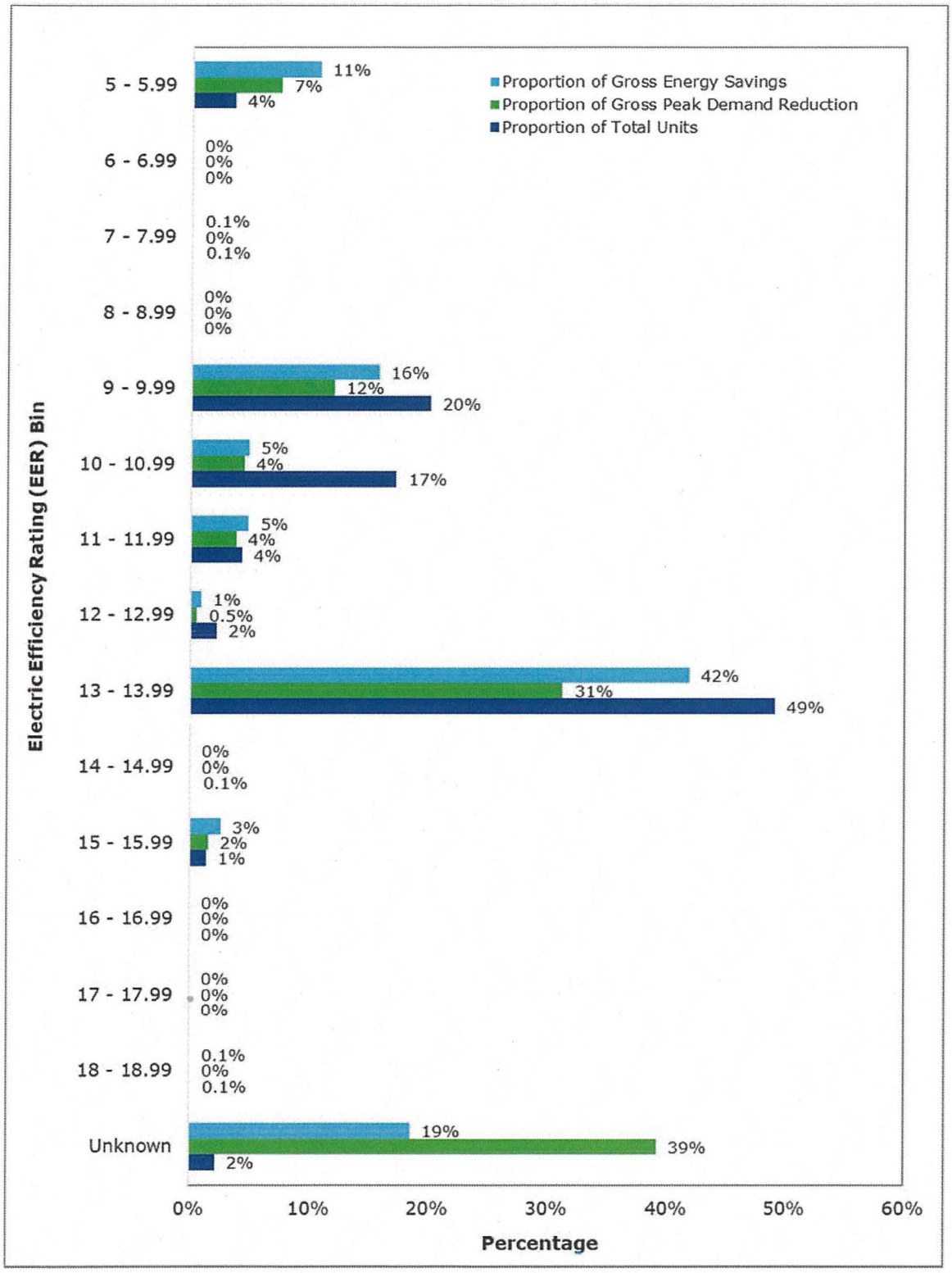
In North Carolina, duct sealing at water-cooled chiller systems accounted for 2% of the HVAC systems served, but 56% of the program-wide annual energy savings and 39% of the program's peak demand reduction as shown in Figure 5-14. On the other hand, heat pumps comprise 80% of the ductwork systems tested and sealed, but yield 37% and 45% of the annual energy and demand reduction savings, respectively.

