



2014 Northwest Commercial Building Stock Assessment

APPENDIX AAA Combined CBSA Building Characteristic Summary Tables

Prepared for:
Northwest Energy Efficiency Alliance



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June 17, 2015

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AAA.1 Introduction

This appendix presents updated versions of all summary tables and graphs provided in Appendix A and Appendix AA to the 2014 Northwest Commercial Building Stock Assessment Final Report. These updates represent the compilation of survey data collected from the 859 buildings sampled as part of the 2014 Core CBSA, as well as 521 additional sites surveyed as part of CBSA Oversample studies performed at the request of Bonneville Power Administration (BPA), Puget Sound Energy (PSE), Seattle City Light (SCL), and Snohomish County PUD (SnoPUD). Table AAA.1 provides the distribution of onsite surveys within each building type for the 2014 Combined CBSA database.

Table AAA.1. Number of Buildings Surveyed by Type in 2014 Combined CBSA

Building Type	Number of Buildings Surveyed
Assembly	137
Food Service	159
Grocery	129
Hospitals	62
Lodging	100
Office	171
Other	111
Residential Care	97
Retail	152
Schools	117
Universities	40
Warehouse	105
Total	1,380

All survey data was extrapolated to the region level using a methodology similar to the regional case weights explained in Appendix B. The application of case weights was adjusted to compensate for the additional building surveys performed in some utility territories as reflected in the combined database. For each sample cell, weights were calculated for each oversampled utility territory to ensure that findings from the additional sample increased the precision for findings locally, without biasing regional findings toward data collected in the oversampled territories. The weight given to each utility territory was based on its proportion of square footage relative to the region according to the CBSA Population Frame, by sample cell.

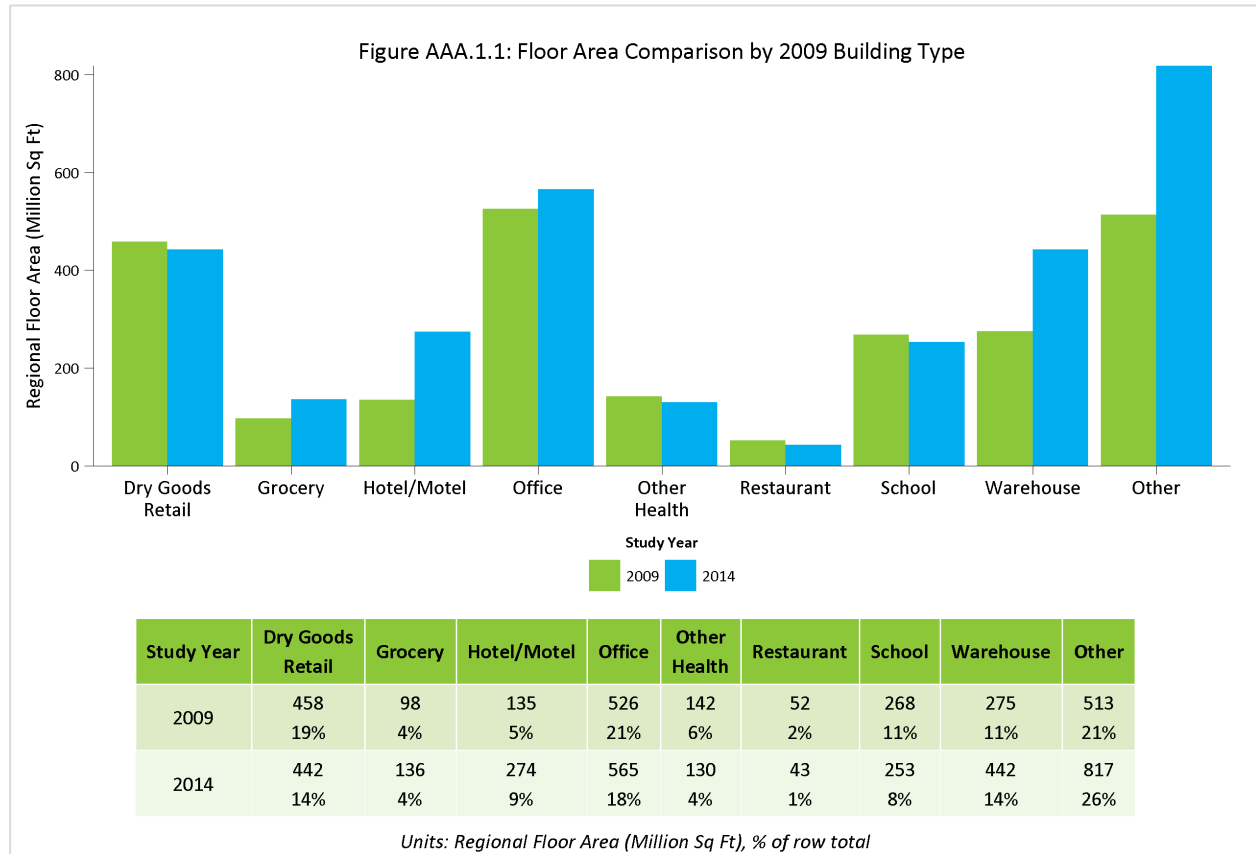
The sections that follow present the updated building characteristic and summary figures based on the Combined CBSA database. Generally, the changes in the summary data are marginal and do not impact overall findings. A few isolated findings changed as a result of the larger sample of survey data, including:

- The overall electric EUI across all building types went down slightly from 14.6 to 14.3 kWh per square foot. No individual building type changed significantly, though Food Service, Grocery, Warehouse, and Other experienced the largest changes.
- Natural gas EUI also decreased in aggregate from 0.39 to 0.35 therms per square foot. All building types except Other experienced decreases, with the largest difference in Grocery, Office, and Residential Care.
- The proportion of wattage and lighting power density from Fluorescent T12 lighting increased relative to findings from the Core CBSA database, but still represents a very low percentage of overall regional lighting.
- For some building types, Schools and Offices in particular, the proportion of Indoor Fluorescent T12 fixtures with 4 lamps was reduced in favor of T12 fixtures with 2 or 3 lamps.
- The total wattage and light power density attributable to outdoor signage increased.
- The age distribution for Minisplit HP HVAC systems shifted to newer equipment.
- For Universities, the proportion of square footage attributable to onsite square footage increased relative to earlier findings.

Statistical error bands (at the 90% confidence level) have been presented where applicable. Unless otherwise noted, all numbers represent the total and percent of *known* values – unknown or missing data were removed for clarity.

AAA.2 Comparisons to the 2009 CBSA

Comparisons to 2009 data required the project team to “re-map” 2014 CBSA building categories to the 2009 categories resulting in a reduction of buildings examined.



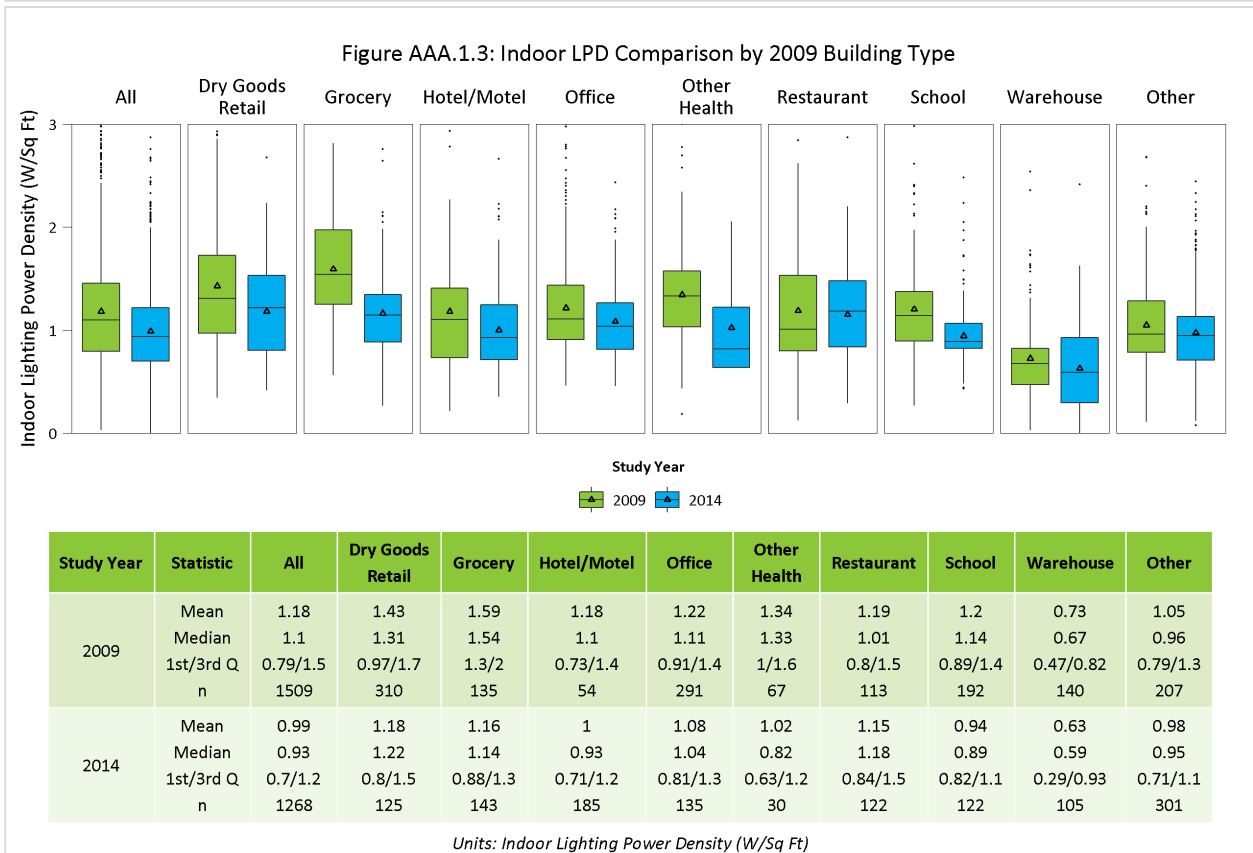
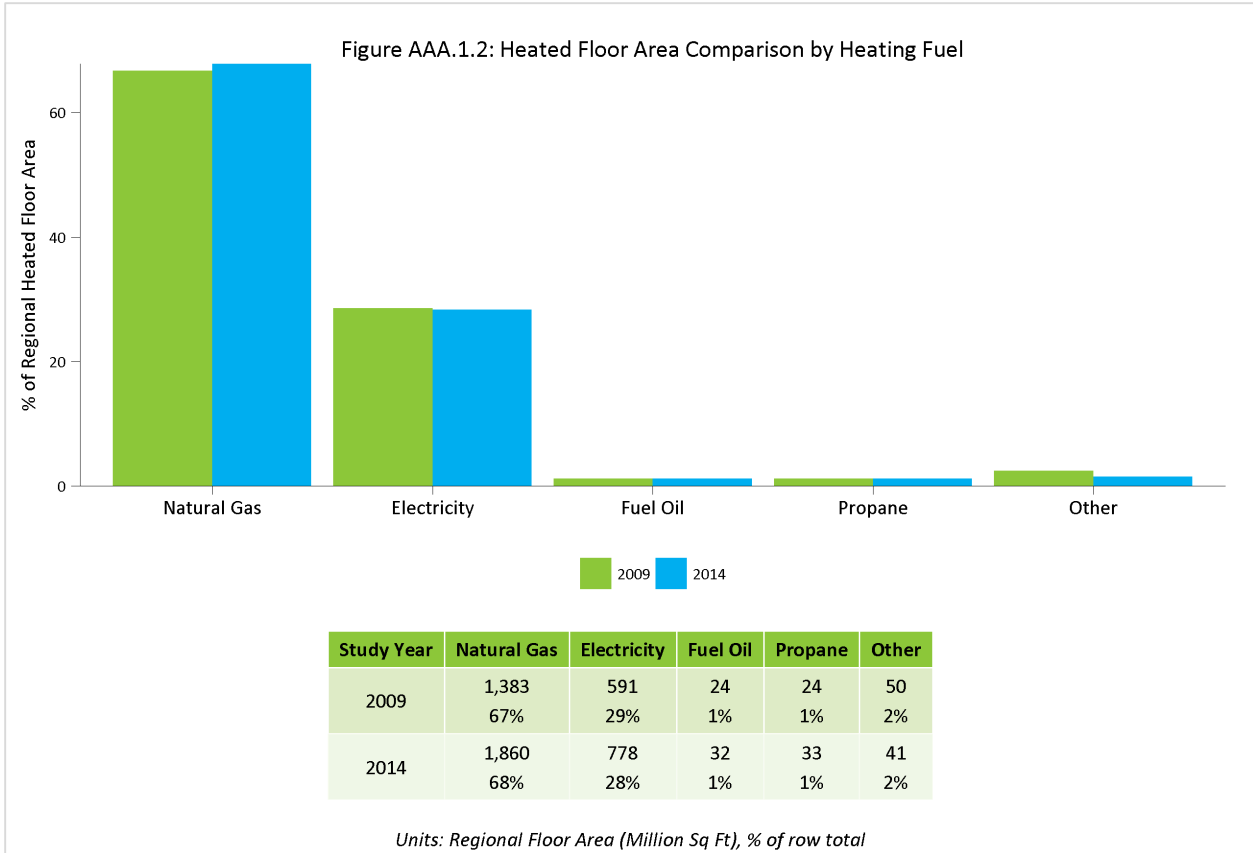
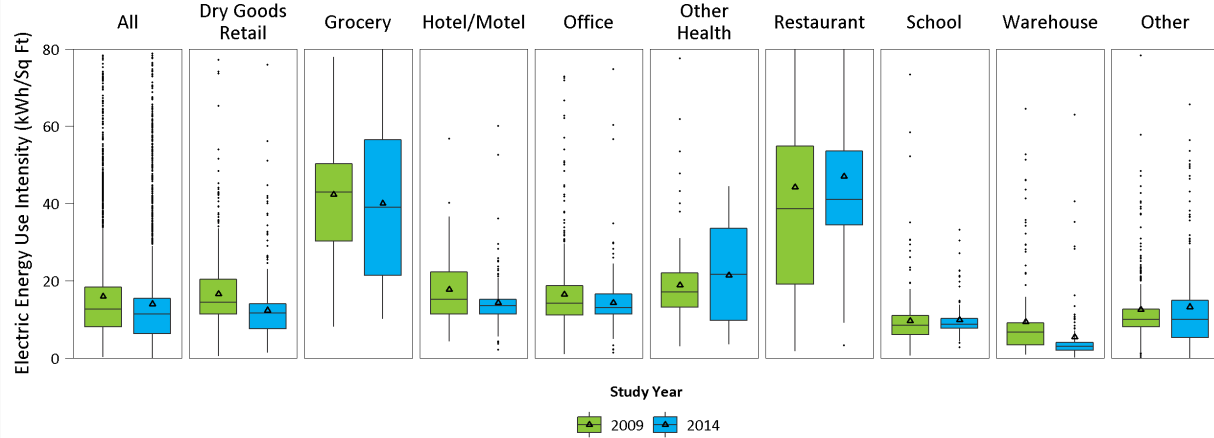