Figure 5-14. NC Non-residential Duct Testing and Sealing Program Performance Indicators by Cooling System Type (2014-2017)



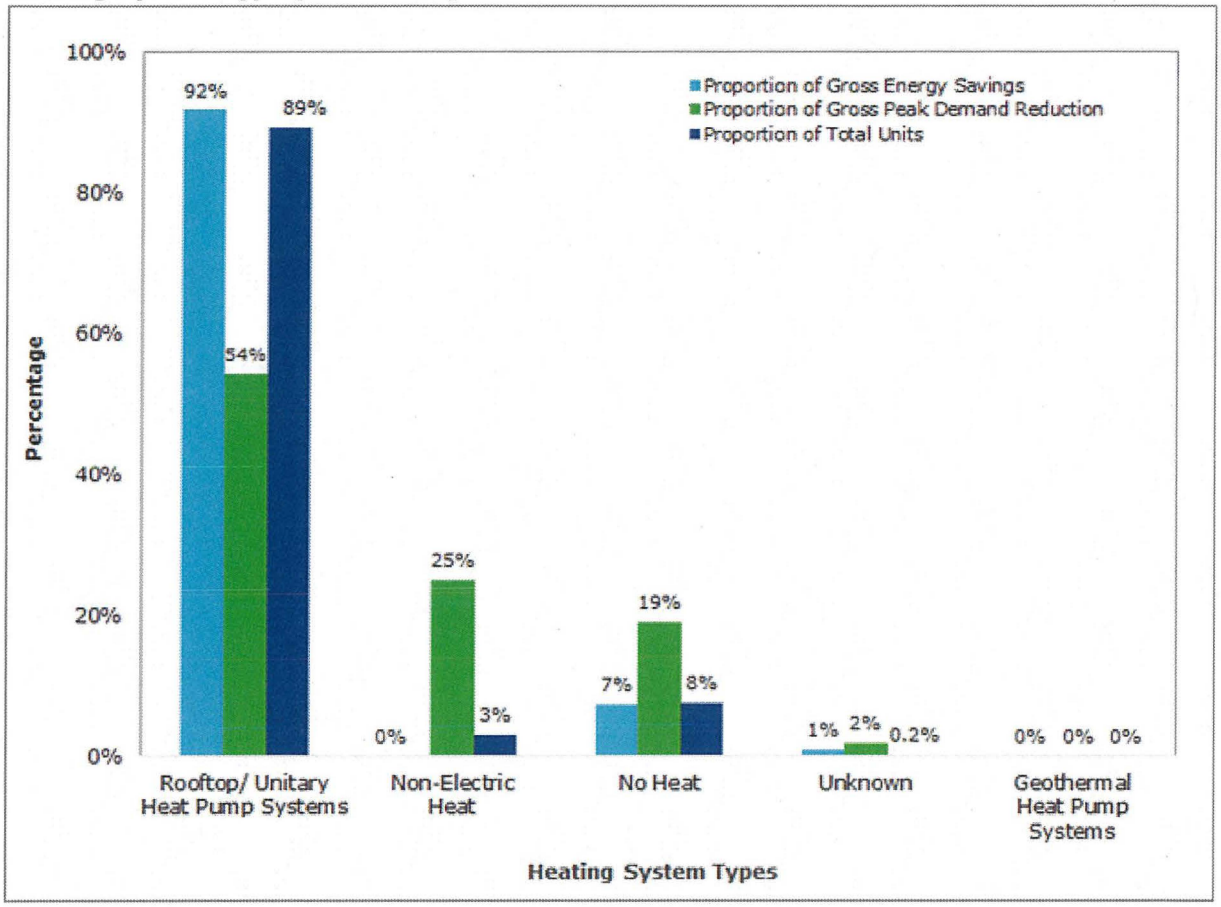
In Figure 5-15, the cooling efficiencies of the participant systems are shown, in EER bins. Approximately Fifty percent of the participant systems that serve the tested and sealed ductwork had an EER rating of 13 or higher.

Figure 5-15. NC Non-residential Duct Testing and Sealing Program Performance Indicators by Cooling-System Efficiency Rating (2014-2017)



The types of space-heating systems served by the ductwork that was tested and sealed were as shown in Figure 5-16. Over the life of the program, 89% of the HVAC systems were rooftop/unitary heat pumps that yielded 92% and 54% of the annual energy savings and demand reduction, respectively.

Figure 5-16. NC Non-residential Duct Testing and Sealing Program Performance Indicators by Heating System Type (2014-2017)



5.2 Non-residential Energy Audit – Virginia and North Carolina

Under the now-closed DSM Phase II Non-residential Energy Audit Program, qualifying customers were eligible to receive an on-site energy audit by a contractor participating in Dominion Energy's contractor network. To qualify for this Program, the customer must have been responsible for the electric bill and must have been the owner of the facility or reasonably able to secure permission to complete the measures. After an audit was performed, the customer received a personalized report showing projected energy and potential cost savings that could be anticipated from the implementation of options identified during the audit. Once a qualifying customer provided documentation that at least one of the recommended EE improvements had been made, a portion of the audit value was refunded up to the full value of the audit, based on the measures installed.