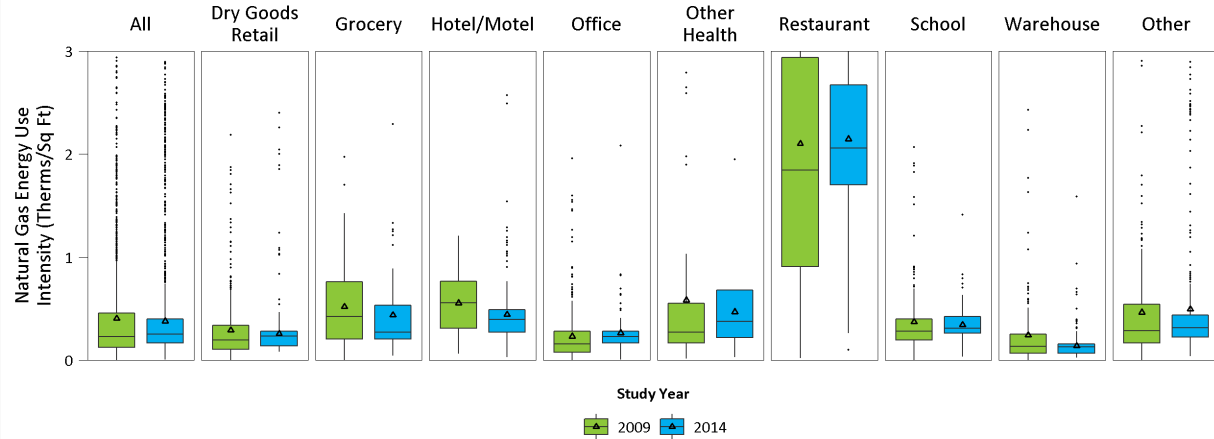
Figure AAA.1.4: Electric EUI Comparison by 2009 Building Type



Study Year	Statistic	All	Dry Goods Retail	Grocery	Hotel/Motel	Office	Other Health	Restaurant	School	Warehouse	Other
2009	Mean	16	16.6	42.4	17.7	16.5	18.9	44.2	9.66	9.4	12.6
	Median	12.6	14.5	43	15.2	14.2	17.1	38.6	8.45	6.72	10
	1st/3rd Q	8.1/18	11/20	30/50	11/22	11/19	13/22	19/55	6.1/11	3.5/9.1	8.1/13
	n	1869	366	151	70	400	94	130	211	182	265
2014	Mean	14	12.4	40	14.4	14.3	21.5	47	9.92	5.46	13.3
	Median	11.3	11.6	39	13.5	13.1	21.6	41	8.74	3.03	10
	1st/3rd Q	6.3/15	7.6/14	21/57	11/15	11/17	9.8/34	34/54	7.8/10	2/4.1	5.3/15
	n	1268	125	143	185	135	30	122	122	105	301

Units: Electric Energy Use Intensity (kWh/Sq Ft)

Figure AAA.1.5: Natural Gas EUI Comparison by 2009 Building Type

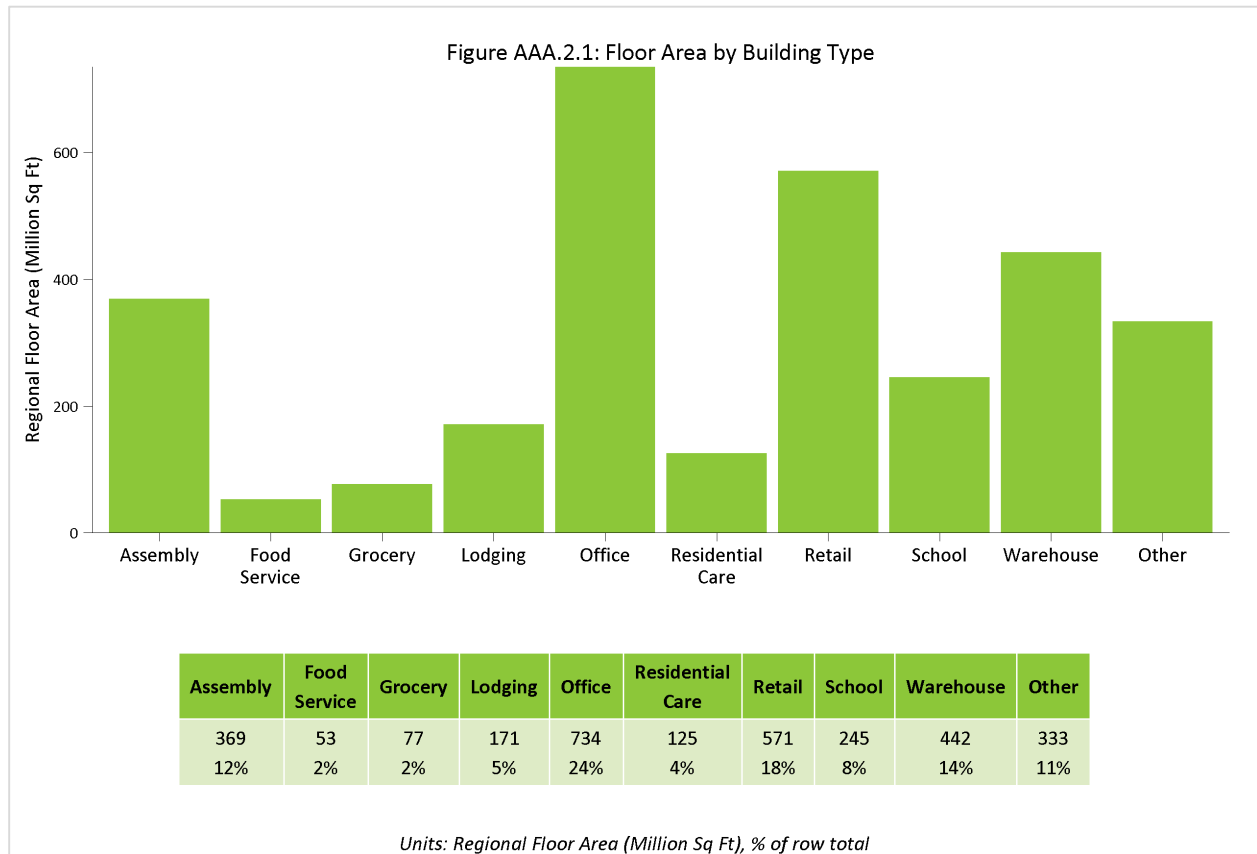


Study Year	Statistic	All	Dry Goods Retail	Grocery	Hotel/Motel	Office	Other Health	Restaurant	School	Warehouse	Other
2009	Mean	0.41	0.29	0.52	0.56	0.23	0.58	2.1	0.37	0.24	0.46
	Median	0.23	0.19	0.42	0.56	0.16	0.27	1.85	0.28	0.13	0.28
	1st/3rd Q	0.12/0.46	0.1/0.34	0.21/0.76	0.31/0.76	0.077/0.28	0.16/0.55	0.91/2.9	0.2/0.4	0.067/0.25	0.17/0.54
	n	1511	313	119	63	292	76	121	186	144	197
2014	Mean	0.38	0.26	0.44	0.44	0.26	0.47	2.15	0.34	0.14	0.5
	Median	0.25	0.23	0.27	0.4	0.23	0.38	2.06	0.31	0.13	0.31
	1st/3rd Q	0.16/0.4	0.14/0.28	0.21/0.53	0.27/0.49	0.16/0.28	0.22/0.68	1.7/2.7	0.26/0.42	0.065/0.15	0.22/0.44
	n	1014	103	98	170	84	17	112	105	79	246

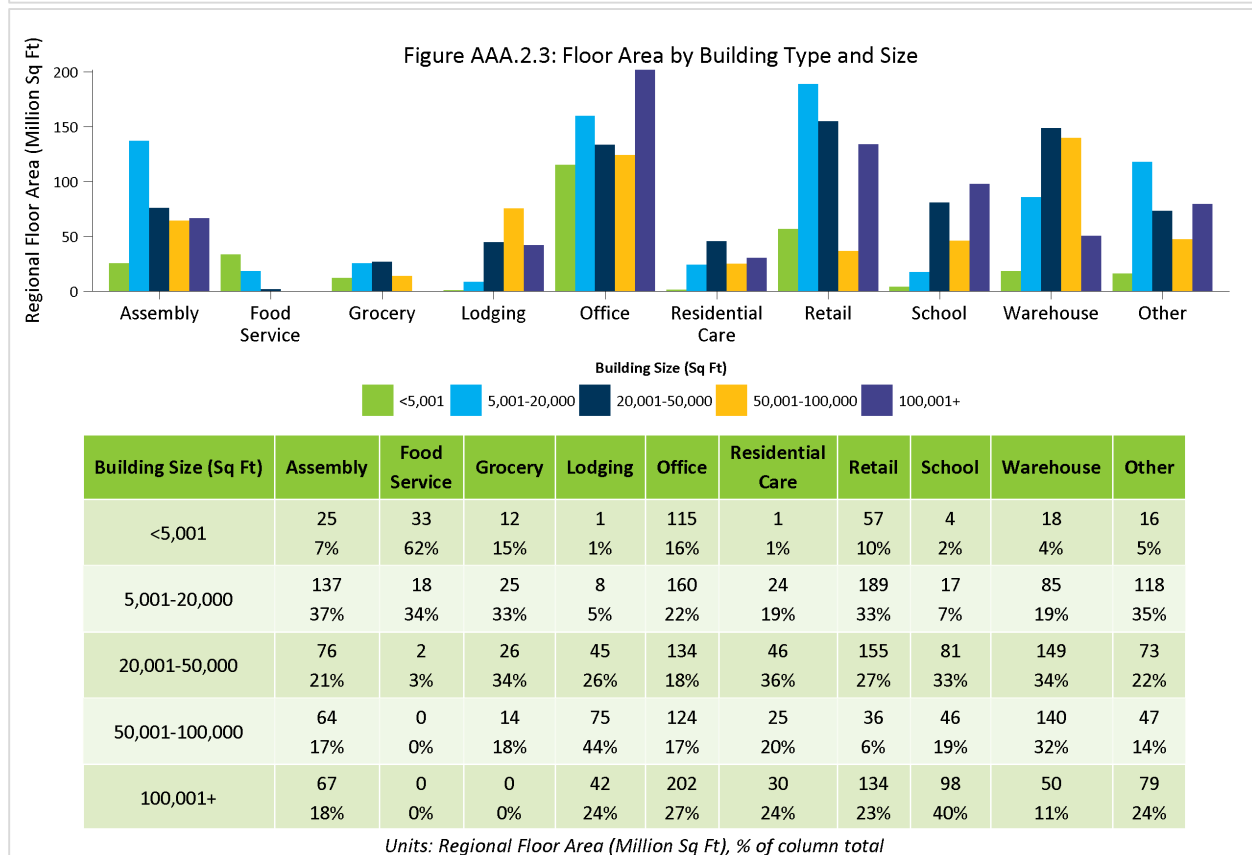
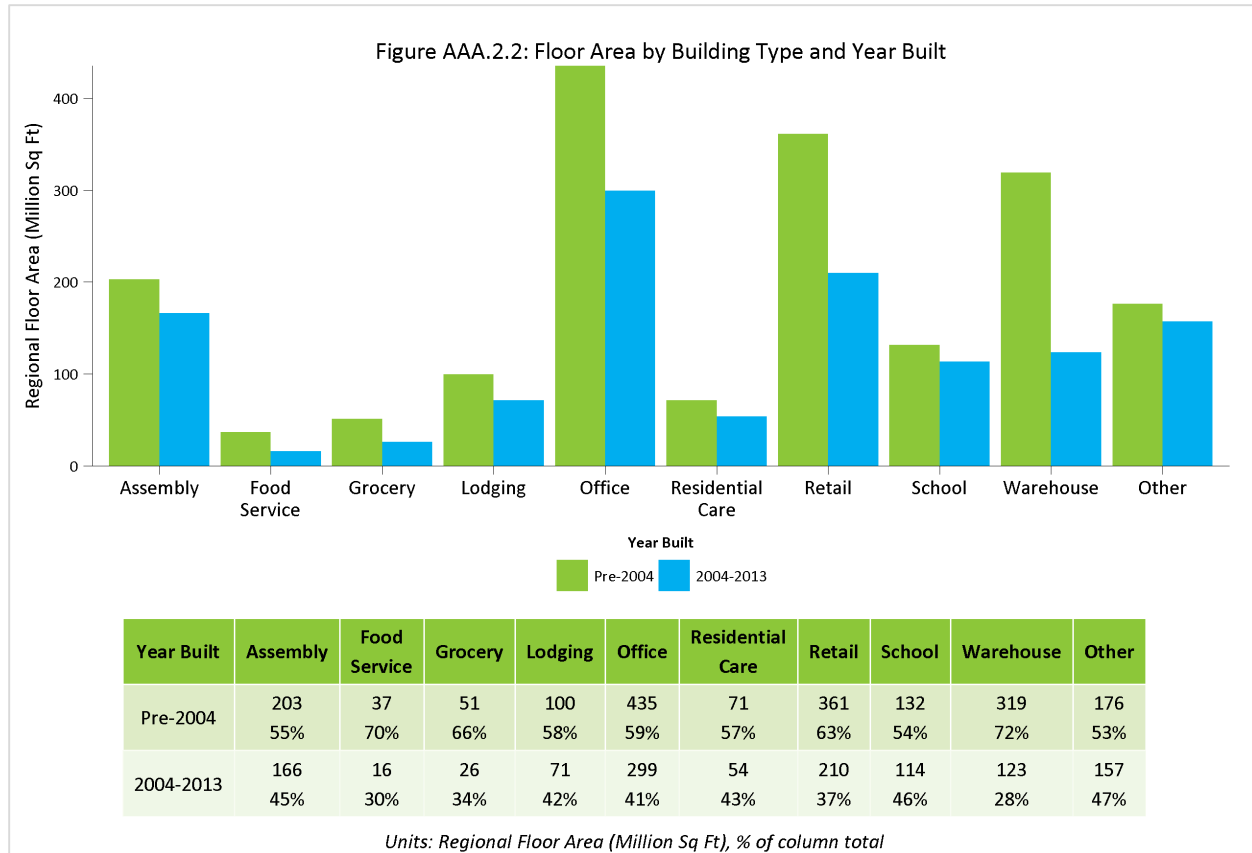
Units: Natural Gas Energy Use Intensity (Therms/Sq Ft)

AAA.3 2014 CBSA General Building Information

All summary tables below use the current 2014 CBSA building type mappings.

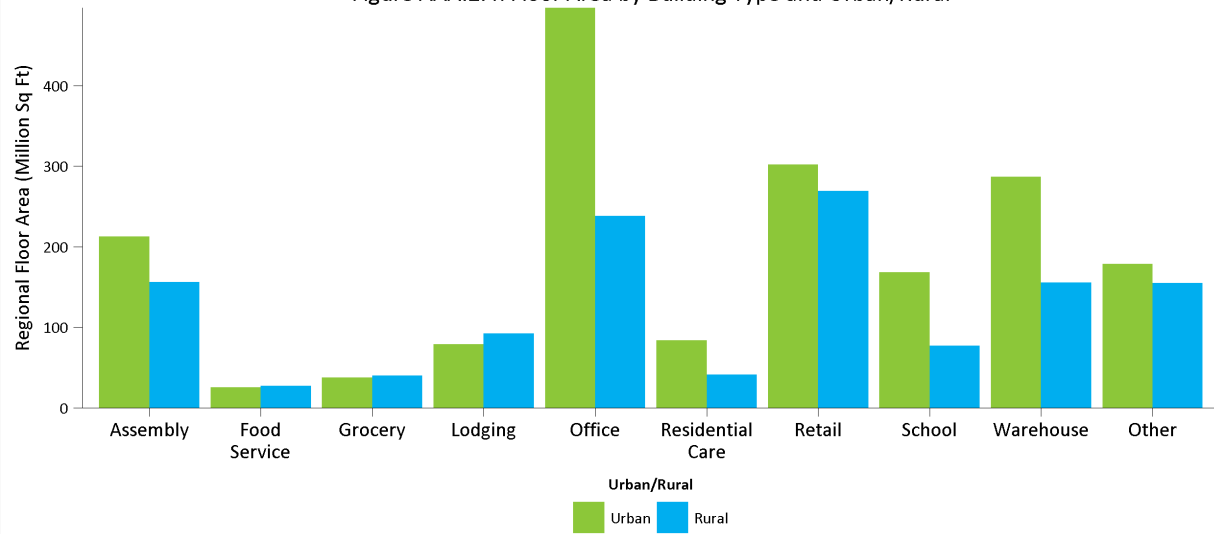


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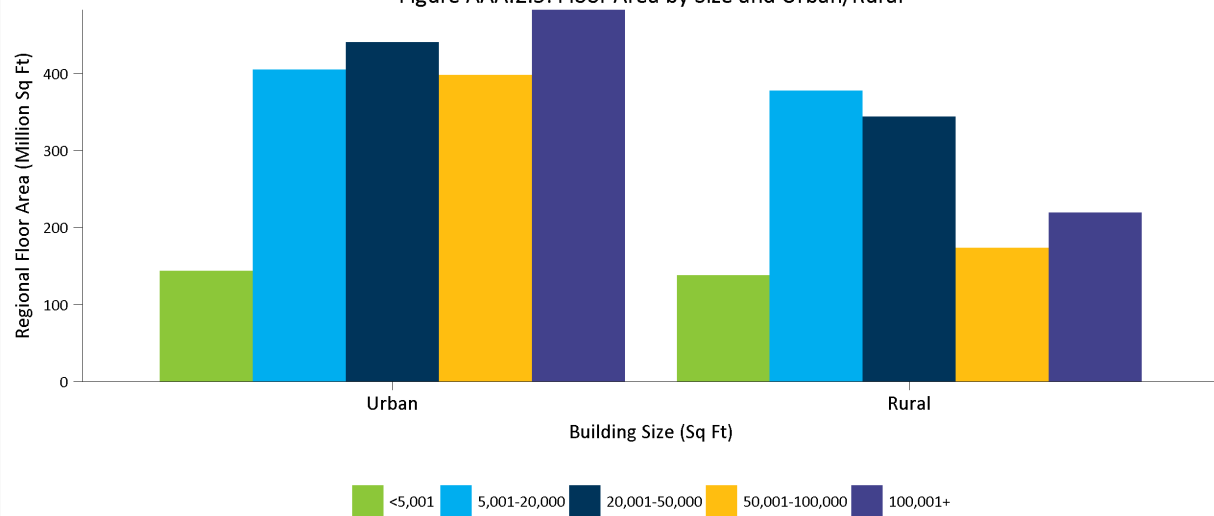
Figure AAA.2.4: Floor Area by Building Type and Urban/Rural



Urban/Rural	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
Urban	213 58%	26 48%	37 48%	79 46%	496 68%	84 67%	302 53%	168 69%	286 65%	179 54%
Rural	156 42%	28 52%	40 52%	92 54%	238 32%	41 33%	269 47%	77 31%	156 35%	155 46%

Units: Regional Floor Area (Million Sq Ft), % of column total

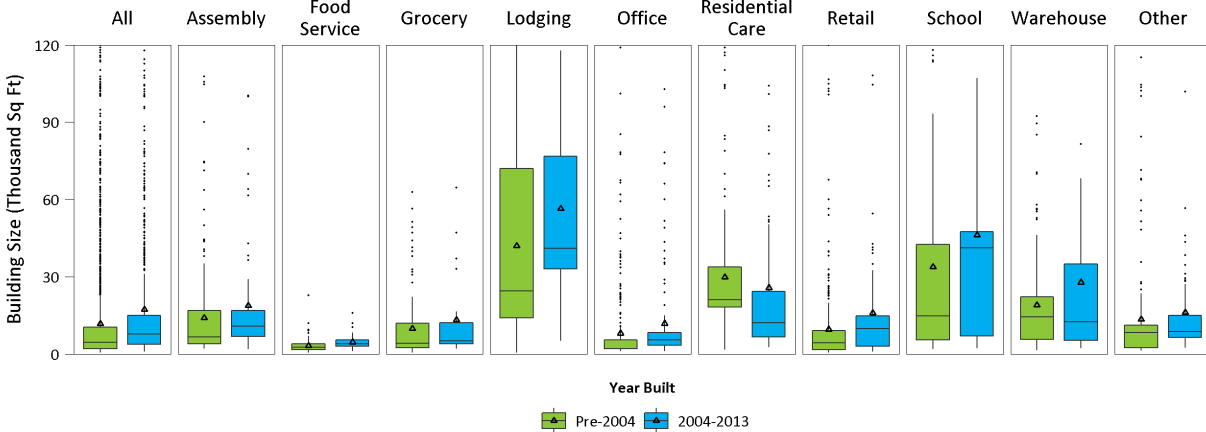
Figure AAA.2.5: Floor Area by Size and Urban/Rural



Urban/Rural	<5,001	5,001-20,000	20,001-50,000	50,001-100,000	100,001+
Urban	144 8%	405 22%	441 24%	398 21%	482 26%
Rural	138 11%	377 30%	344 27%	173 14%	220 18%

Units: Regional Floor Area (Million Sq Ft), % of row total

Figure AAA.2.6: Building Size by Building Type and Year Built



Year Built	Statistic	All	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
Pre-2004	Mean	11.8 ± 1	14.2 ± 4	3.22 ± 0.4	9.9 ± 2	42.1 ± 12	8.13 ± 4	29.9 ± 6	9.66 ± 4	33.9 ± 9	19.1 ± 4	13.6 ± 5
	Median	4.5	6.71	2.66	4.15	24.4	2.1	21	4.28	14.8	14.4	8.45
	1st/3rd Q	2/10	4.1/17	1.8/4	2.4/12	14/72	2/5.5	18/34	1.7/9.2	5.6/43	5.8/22	2.4/11
	n	900	99	122	100	68	118	64	101	85	71	72
2004-2013	Mean	17.4 ± 3	18.8 ± 7	4.69 ± 0.8	13.4 ± 5	56.5 ± 12	11.9 ± 7	25.8 ± 14	16.1 ± 7	46.3 ± 17	27.9 ± 11	16.3 ± 7
	Median	7.76	10.9	4.03	5.15	41.1	5.46	12.2	9.94	41.2	12.6	8.73
	1st/3rd Q	3.8/15	6.8/17	3/5.6	4/12	33/77	3.4/8.4	6.6/24	3.1/15	7/48	5.4/35	6.4/15
	n	378	38	37	29	32	53	33	51	32	34	39

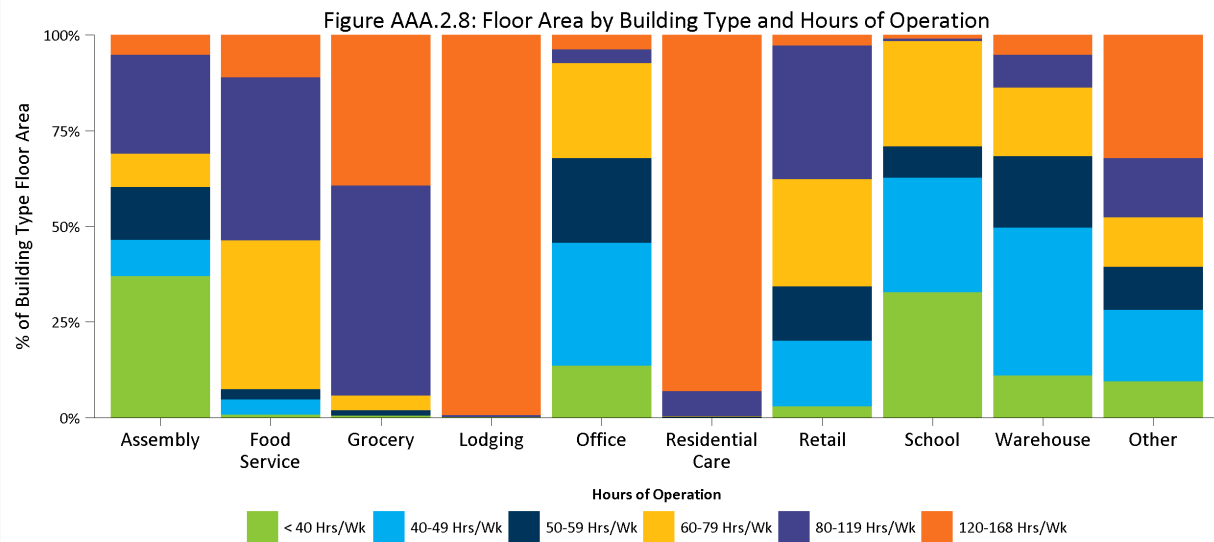
Units: Building Size (Thousand Sq Ft), error band shown at the 90% confidence level

Figure AAA.2.7: Building Age by Building Type and Year Built



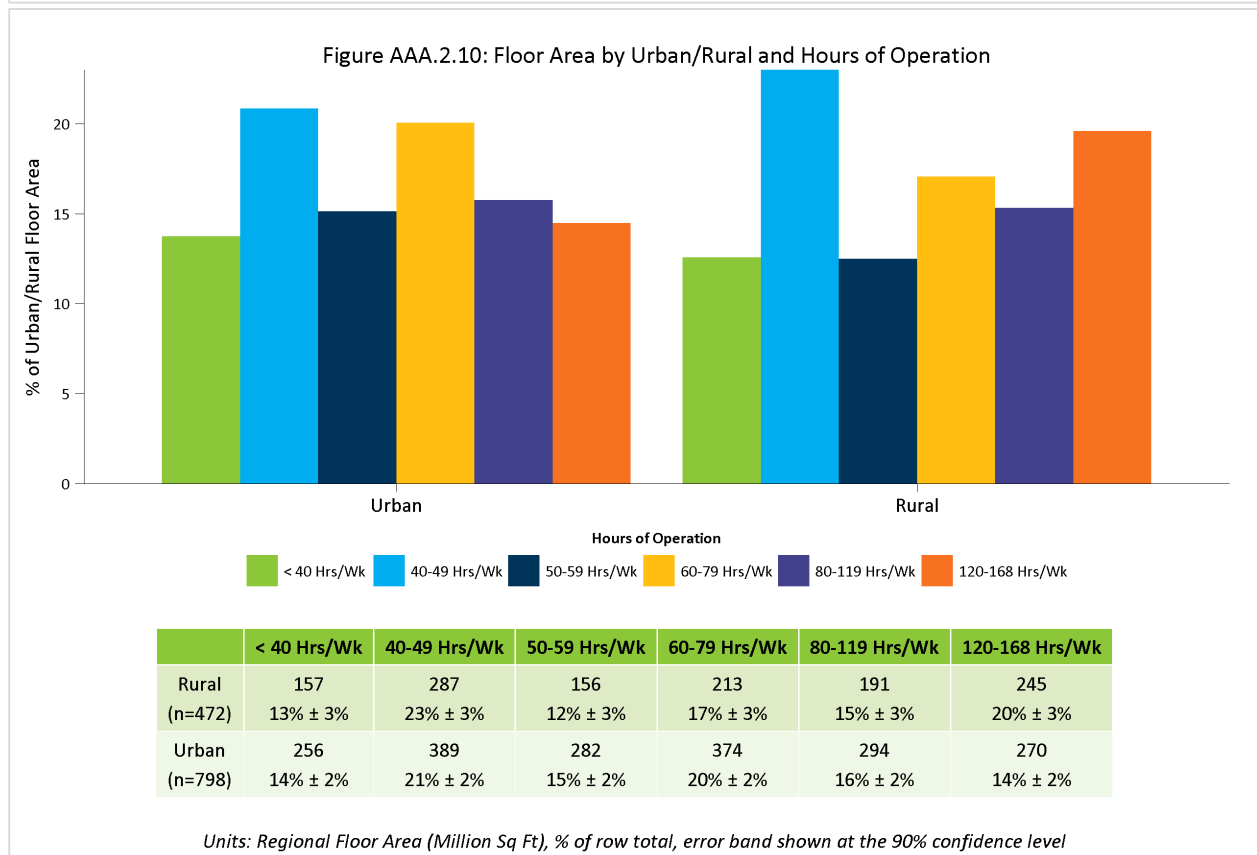
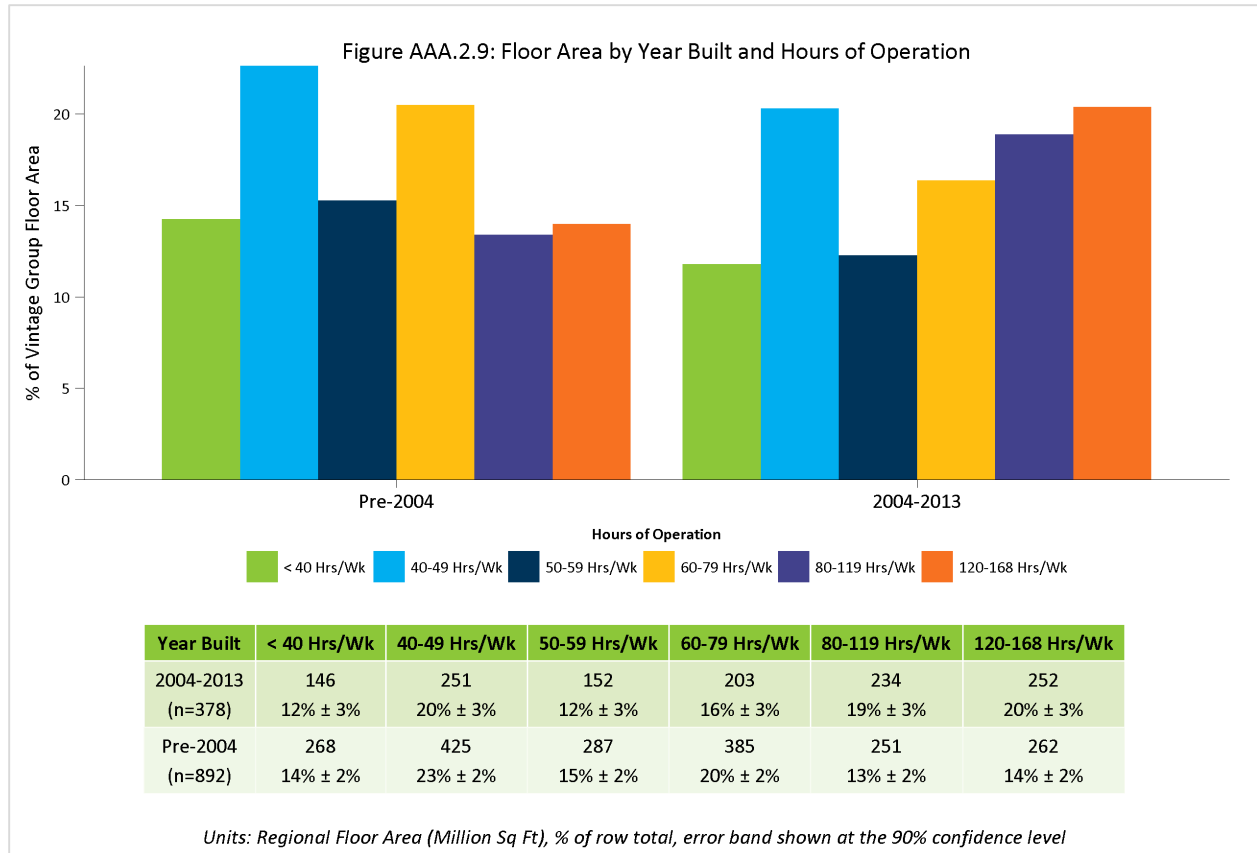
Year Built	Statistic	All	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
Pre-2004	Mean	41.2 ± 1	54.2 ± 5	40.2 ± 3	36.4 ± 3	33 ± 5	45 ± 4	34.5 ± 4	38.4 ± 4	45.5 ± 4	37.4 ± 4	35.4 ± 5
	Median	36	57	36	34	27	34	29	37	46	36	28
	1st/3rd Q	22/54	31/77	22/54	24/48	17/38	25/55	17/52	22/49	34/60	21/53	18/43
	n	900	99	122	100	68	118	64	101	85	71	72
2004-2013	Mean	6.98 ± 0.2	7.56 ± 0.7	7.99 ± 0.5	6.98 ± 0.4	6.49 ± 0.6	6.92 ± 0.5	7.12 ± 0.6	6.74 ± 0.5	7.13 ± 0.7	8.31 ± 0.5	5.69 ± 0.9
	Median	7	9	8	7	7	7	7	7	8	8	5
	1st/3rd Q	5/9	5/10	7/10	6/8	5/8	6/9	5/9	5/8	6/9	7/10	3/9
	n	378	38	37	29	32	53	33	51	32	34	39