This program was implemented through a contractor network, so customers had to contact a participating contractor to receive the energy audit. Customers were not considered participants until a completed application form had been processed and a rebate issued. Work had to have been completed within six months of the audit to qualify for a rebate. In 2016, Dominion Energy announced the program was closed to new participants in both states, and that to be eligible for a rebate, the service must have been completed by a participating contractor by December 24, 2016 and rebate applications received by February 7, 2017. The rebate form submission and processing time all together can add up to 135 days before a participant is registered in the tracking and reporting system. This report section shows those final enrollments in 2017 that were serviced in the last months of 2016.

The program measures offered were primarily EE measures designed to decrease energy consumption through replacement of inefficient equipment or installation of new equipment that exceeded current efficiency standards. Measures eligible to receive a rebate in 2016 included the following:

- LED exit sign
- LED reflector lamp and A-line LED
- Occupancy sensor
- Economizer repair
- LED case lighting
- Reach-in unit occupancy sensor
- Plug-load occupancy sensor
- ENERGY STAR® software
- Smart strip
- Anti-sweat heat control, door heater control (cooler and freezer)
- Door closer (cooler and freezer)
- Refrigeration coil cleaning
- Door gasket (cooler and freezer)
- Electronically commutated motor (ECM) at evaporator fan (display case and walk-in)

- Forced air circulation controller (cooler and freezer)
- Floating head pressure control
- Refrigeration night cover
- Strip curtain (cooler and freezer)
- Suction pipe insulation (cooler and freezer)
- Vending machine miser (refrigerated, non-refrigerated, and glass front refrigerated)
- Zero-heat, reach-in glass door

The Non-residential Energy Audit Program allowed customer assignment of the rebate to the contractor beginning in June 2013. In 2016, 99% of participants assigned their rebates to the contractor. Table 5-4 shows the proportion of rebates given to contractors of all participants in 2016.

Table 5-4. Proportion of 2016 Non-residential Energy Audit Participants Who Assigned Rebate to Contractors Directly

State	Percent of Energy Audit Rebated	Percent of Rebates Given to Contractors
VA	1%	99%
NC	0%	100%
Overall	**1%**	**99%**

5.2.1 Methods for the Current Reporting Period

For the current period, the evaluation approach included reviewing the tracking data and then estimating gross energy savings and peak demand reduction using STEP Manual calculations.

For this program, the deemed savings and peak demand reduction are multiplied by the realization rate and NTG factors at the measure level. Realization rates and NTG factors for measures installed by December 2013 were evaluated in the 2014 impact evaluation study for the program. The resulting realization rates and NTG factors are shown in Table 5-5. Measures that were not verified in the 2014 study receive a 100% realization rate and the program planning assumption NTG factor. This includes measures that received no response in the 2014 study, measures that had not yet been installed by any participants by December 31, 2013, and measures that were added to the eligibility list in 2014 as part of DSM Phase III.

To calculate program overall realization rates and NTG factors for a particular period, realization rates and NTG factors per installed measure were weighted by deemed energy savings for that measure. As a consequence, program overall realization rates and NTG factors vary each reported month and year.

Table 5-5. Non-residential Energy Audit Program Realization Rates by Measure Type and Program Overall for the 2012-2013 Evaluation Period

Measure Type	Energy (kWh/year) Realization Rate	Standard Error	Peak Demand (kW) Realization Rate	Standard Error	NTG Factor	Standard Error
Walk-In Door Closers	89.8%	6.1%	91.2%	5.5%	94.2%	5.5%
Smart Strips	70.0%	8.3%	-	-	100.0%	<1.0%
ECMs	78.6%	<1.0%	78.6%	<1.0%	75.5%	26.0%

Measure Type	Energy (kWh/year) Realization Rate	Standard Error	Peak Demand (kW) Realization Rate	Standard Error	NTG Factor	Standard Error
LED Display Case Lighting	97.5%	<1.0%	97.5%	<1.0%	100.0%	0.0%
Occupancy Sensor	93.1%	<1.0%	51.2%	<1.0%	100.0%	0.0%
Door Gaskets	99.2%	4.0%	99.2%	4.0%	99.4%	<1.0%
Strip Curtains	36.1%	22.1%	35.3%	21.9%	99.7%	<1.0%

Table 5-6 outlines Dominion Energy's initial program planning assumptions used to design the program. As previously described, DNV GL uses the planned NTG factor in its deemed savings calculations for the program measures that have not yet been verified through EM&V.