Units: Building Age (years), error band shown at the 90% confidence level

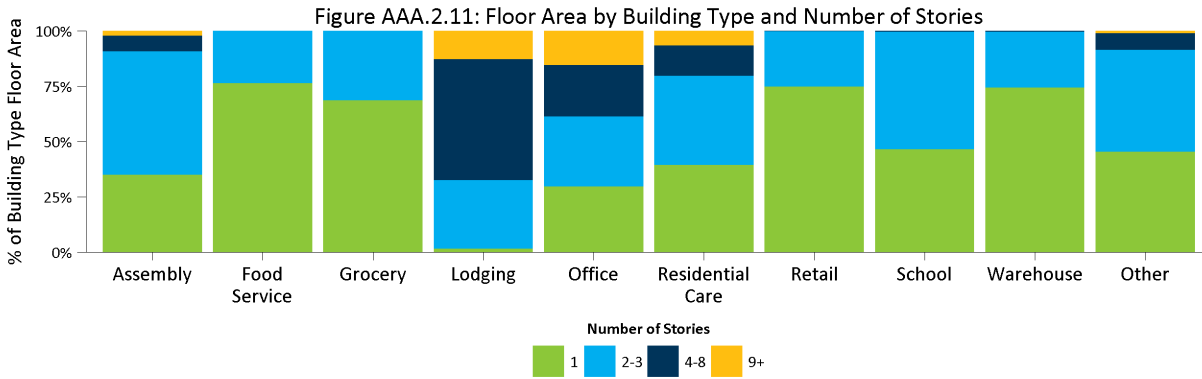


Hours of Operation	Assembly (n=137)	Food Service (n=158)	Grocery (n=129)	Lodging (n=95)	Office (n=170)	Residential Care (n=97)	Retail (n=151)	School (n=117)	Warehouse (n=105)	Other (n=111)
< 40 Hrs/Wk	136 37% ± 7%	0 1% ± 1%	0 1% ± 1%	0 0% ± 0%	100 14% ± 4%	0 0% ± 0%	16 3% ± 2%	80 33% ± 7%	49 11% ± 5%	31 9% ± 5%
40-49 Hrs/Wk	35 9% ± 4%	2 4% ± 3%	0 0% ± 0%	0 0% ± 0%	235 32% ± 6%	0 0% ± 0%	98 17% ± 5%	73 30% ± 7%	171 39% ± 8%	62 19% ± 6%
50-59 Hrs/Wk	51 14% ± 5%	1 3% ± 2%	1 1% ± 2%	0 0% ± 0%	163 22% ± 5%	0 0% ± 1%	80 14% ± 5%	20 8% ± 4%	83 19% ± 6%	38 11% ± 5%
60-79 Hrs/Wk	32 9% ± 4%	21 39% ± 6%	3 4% ± 3%	0 0% ± 0%	182 25% ± 5%	0 0% ± 1%	159 28% ± 6%	68 28% ± 7%	79 18% ± 6%	43 13% ± 5%
80-119 Hrs/Wk	95 26% ± 6%	23 43% ± 7%	42 55% ± 7%	1 1% ± 1%	26 4% ± 2%	8 7% ± 4%	199 35% ± 6%	2 1% ± 1%	38 9% ± 5%	52 15% ± 6%
120-168 Hrs/Wk	19 5% ± 3%	6 11% ± 4%	30 39% ± 7%	166 99% ± 1%	28 4% ± 2%	117 93% ± 4%	16 3% ± 2%	2 1% ± 1%	23 5% ± 4%	107 32% ± 7%

Units: Regional Floor Area (Million Sq Ft), % of column total, error band shown at the 90% confidence level

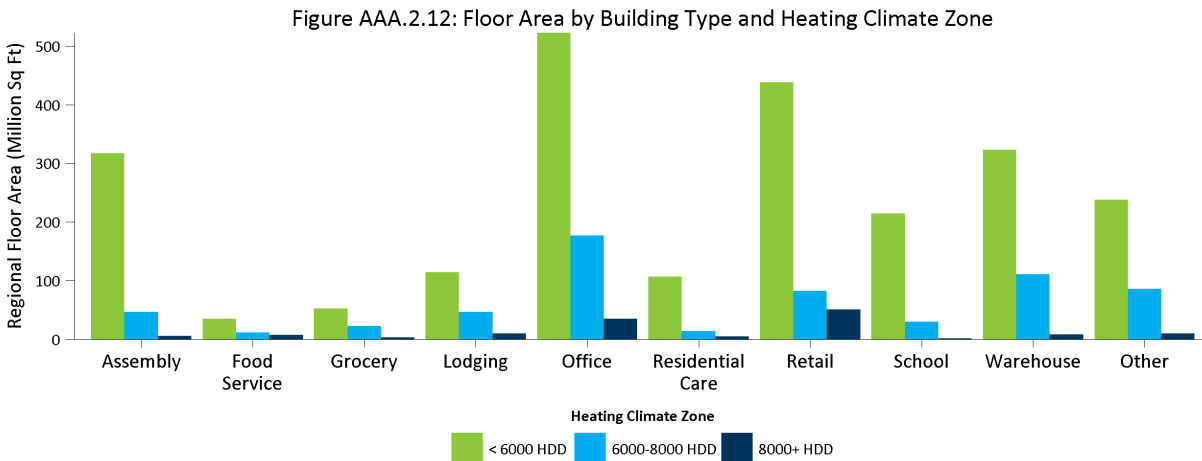


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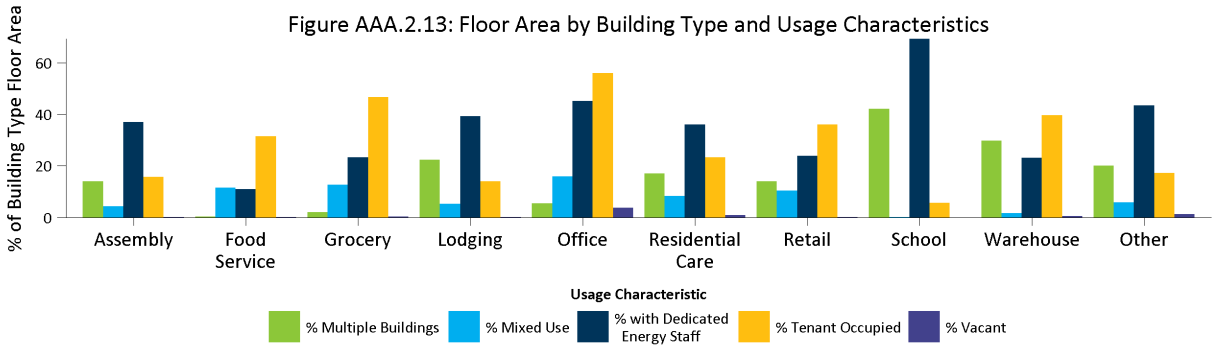
Number of Stories	Assembly (n=137)	Food Service (n=159)	Grocery (n=129)	Lodging (n=100)	Office (n=171)	Residential Care (n=97)	Retail (n=152)	School (n=117)	Warehouse (n=105)	Other (n=111)
1	129 35% ± 7%	41 76% ± 6%	53 69% ± 7%	2 1% ± 2%	217 30% ± 6%	49 39% ± 8%	427 75% ± 6%	114 46% ± 8%	329 74% ± 7%	151 45% ± 8%
2-3	206 56% ± 7%	13 24% ± 6%	24 31% ± 7%	53 31% ± 8%	233 32% ± 6%	50 40% ± 8%	143 25% ± 6%	131 53% ± 8%	112 25% ± 7%	154 46% ± 8%
4-8	27 7% ± 4%	0 0% ± 0%	0 0% ± 0%	94 55% ± 8%	171 23% ± 5%	17 14% ± 6%	0 0% ± 0%	1 0% ± 1%	1 0% ± 1%	25 7% ± 4%
9+	7 2% ± 2%	0 0% ± 0%	0 0% ± 0%	22 13% ± 6%	113 15% ± 5%	8 7% ± 4%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	3 1% ± 2%

Units: Regional Floor Area (Million Sq Ft), % of column total, error band shown at the 90% confidence level



Heating Climate Zone	Assembly (n=137)	Food Service (n=159)	Grocery (n=129)	Lodging (n=100)	Office (n=171)	Residential Care (n=97)	Retail (n=152)	School (n=117)	Warehouse (n=105)	Other (n=111)
< 6000 HDD	317 86% ± 5%	35 65% ± 6%	52 68% ± 7%	114 67% ± 8%	522 71% ± 6%	107 85% ± 6%	438 77% ± 6%	214 87% ± 5%	323 73% ± 7%	238 71% ± 7%
6000-8000 HDD	47 13% ± 5%	11 21% ± 5%	22 28% ± 7%	47 27% ± 7%	177 24% ± 5%	13 11% ± 5%	82 14% ± 5%	30 12% ± 5%	111 25% ± 7%	86 26% ± 7%
8000+ HDD	5 1% ± 2%	7 14% ± 5%	3 4% ± 3%	10 6% ± 4%	35 5% ± 3%	5 4% ± 3%	50 9% ± 4%	1 0% ± 1%	8 2% ± 2%	10 3% ± 3%

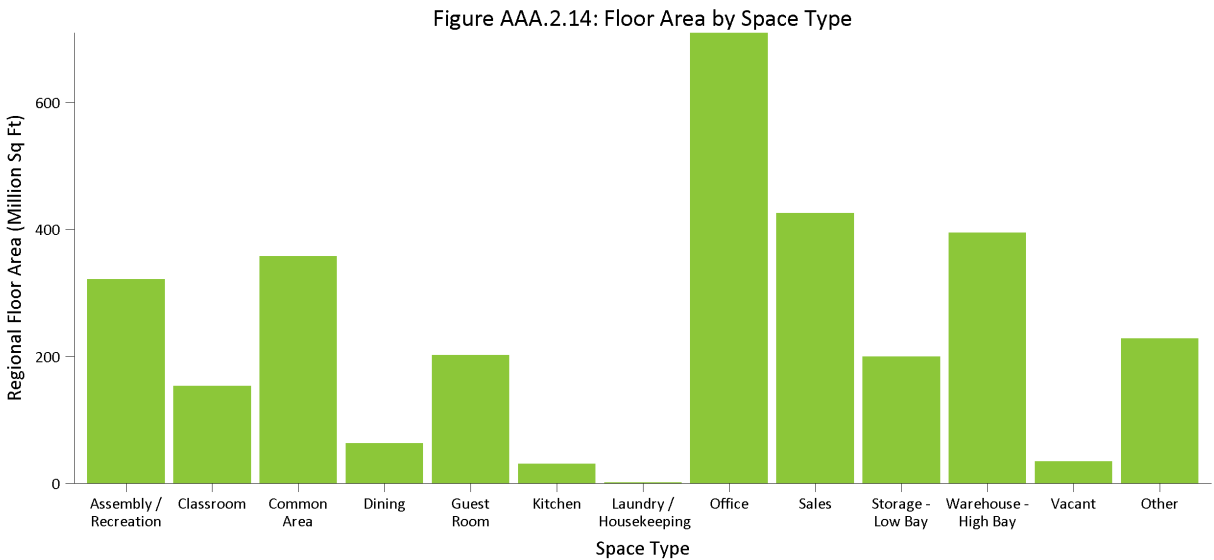
Units: Regional Floor Area (Million Sq Ft), % of column total, error band shown at the 90% confidence level



Usage Characteristic	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
% Multiple Buildings	51 14%	0 0%	2 2%	38 22%	40 5%	21 17%	80 14%	103 42%	132 30%	67 20%
% Mixed Use	16 4%	6 11%	10 13%	9 5%	116 16%	10 8%	59 10%	0 0%	7 2%	19 6%
% with Dedicated Energy Staff	137 37%	6 11%	18 23%	67 39%	331 45%	45 36%	136 24%	170 69%	102 23%	145 43%
% Tenant Occupied	58 16%	17 31%	36 47%	24 14%	411 56%	29 23%	205 36%	14 6%	175 40%	57 17%
% Vacant	0 0%	0 0%	0 0%	0 0%	27 4%	1 1%	1 0%	0 0%	2 0%	4 1%

Units: Regional Floor Area (Million Sq Ft), % of Building Type Floor Area

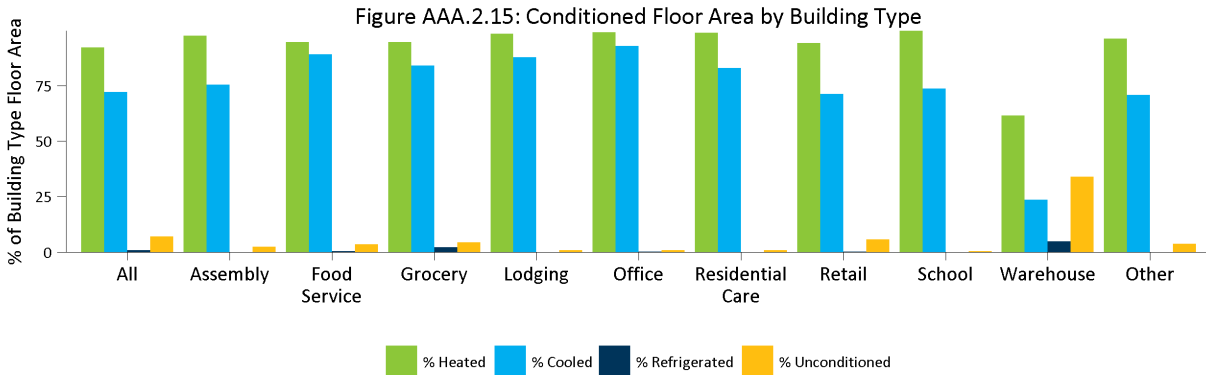
Note: "Mixed Use" indicates buildings where spaces with different businesses and economic use types occupy the same building/complex, such as strip malls, enclosed malls, and office buildings with first floor retail/restaurant/grocery



Assembly / Recreation	Classroom	Common Area	Dining	Guest Room	Kitchen	Laundry / Housekeeping	Office	Sales	Storage - Low Bay	Warehouse - High Bay	Vacant	Other
322 10%	153 5%	357 11%	63 2%	202 6%	31 1%	2 0%	709 23%	425 14%	200 6%	395 13%	35 1%	228 7%

Units: Regional Floor Area (Million Sq Ft), % of row total

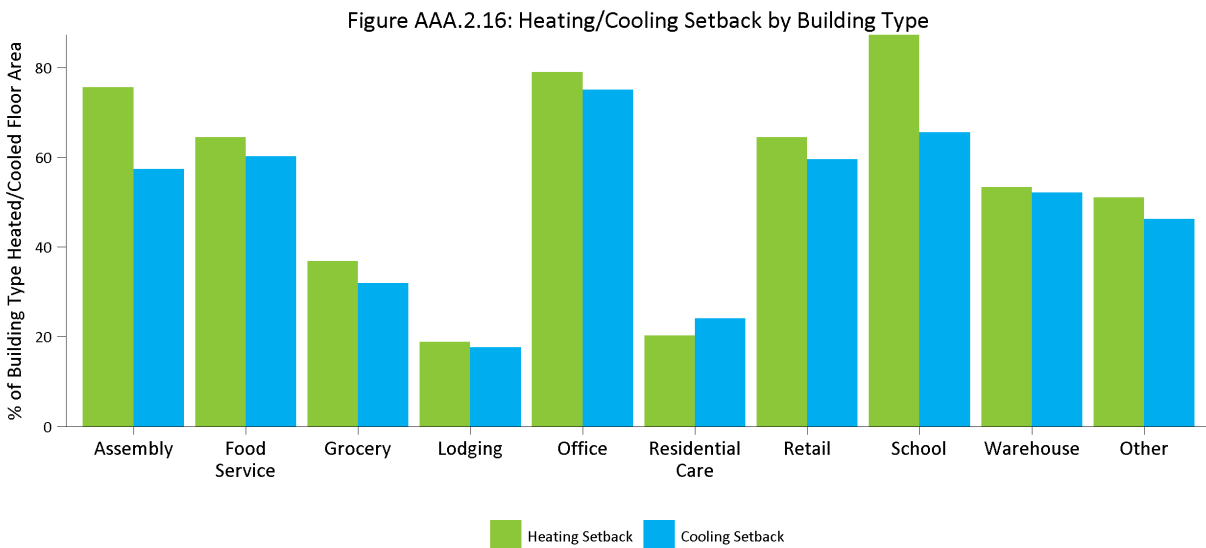
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	All	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
% Heated	2,882 92%	360 98%	50 95%	73 95%	169 99%	729 99%	124 99%	539 94%	245 100%	273 62%	321 96%
% Cooled	2,256 72%	278 75%	47 89%	65 84%	151 88%	683 93%	104 83%	407 71%	181 74%	104 23%	236 71%
% Refrigerated	23 1%	0 0%	0 0%	2 2%	0 0%	0 0%	0 0%	0 0%	0 0%	21 5%	0 0%
% Unconditioned	217 7%	9 2%	2 3%	3 4%	1 1%	5 1%	1 1%	32 6%	1 0%	150 34%	12 4%

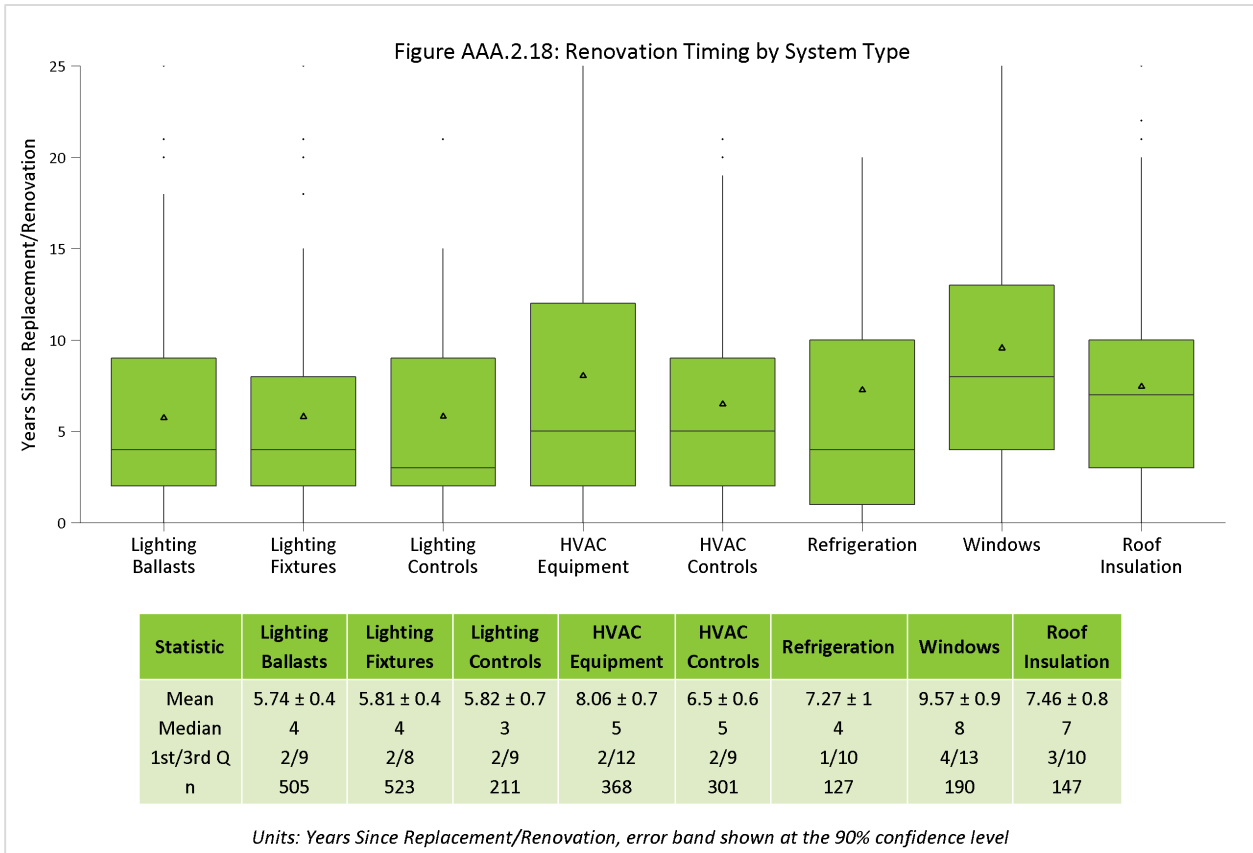
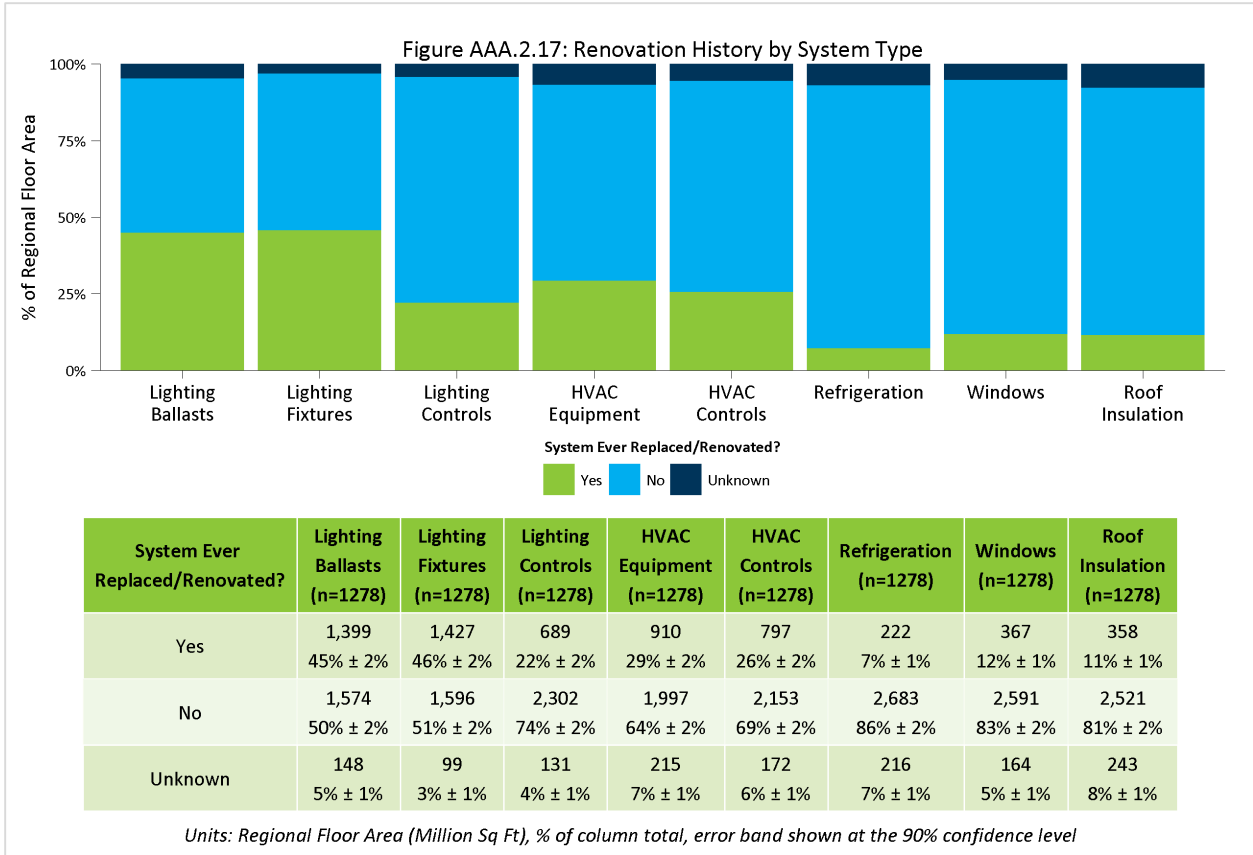
Units: Regional Floor Area (Million Sq Ft), % of Building Type Floor Area

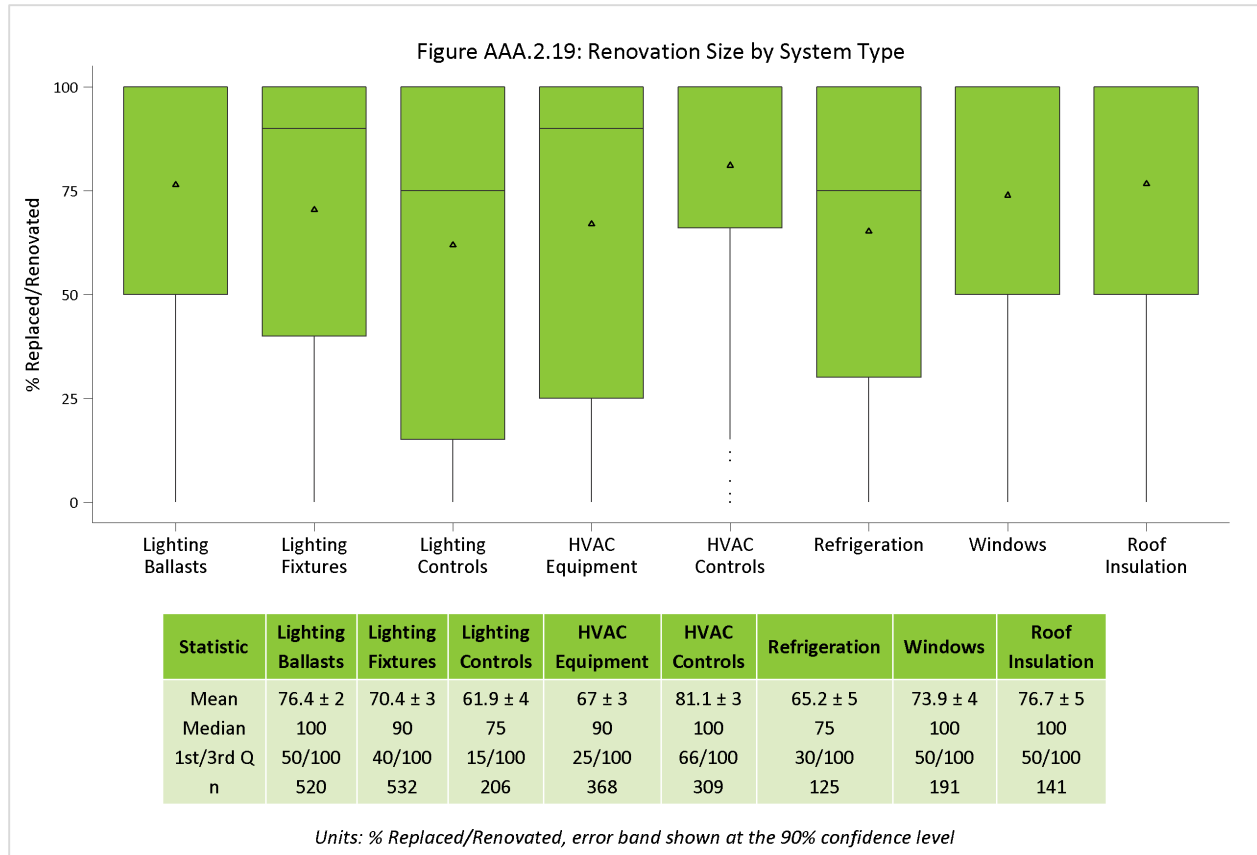
Note: % cooled does not include refrigerated space



	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
Heating Setback	268 76%	32 65%	27 37%	31 19%	512 79%	24 20%	347 65%	213 87%	146 53%	161 51%
Cooling Setback	156 57%	29 60%	21 32%	26 18%	455 75%	24 24%	242 60%	118 66%	54 52%	107 46%

Units: Regional Floor Area (Million Sq Ft), % Building Type Heated/Cooled Floor Area





AAA.4 Energy Use Intensities

All Energy Use Intensities exclude parking garages. Gas EUIs only include gas service customers.