Table 5-6. Non-residential Energy Audit Program Planning Assumptions System-wide

Item	Description
Target Market	Non-residential customers
NTG Factor	83%
Measure Life	7 years
Average Energy Savings (kWh) per Participant per Year	29,541 kWh per participant per year
Average Peak Demand Reduction (kW) per Participant	5.27 kW per participant per year
Average Rebate (US $) per Participant	$1,852 per participant

5.2.2 Assessment of Program Progress Towards Plan

The next two sections provide tables and charts summarizing the key indicators of the Non-residential Energy Audit program history in Virginia and North Carolina. The two subsections thereafter provide charts to show the types of participant buildings involved in the program as well as other participant metrics associated with the measures installed.

5.2.2.1 Key Virginia Program Data

Table 5-7, summarizes key indicators of progress from July 1, 2012 through February 28, 2017 in Virginia. Detailed program indicators by year and month are provided in Appendix A.8.

In Virginia, program enrollment was closed at the end of 2016, although applications could be approved until February 7, 2017. The gross number of audits decreased from 118 in 2016 to four in 2017 and brought the program total to 735 audits. The gross number of participants decreased from 125 in 2016 to 15 in 2017 and brought the program total to 1,632 participants (68% of those planned). The net annual energy savings for 2017 were 162,456 kWh/year and comprised 0.5% of the total net annual energy savings of 39,138,178kWh/year that were achieved over the life of the program. This represents 75% of the planned lifetime savings. The net demand reductions for 2017 were 19 kW, bringing the program total to 3,196 kW of the 24,384 kW planned (13% of planned).

Over the life of the program, the average gross annual energy savings per participant was 26,808 kWh/year (29,541 kWh/year planned). The average gross peak demand reduction per participant was 2.4kW (5.27 kW planned). The average rebate per participant was $4,456 and the overall program costs were $11,109,197,

or 124% of planned. The cumulative progress over the life of the program is shown in Figure 5-17 and Figure 5-18, immediately following Table 5-7.

Table 5-7. VA Non-residential Energy Audit Program Performance Indicators (2012-2017)

Category	Item	Virginia						
		2012	2013	2014	2015	2016	2017	Program Total (2012-2017)
Operations and Management Costs ($)	Direct Rebate							
	Direct Implementation							
	Direct EM&V							
	Indirect Other (Administrative)	$67,698	$151,749	$309,322	$15,730	$74,888	$10,321	$629,710
Total Costs ($)	Total							
	Planned							
	Variance							
	Cumulative % of Planned	67%	93%	260%	24%	127%	86%	124%
Audits	Total (Gross)	8	514	22	69	118	4	735
Participants	Total (Gross)	1	302	1,116	73	125	15	1,632
	Planned (Gross)	138	373	589	589	721	0	2,410
	Variance	-137	-71	527	-516	-596	15	-778
	Cumulative % of planned (Gross)	1%	81%	189%	12%	17%	N/A	68%
Installed Energy Savings (kWh/year)	Total (Gross)	35,433	4,498,061	31,588,249	667,407	6,765,468	196,549	43,751,165
	Attribution Rate weighted by Measure[56]	100%	98%	99%	84%	99%	95%	93%
	Realization Rate weighted by Measure[57]	97%	72%	93%	97%	92%	86%	91%
	Adjusted (Net) by Realization Rate and Attribution Rate	34,538	3,168,993	29,013,666	546,608	6,211,917	162,456	39,138,178
	Planned (Net)	3,401,000	9,140,494	17,399,649	17,399,649	4,818,529	0	52,159,321

[56] The attribution rate adjustment was updated based on the 2015 Load Shape Study.

[57] The realization rate adjustment was updated based on the 2015 Load Shape Study.

Category	Item	Virginia						
		2012	2013	2014	2015	2016	2017	Program Total (2012-2017)
	Cum. % toward planned total (Net)	1.0%	35%	167%	3%	129%	N/A	75%
	Avg. Savings per Participant (Gross)	35,433	14,894	28,305	9,143	54,124	13,103	26,808
	Avg. Savings per Participant (Net)	34,538	10,493	25,998	7,488	49,695	10,830	23,982
Installed Demand Reduction	Total (Gross)	10	956	2,104	9	765	24	3,868
	Attribution Rate weighted by Measure[56]	100%	98%	99%	94%	99%	93%	99%
	Realization Rate weighted by Measure[57]	97%	78%	83%	66%	92%	86%	84%
	Adjusted (Net) by Realization Rate and Attribution Rate	10	733	1,724	7	701	19	3,196
	Planned (Net)	600	1,614	15,040	6,390	740	0	24,384
	Cum. % toward planned total (Net)	2%	45%	11%	0%	95%	N/A	13%
	Avg. Demand per Participant (Gross)	10.0	3.2	1.9	0.1	6.1	1.6	2.4
	Avg. Demand per Participant (Net)	9.8	2.4	1.5	0.1	5.6	1.3	2.0
Program Performance	Cum. $Admin. per Cum. Participant (Gross)	$67,698	$502	$277	$215	$599	$386	$688
	Cum. $Admin. per Cum. kWh/year (Gross)	$1.91	$0.03	$0.01	$0.02	$0.01	$0.01	$0.05
	Cum. $Admin. per Cum. kW (Gross)	$6,737	$159	$147	$1,846	$98	$0.01	$422
	Cum. $EM&V per Cum. Total Costs ($)	17.6%	4.9%	6.7%	19.5%	4.5%	$0	41.1%
	Cum. $Rebate per Cum. Participant (Gross)							

Figure 5-17. VA Non-residential Energy Audit Net Adjusted Annualized Savings (kWh/year)

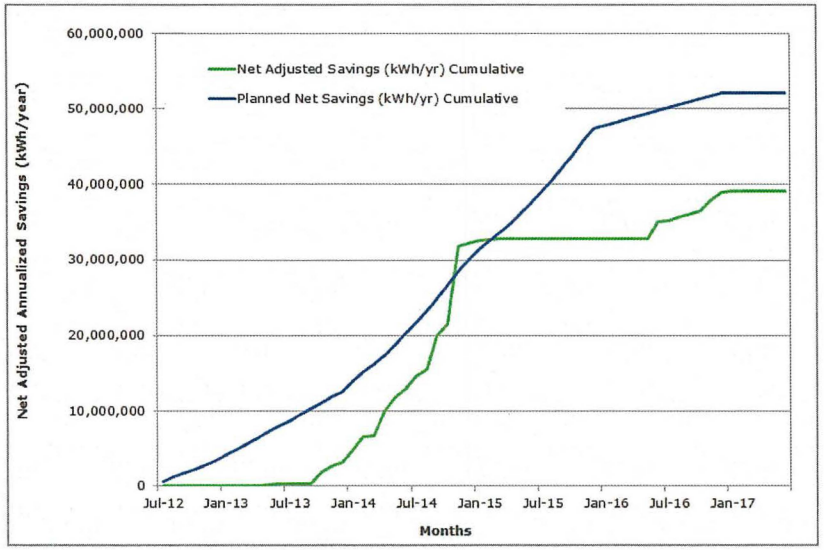
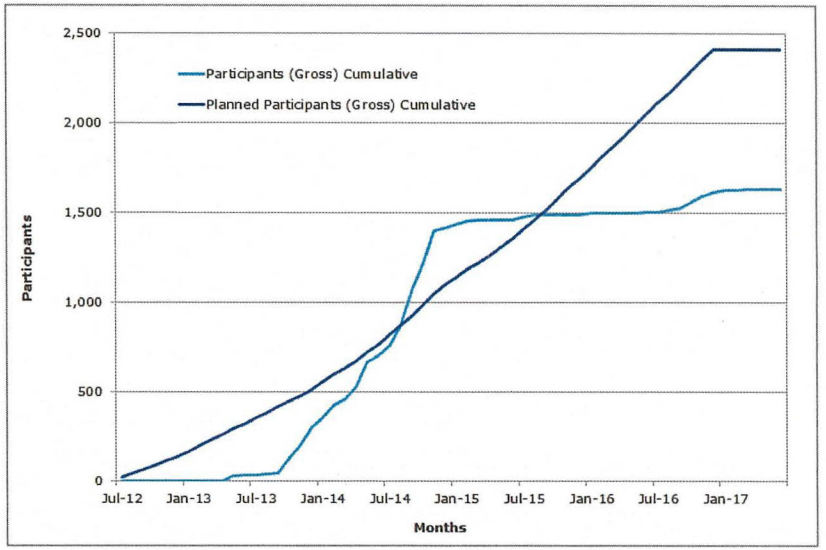


Figure 5-18. VA Non-residential Energy Audit Cumulative Participation



5.2.2.2 Key North Carolina Program Data

Table 5-8 summarizes key indicators of progress from January 1, 2014 through February 28, 2017 in North Carolina. Detailed program indicators by year and month are provided in Appendix A.8.

Program enrollment was closed at the end of 2016, although applications could be approved until February 7, 2017. The gross number of audits decreased from 14 in 2016 to zero in 2017 and brought the program total to 111 audits. The gross number of participants decreased from 12 in 2016 to two in 2017 and brought the program total to 108 participants (89% of those planned).