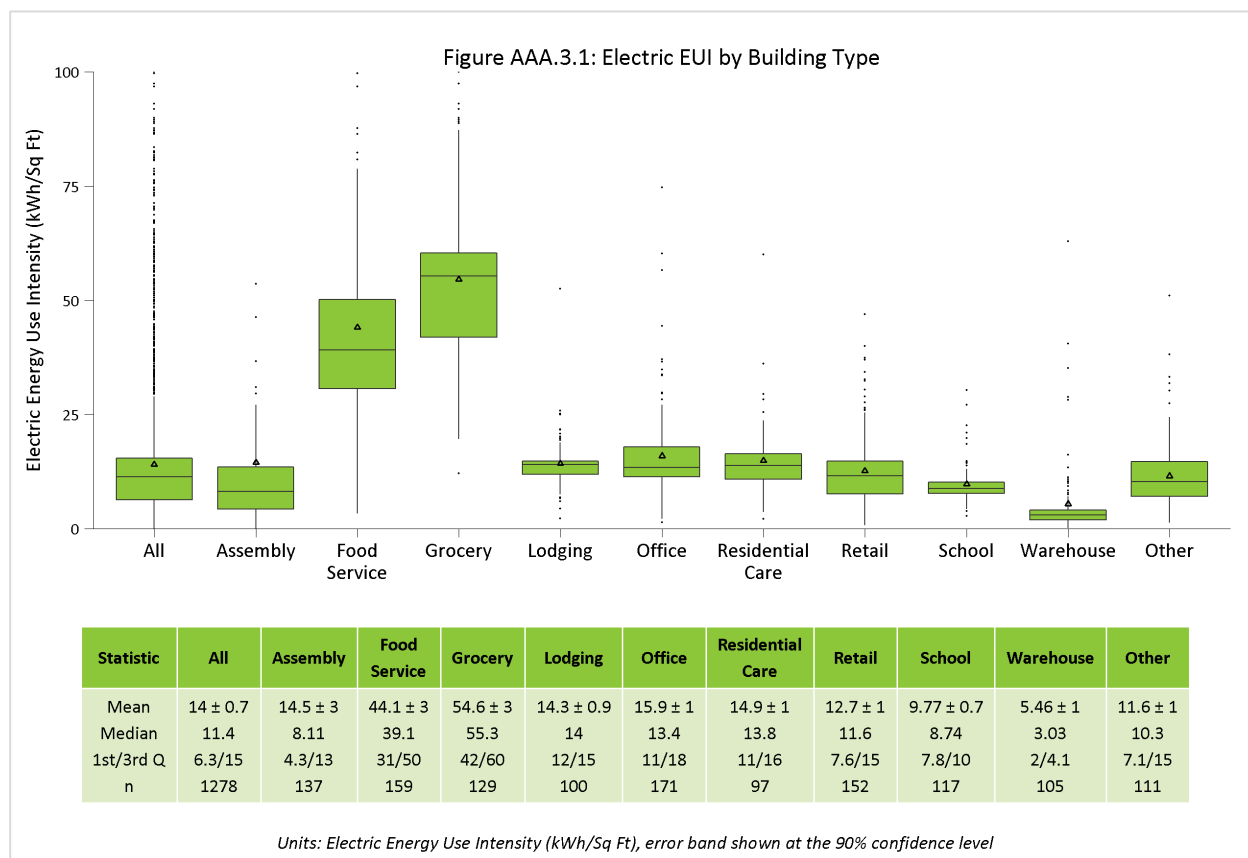


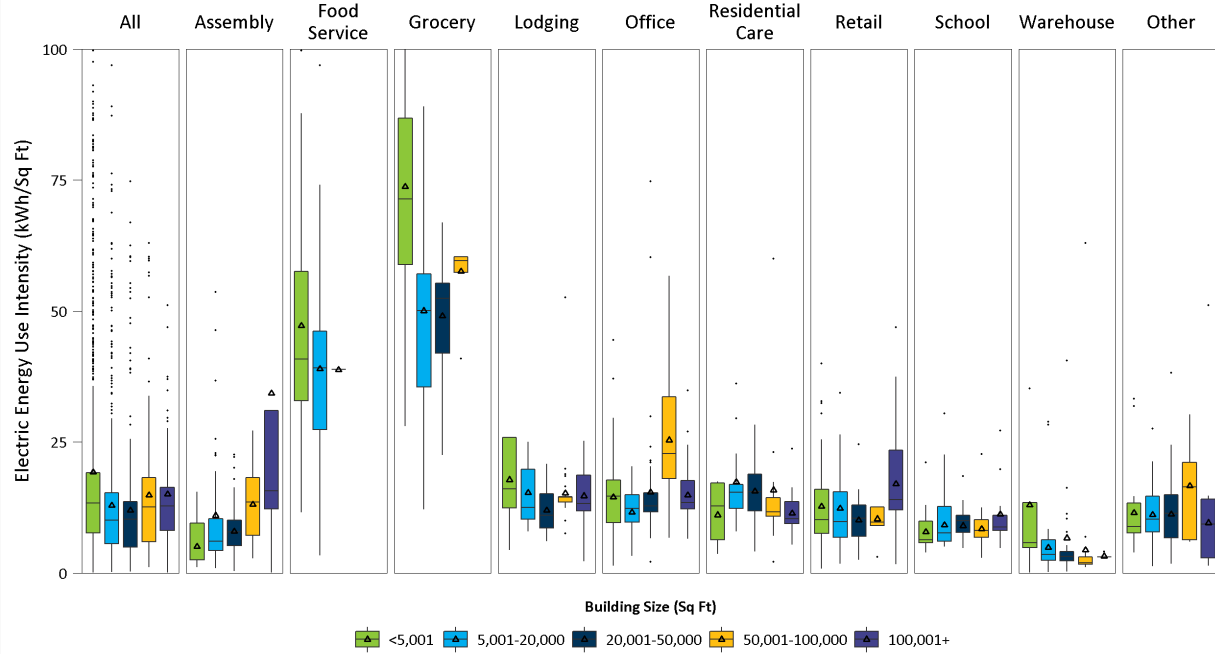
Figure AAA.3.2: Electric EUI by Building Type and Year Built



Year Built	Statistic	All	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
Pre-2004	Mean	12.8 ± 0.7	8.14 ± 1	43.6 ± 4	54.9 ± 3	14.8 ± 1	15.4 ± 1	14.9 ± 0.9	11.3 ± 1	8.55 ± 0.7	5.97 ± 2	10.2 ± 1
	Median	10.3	6.05	38.5	55.3	14.3	13.2	14.8	10.4	8.03	3.02	9.46
	1st/3rd Q	5/15	3.6/12	27/53	43/60	12/16	12/18	12/16	6.8/13	6.1/9.5	2/3.8	6.3/12
	n	900	99	122	100	68	118	64	101	85	71	72
2004-2013	Mean	15.9 ± 1	22.3 ± 9	45.1 ± 6	54.1 ± 6	13.6 ± 1	16.8 ± 2	15 ± 3	15.1 ± 2	11.2 ± 2	4.13 ± 0.8	13.1 ± 2
	Median	12.7	13.5	41	55.3	13.3	14	11.6	14	9.99	3.03	12.8
	1st/3rd Q	8.1/18	7/22	39/47	39/60	12/15	11/20	9.1/16	9.7/21	8.1/11	3/5.2	8.7/15
	n	378	38	37	29	32	53	33	51	32	34	39

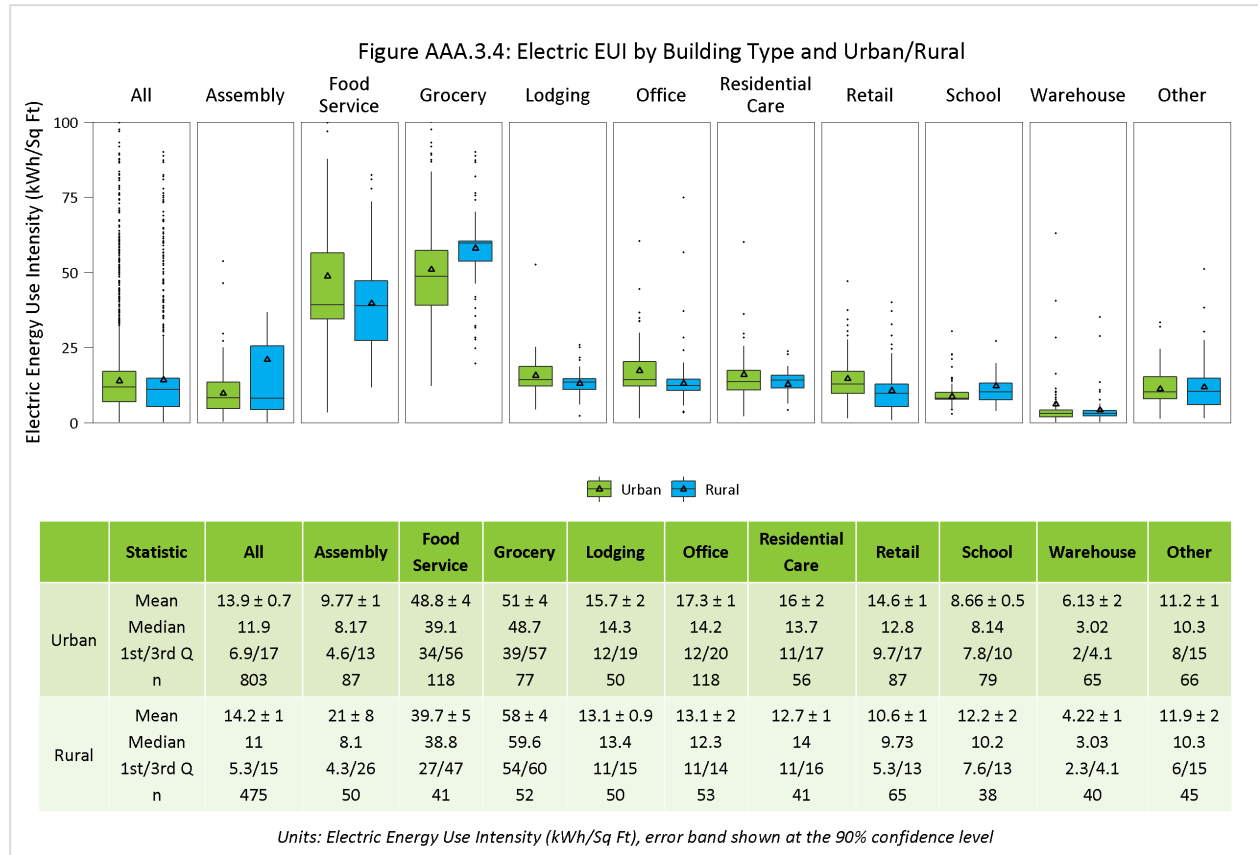
Units: Electric Energy Use Intensity (kWh/Sq Ft), error band shown at the 90% confidence level

Figure AAA.3.3: Electric EUI by Building Type and Size



Building Size (Sq Ft)	Statistic	All	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
<5,001	Mean	19.2 ± 2	5.02 ± 2	47.2 ± 4	73.7 ± 5	17.8 ± 6	14.5 ± 2	11.1 ± 6	12.7 ± 2	7.86 ± 2	13 ± 5	11.5 ± 3
	Median	13.3	2.51	40.8	71.3	16	14.6	12.8	10.1	6.31	5.79	8.82
	1st/3rd Q	7.6/19	2.5/9.5	33/58	59/87	12/26	9.6/18	6.3/17	7.6/16	5.7/9.9	4.8/13	7.6/13
	n	379	15	129	74	6	59	5	40	14	19	18
5,001-20,000	Mean	12.9 ± 1	11 ± 2	39 ± 7	50 ± 6	15.3 ± 3	11.6 ± 1	17.4 ± 3	12.3 ± 2	9.14 ± 1	4.85 ± 2	11.1 ± 1
	Median	10.1	6.05	39.1	50.1	12.5	12.3	15.4	9.73	7.6	3.53	10.3
	1st/3rd Q	5.6/15	4.3/10	27/46	35/57	10/20	9.7/15	12/17	6.8/16	6.1/13	2.4/6.3	7.8/15
	n	327	58	29	36	13	34	19	35	20	38	45
20,001-50,000	Mean	11.9 ± 1	7.93 ± 1	38.8 ± 0	49 ± 5	11.9 ± 1	15.4 ± 3	15.6 ± 2	10.1 ± 1	9.01 ± 0.8	6.65 ± 3	11.2 ± 3
	Median	10.2	7.79	38.8	52.4	11	12.7	15.5	10.4	9.98	3.14	11.4
	1st/3rd Q	4.9/14	5.2/10	39/39	42/55	8.5/15	12/15	12/19	6.9/13	7.8/11	2.3/4.1	6.7/15
	n	272	39	1	15	30	35	31	35	31	31	24
50,001-100,000	Mean	14.8 ± 2	13.1 ± 4	No Sample Data	57.5 ± 6	15.2 ± 2	25.4 ± 5	15.8 ± 5	10.3 ± 2	8.38 ± 1	4.38 ± 4	16.6 ± 6
	Median	12.5	13.5	No Sample Data	59.6	14.4	22.8	11.7	9.67	8.1	1.96	16.4
	1st/3rd Q	6/18	7.2/18	No Sample Data	57/60	14/15	18/34	11/14	9/13	6.8/10	1.6/3	6.3/21
	n	135	10	No Sample Data	4	20	15	26	5	31	15	9
100,001+	Mean	15 ± 2	34.3 ± 21	No Sample Data	No Sample Data	14.7 ± 1	14.8 ± 2	11.4 ± 1	17 ± 3	11.2 ± 2	3.21 ± 2	9.56 ± 3
	Median	12.7	15.6	No Sample Data	No Sample Data	13.3	13.4	10.3	14	8.74	3.03	9.28
	1st/3rd Q	8.1/16	12/31	No Sample Data	No Sample Data	12/19	12/18	9.4/14	12/23	8.1/11	3/3	2.9/14
	n	165	15	No Sample Data	No Sample Data	31	28	16	37	21	2	15

Units: Electric Energy Use Intensity (kWh/Sq Ft), error band shown at the 90% confidence level