The net annual energy savings for 2017 were 491,719 kWh and comprised 35% of the total net annual energy savings of 2,243,824 kWh that were achieved over the life of the program in North Carolina. This represents 62% of the planned lifetime savings. The net demand reductions for 2017 were 80 kW, bringing the program total to 184 kW of the 424-kW planned (43% of planned).

Over the life of the program, the average gross annual energy savings per participant was 16,831 kWh/year (29,541 kWh/year planned). The average gross peak demand reduction per participant was 2.4 kW (5.27 kW planned). The average rebate per participant was $3,103 and the overall program costs were $531,553, or 127% of planned. The cumulative progress over the life of the program is shown in Figure 5-19 and Figure 5-20, immediately following Table 5-8.

Table 5-8. NC Non-residential Energy Audit Program Performance Indicators (2014-2017)

Category	Item	North Carolina				
		2014	2015	2016	2017	Program Total (2014-2017)
Operations and Management Costs ($)	Direct Rebate					
	Direct Implementation					
	Direct EM&V					
	Indirect Other (Administrative)	$6,487	$3,164	$3,088	$3,936	$16,675
Total Costs ($)	Total					
	Planned					
	Variance					
	Cumulative % of Planned	139%	105%	78%	515%	127%
Audits	Total (Gross)	16	81	14	0	111
Participants	Total (Gross)	16	78	12	2	108
	Planned (Gross)	37	37	48	0	122
	Variance	-21	41	-36	2	-14
	Cumulative % of planned (Gross)	43%	211%	25%		89%
Installed Energy Savings (kWh/year)	Total (Gross)	495,669	225,418	270,829	825,840	1,817,756
	Attribution Rate weighted by Measure[58]	99%	99%	99%	76%	89%
	Realization Rate weighted by Measure[59]	99%	69%	94%	79%	85%
	Adjusted (Net) by Realization Rate and Attribution Rate	487,729	153,498	253,571	491,719	1,386,517
	Planned (Net)	1,093,017	827,170	323,638	0	2,243,824
	Cum. % toward planned total (Net)	45%	19%	78%		62%
	Avg. Savings per Participant (Gross)	30,979	2,890	22,569	412,920	16,831
	Avg. Savings per Participant (Net)	30,483	1,968	21,131	245,859	12,838

[58] The attribution rate adjustment was updated based on the 2015 Load Shape Study.

[59] The realization rate adjustment was updated based on the 2015 Load Shape Study.

Category	Item	North Carolina				
		2014	2015	2016	2017	Program Total (2014-2017)
Installed Demand Reduction	Total (Gross)	57	30	31	147	264
	Attribution Rate weighted by Measure[58]	99%	99%	99%	76%	86%
	Realization Rate weighted by Measure[59]	99%	64%	94%	79%	83%
	Adjusted (Net) by Realization Rate and Attribution Rate	55	20	29	80	184
	Planned (Net)	195	179	50	0	424
	Cum. % toward planned total (Net)	28.5%	11.3%	58%	n/a	43%
	Avg. Demand per Participant (Gross)	3.6	0.4	2.5	73.6	2.4
	Avg. Demand per Participant (Net)	3.5	0.3	2.4	39.9	1.7
Program Performance	Cum. $Admin. per Cum. Participant (Gross)	$405	$41	$257	$1,968	$154
	Cum. $Admin. per Cum. kWh/year (Gross)	$0.01	$0.01	$0.01	$0.00	$0.01
	Cum. $Admin. per Cum. kW (Gross)	$114	$106	$101	$27	$63
	Cum. $EM&V per Cum. Total Costs ($)	12.2%	4.5%	7.2%	7.0%	8.4%
	Cum. $Rebate per Cum. Participant (Gross)					

Figure 5-19. NC Non-residential Energy Audit Cumulative Net Adjusted Annualized Savings (kWh/year)