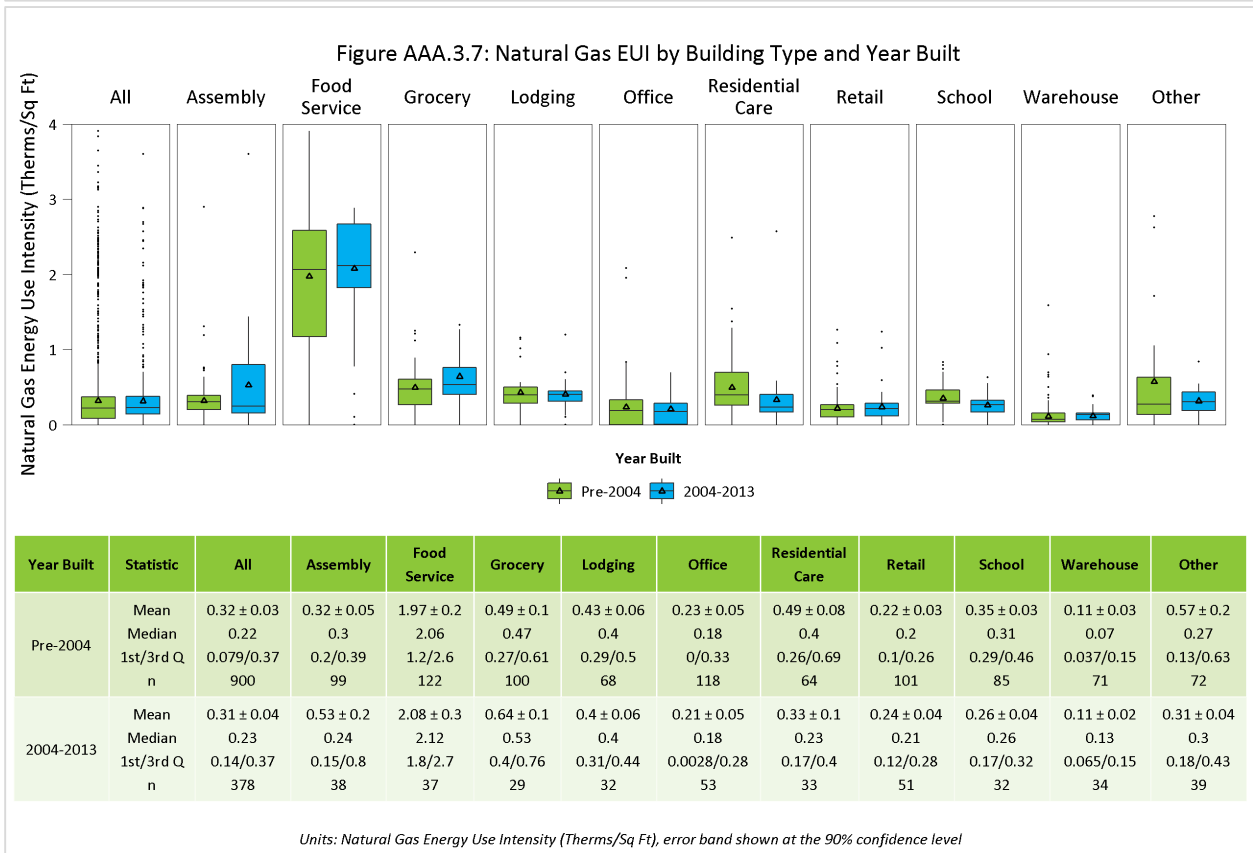
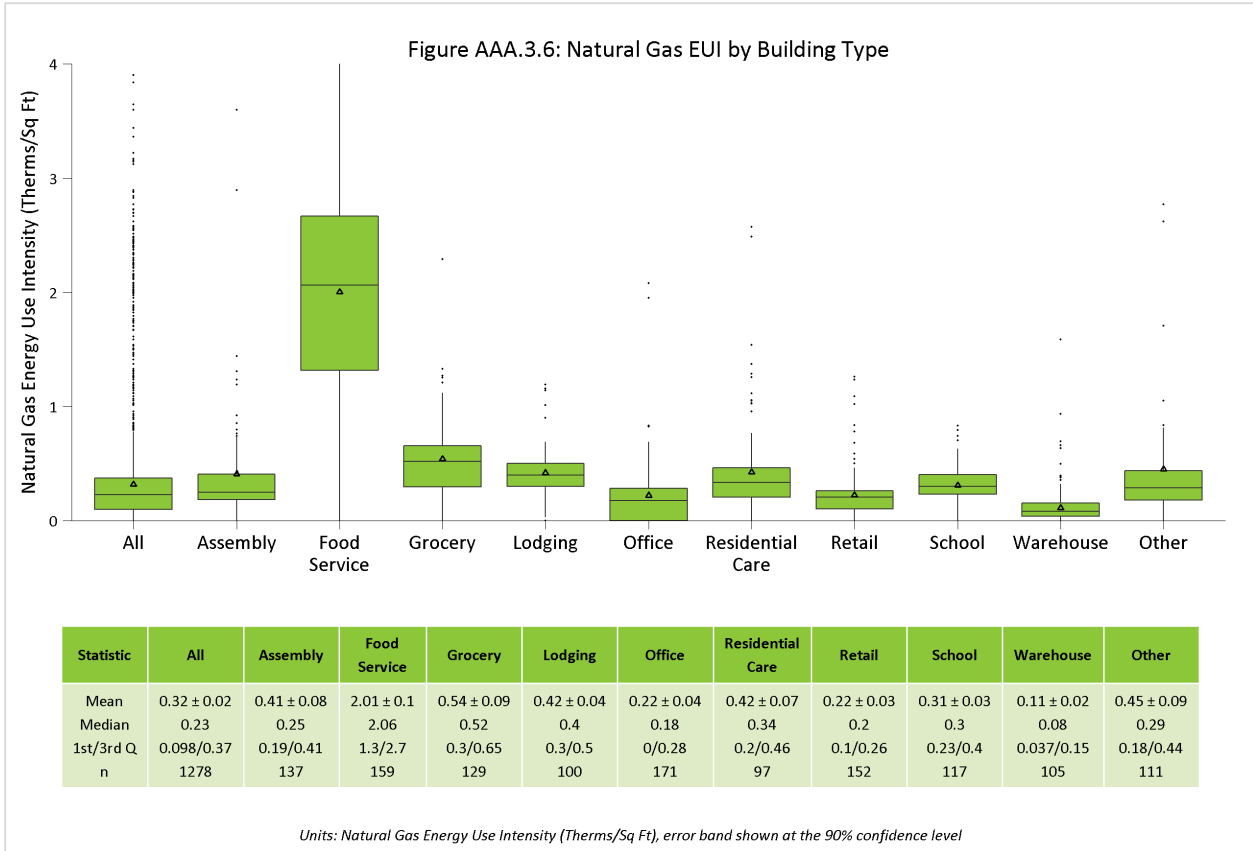
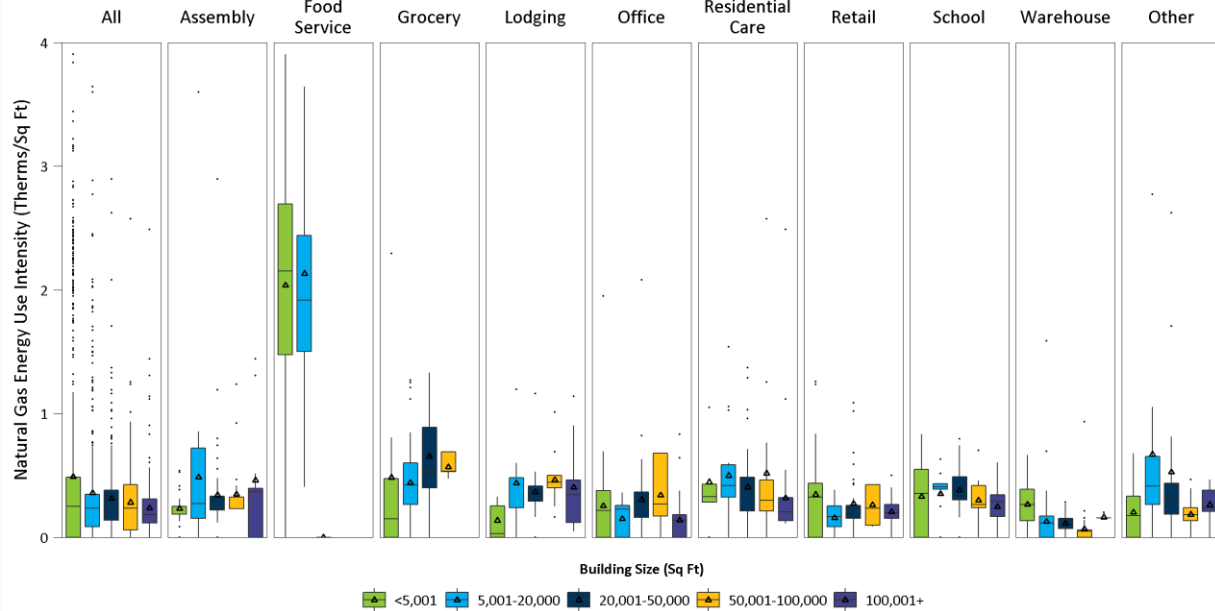
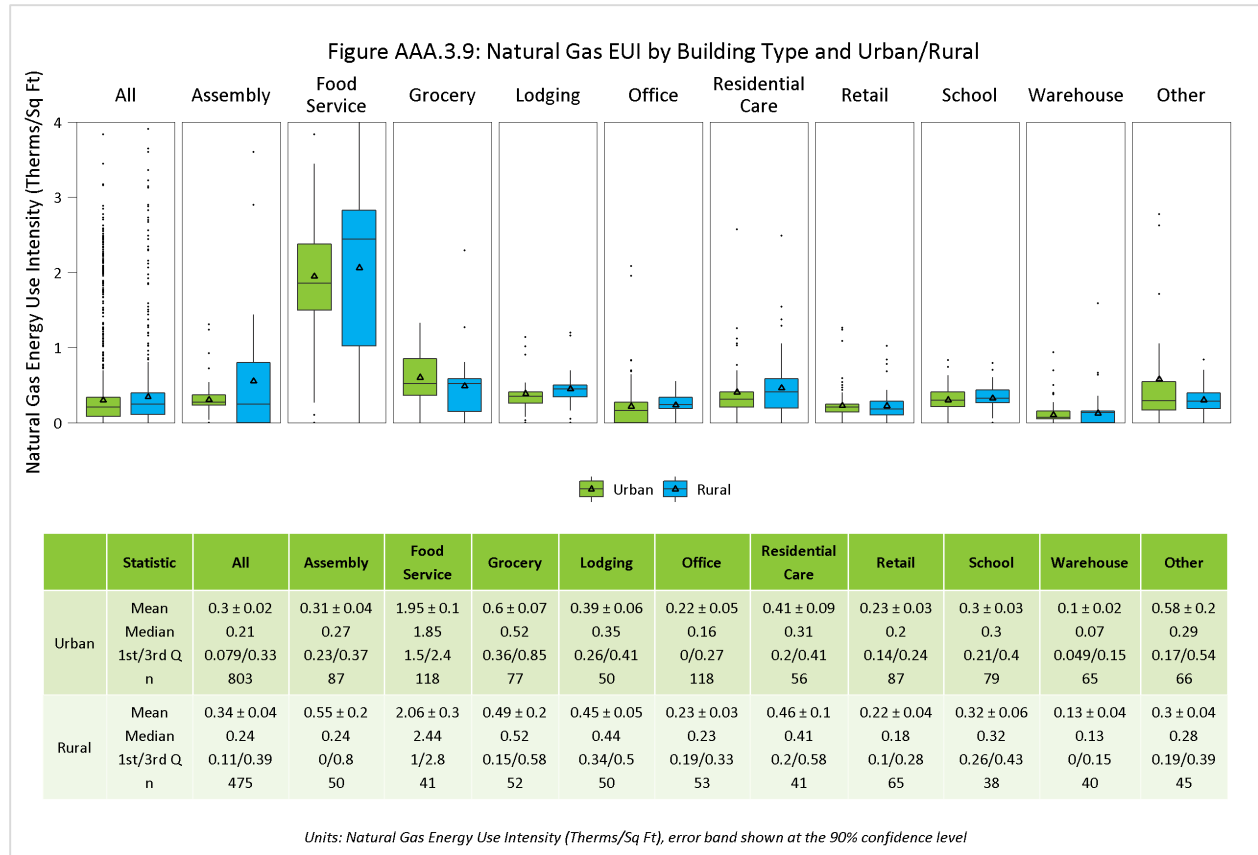


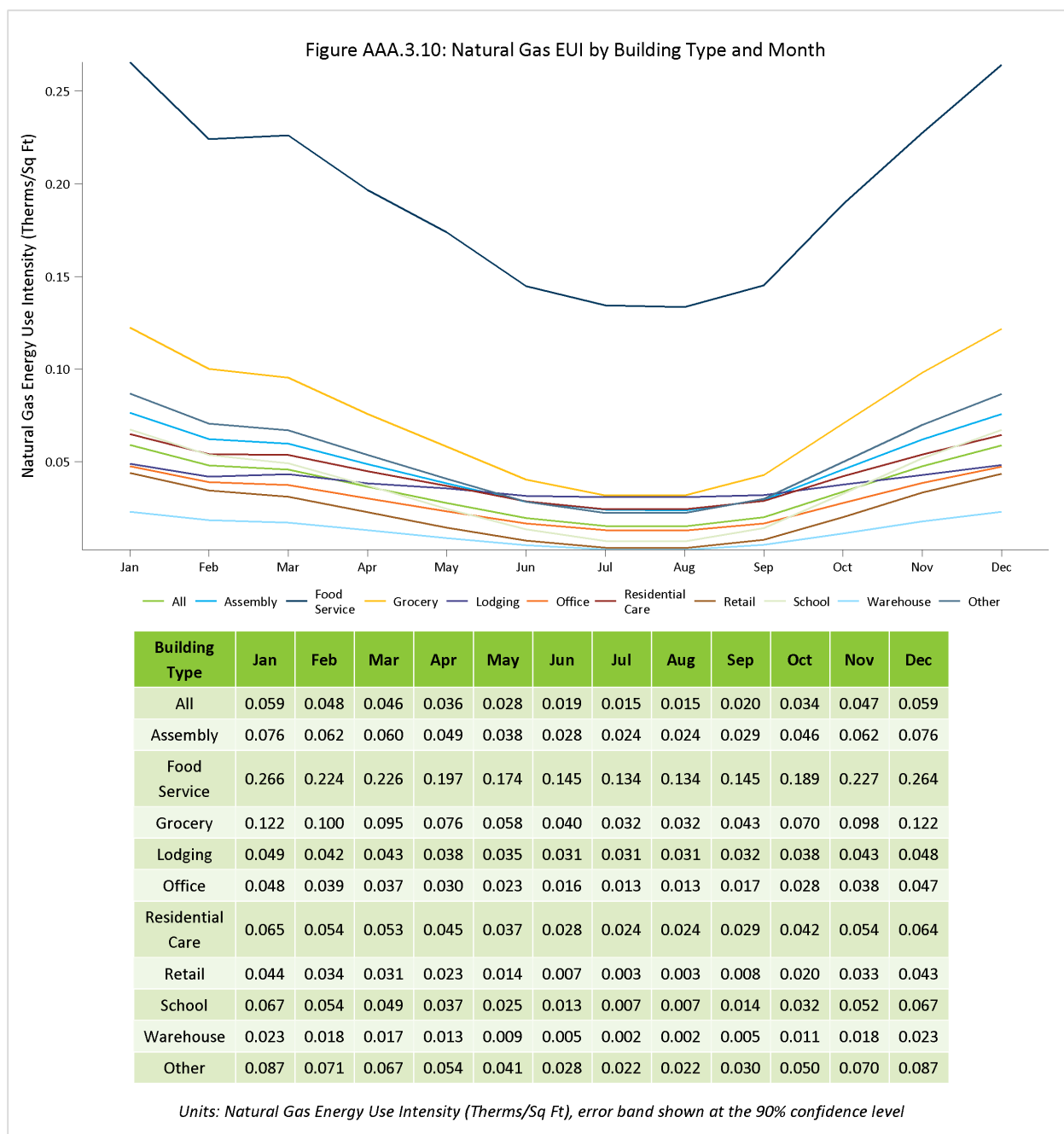
Figure AAA.3.8: Natural Gas EUI by Building Type and Size



Building Size (Sq Ft)	Statistic	All	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
<5,001	Mean	0.49 ± 0.07	0.23 ± 0.07	2.04 ± 0.2	0.48 ± 0.3	0.14 ± 0.1	0.25 ± 0.08	0.45 ± 0.3	0.35 ± 0.09	0.33 ± 0.1	0.26 ± 0.09	0.2 ± 0.09
	Median	0.25	0.25	2.15	0.15	0.03	0.22	0.33	0.32	0.35	0.26	0.18
	1st/3rd Q	0/0.48	0.19/0.25	1.5/2.7	0/0.47	0/0.25	0/0.38	0.28/0.43	0/0.43	0/0.55	0.13/0.39	0/0.33
5,001-20,000	Mean	0.36 ± 0.05	0.49 ± 0.2	2.13 ± 0.3	0.44 ± 0.1	0.44 ± 0.2	0.15 ± 0.04	0.5 ± 0.1	0.16 ± 0.03	0.35 ± 0.07	0.13 ± 0.05	0.67 ± 0.2
	Median	0.23	0.27	1.92	0.42	0.24	0.23	0.42	0.16	0.41	0.11	0.41
	1st/3rd Q	0.085/0.35	0.15/0.72	1.5/2.4	0.27/0.6	0.24/0.48	0/0.26	0.32/0.58	0.085/0.25	0.39/0.43	0/0.17	0.26/0.65
20,001-50,000	Mean	0.31 ± 0.04	0.34 ± 0.1	0 ± 0	0.65 ± 0.2	0.37 ± 0.07	0.3 ± 0.1	0.41 ± 0.1	0.27 ± 0.06	0.38 ± 0.05	0.11 ± 0.02	0.53 ± 0.2
	Median	0.22	0.24	0	0.54	0.31	0.21	0.39	0.21	0.32	0.13	0.32
	1st/3rd Q	0.14/0.38	0.22/0.33	0/0	0.4/0.89	0.29/0.42	0.16/0.37	0.21/0.48	0.15/0.26	0.3/0.49	0.069/0.15	0.18/0.44
50,001-100,000	Mean	0.28 ± 0.04	0.35 ± 0.1	No Sample Data	0.57 ± 0.09	0.46 ± 0.06	0.34 ± 0.1	0.52 ± 0.2	0.26 ± 0.1	0.3 ± 0.04	0.07 ± 0.07	0.18 ± 0.08
	Median	0.24	0.23	No Sample Data	0.53	0.44	0.27	0.3	0.24	0.26	0.05	0.18
	1st/3rd Q	0.058/0.43	0.23/0.32	No Sample Data	0.53/0.69	0.4/0.5	0.17/0.68	0.21/0.46	0.094/0.43	0.24/0.42	0/0.058	0.13/0.24
100,001+	Mean	0.24 ± 0.03	0.46 ± 0.2	No Sample Data	No Sample Data	0.4 ± 0.1	0.14 ± 0.06	0.32 ± 0.2	0.21 ± 0.02	0.25 ± 0.06	0.16 ± 0.08	0.26 ± 0.06
	Median	0.18	0.37	No Sample Data	No Sample Data	0.34	0.14	0.2	0.2	0.29	0.15	0.24
	1st/3rd Q	0.11/0.31	0/0.39	No Sample Data	No Sample Data	0.12/0.46	0/0.18	0.13/0.32	0.15/0.26	0.17/0.34	0.15/0.15	0.21/0.38
	n	379	15	129	74	6	59	5	40	14	19	18
	n	327	58	29	36	13	34	19	35	20	38	45
	n	272	39	1	15	30	35	31	35	31	31	24
	n	135	10		4	20	15	26	5	31	15	9
	n	165	15			31	28	16	37	21	2	15