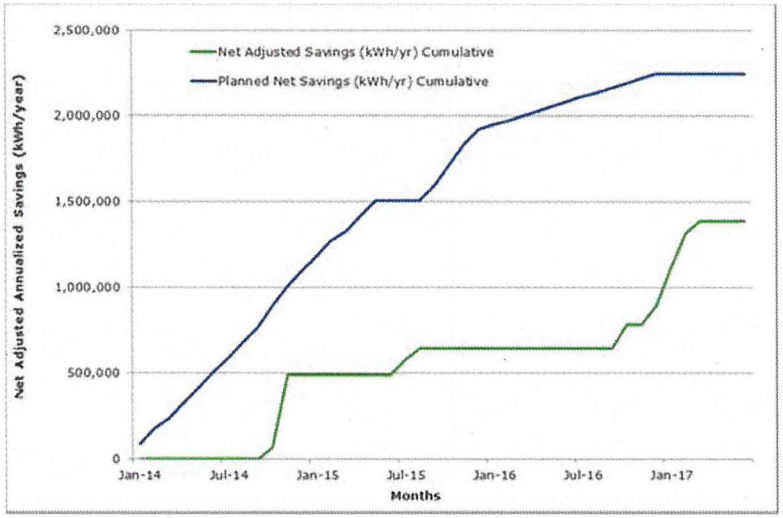
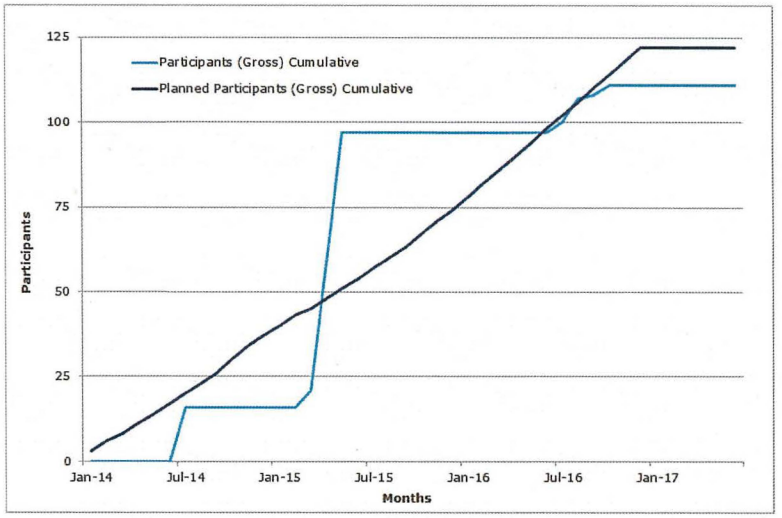


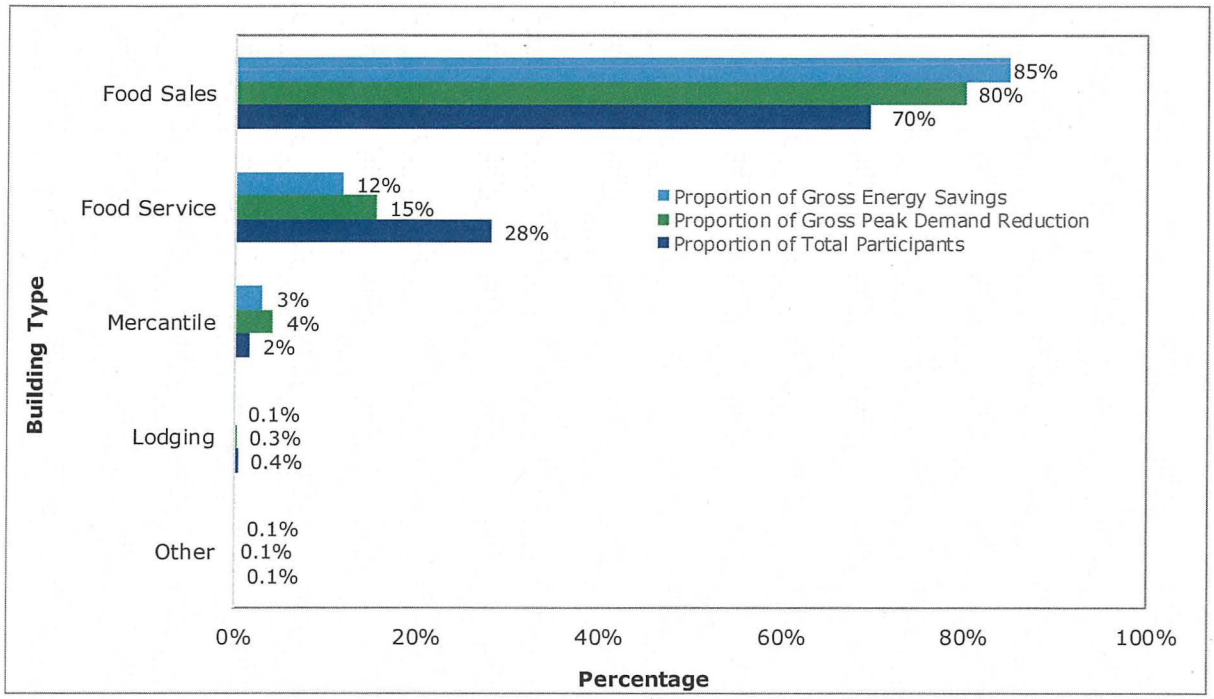
Figure 5-20. NC Non-residential Energy Audit Cumulative Program Participation



5.2.2.3 Additional Virginia Program Data

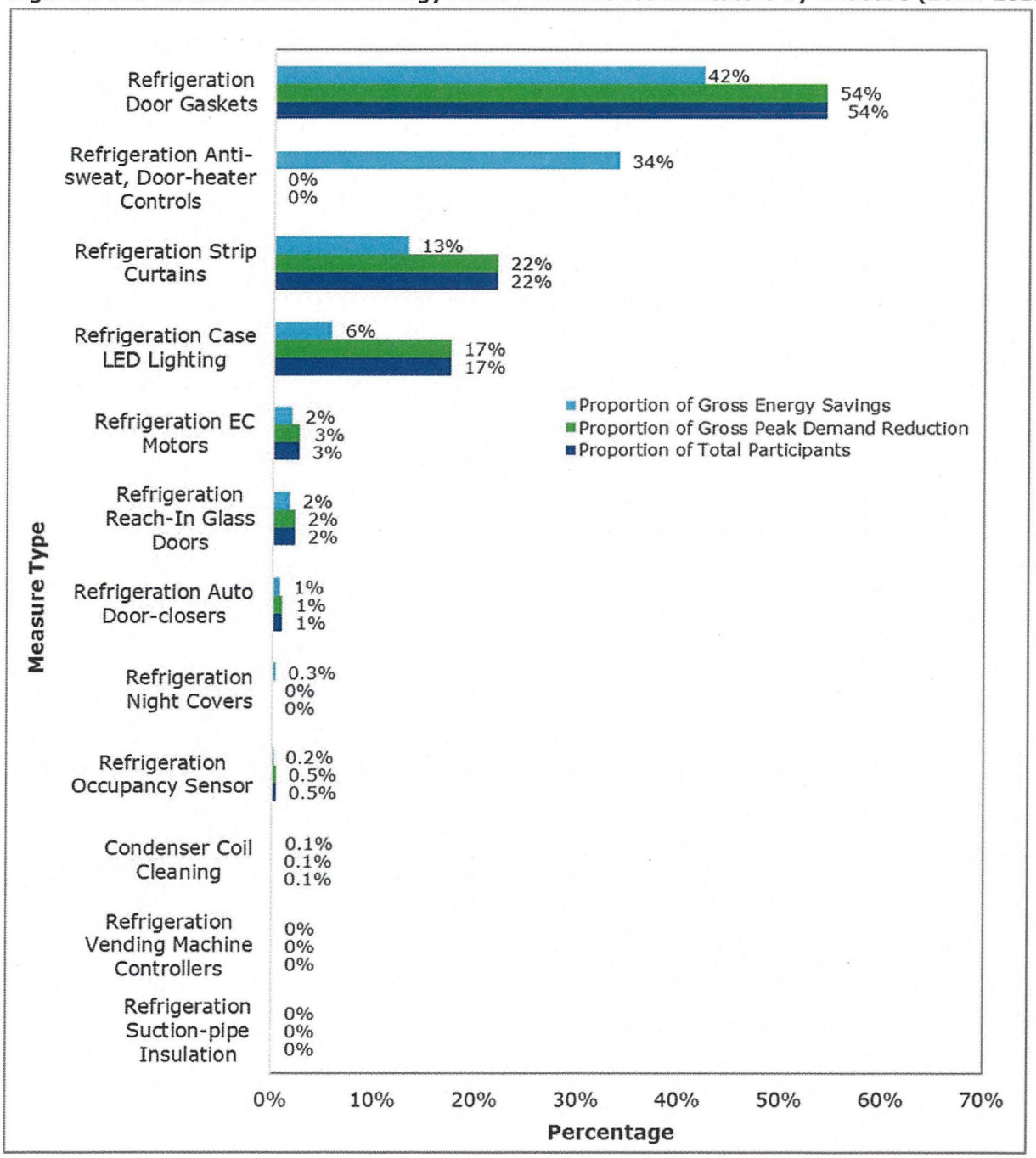
In Virginia, virtually all of the measures have been installed at three building types: food sales, food service, and mercantile facilities (Figure 5-21).

Figure 5-21. VA Non-residential Energy Audit Performance Indicators by Building Type (2012-2017)



The types of measures installed are as shown in Figure 5-22. Three-fourths of the annual energy savings were realized by refrigeration door gaskets and anti-sweat door-heater controls. Six percent of the annual energy savings were realized by LED lighting at refrigeration cases.

Figure 5-22. VA Non-residential Energy Audit Performance Indicators by Measure (2012-2017)



5.2.2.4 Additional North Carolina Program Data

In North Carolina, virtually 100% of the annual energy savings were realized in two building types: food sales and food service facilities (Figure 5-23).

Figure 5-23. NC Non-residential Energy Audit Performance Indicators by Building Type (2014-2017)