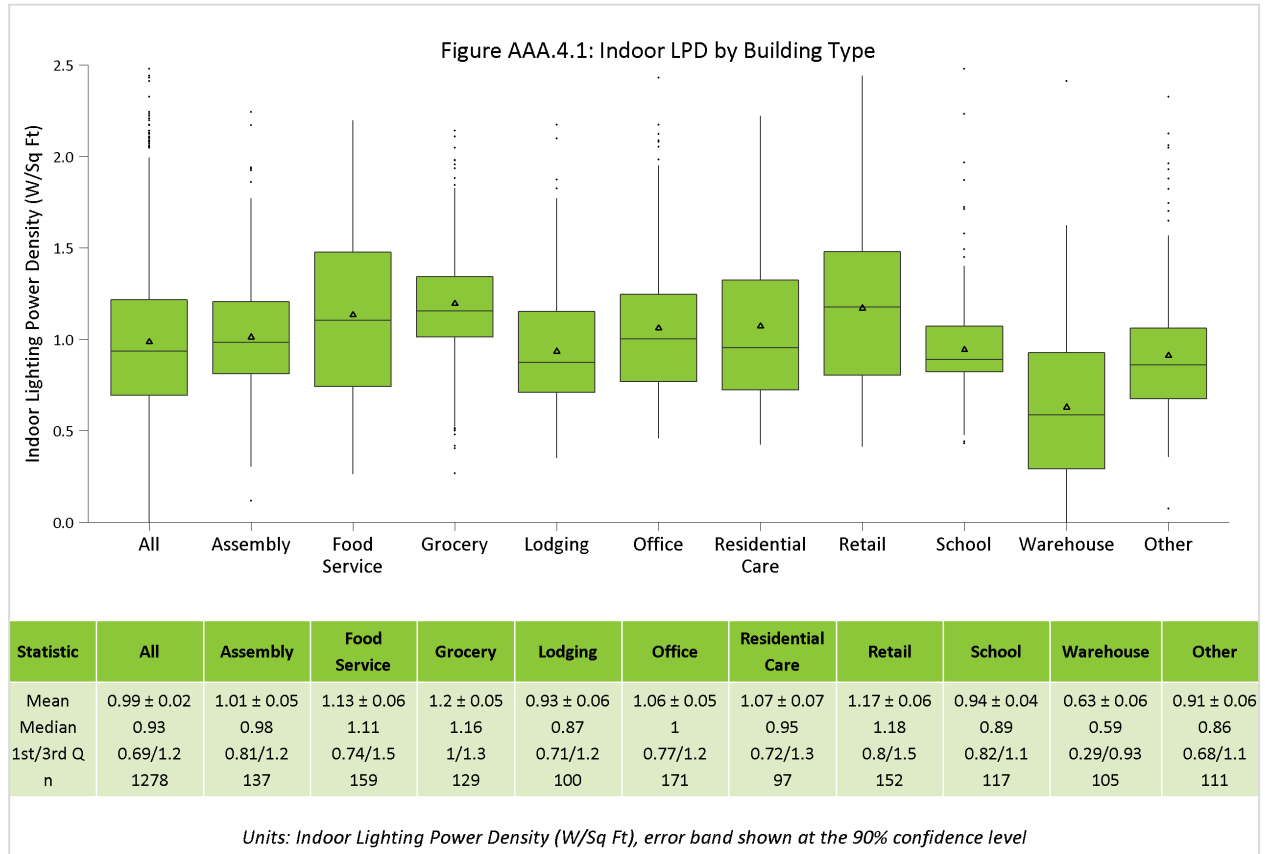
Units: Natural Gas Energy Use Intensity (Therms/Sq Ft), error band shown at the 90% confidence level





AAA.5 Lighting

Interior Lighting Power Densities (LPDs) generated using all building floor area except: parking garages, outdoor lighting, and refrigerated case lighting.



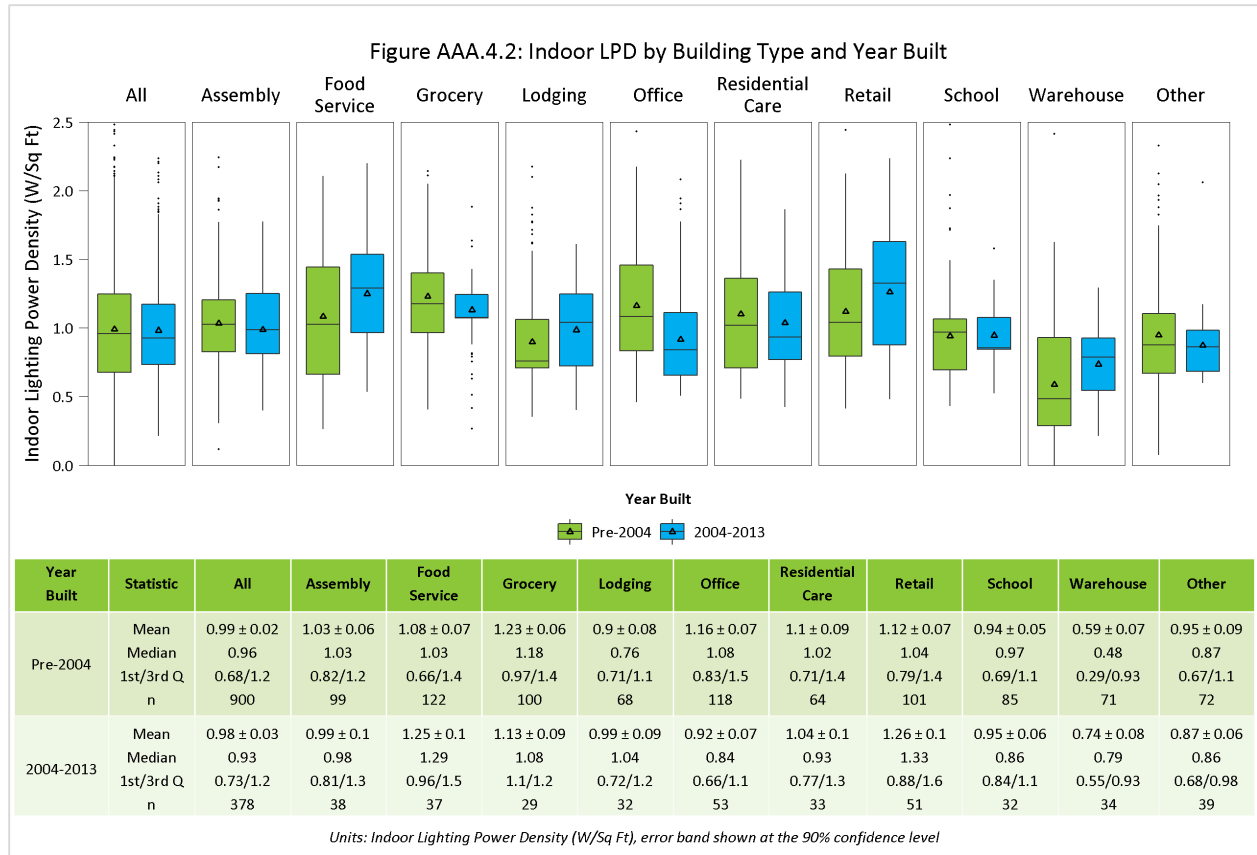
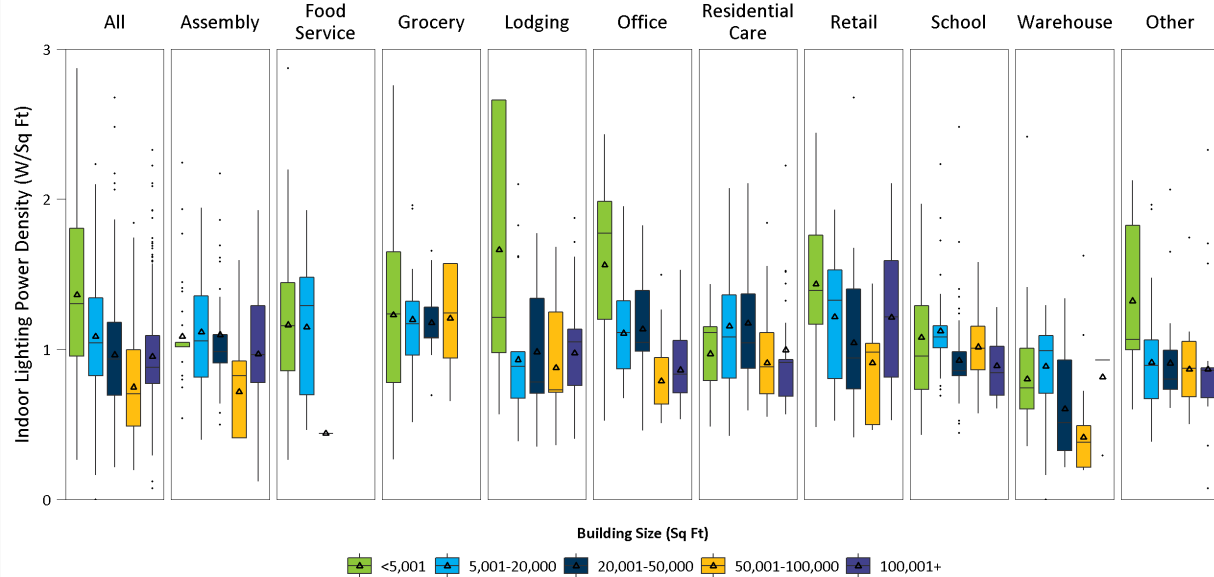


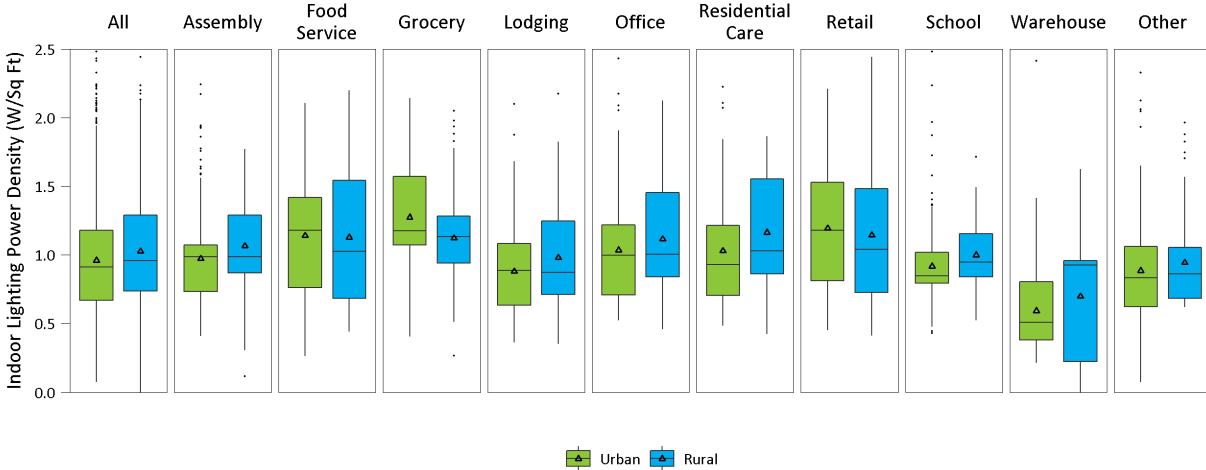
Figure AAA.4.3: Indoor LPD by Building Type and Size



Building Size	Statistic	All	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
<5,001	Mean	1.36 ± 0.04	1.09 ± 0.1	1.16 ± 0.06	1.23 ± 0.1	1.66 ± 0.7	1.56 ± 0.1	0.97 ± 0.3	1.43 ± 0.1	1.08 ± 0.2	0.8 ± 0.1	1.32 ± 0.2
	Median	1.3	1.05	1.16	1.23	1.21	1.77	1.11	1.39	0.95	0.74	1.06
	1st/3rd Q	0.95/1.8	1/1	0.86/1.4	0.78/1.6	0.98/2.7	1.2/2	0.79/1.1	1.2/1.8	0.73/1.3	0.6/1	1/1.8
	n	379	15	129	74	6	59	5	40	14	19	18
5,001-20,000	Mean	1.08 ± 0.03	1.11 ± 0.07	1.15 ± 0.1	1.2 ± 0.1	0.93 ± 0.2	1.11 ± 0.08	1.15 ± 0.2	1.22 ± 0.1	1.12 ± 0.1	0.89 ± 0.08	0.91 ± 0.07
	Median	1.04	1.06	1.29	1.17	0.89	1.11	1.08	1.33	1.08	0.99	0.89
	1st/3rd Q	0.82/1.3	0.81/1.4	0.7/1.5	0.96/1.3	0.67/0.98	0.87/1.3	0.81/1.4	0.8/1.5	1/1.2	0.7/1.1	0.67/1.1
	n	327	58	29	36	13	34	19	35	20	38	45
20,001-50,000	Mean	0.96 ± 0.04	1.1 ± 0.1	0.44 ± 0	1.18 ± 0.09	0.98 ± 0.1	1.13 ± 0.09	1.17 ± 0.1	1.04 ± 0.1	0.93 ± 0.09	0.6 ± 0.1	0.91 ± 0.1
	Median	0.93	0.98	0.44	1.08	0.78	1.05	1.04	0.94	0.86	0.51	0.8
	1st/3rd Q	0.69/1.2	0.91/1.1	0.44/0.44	1.1/1.3	0.71/1.3	0.99/1.4	0.87/1.4	0.74/1.4	0.82/0.98	0.32/0.93	0.73/0.99
	n	272	39	1	15	30	35	31	35	31	31	24
50,001-100,000	Mean	0.75 ± 0.05	0.72 ± 0.2	No Sample Data	1.21 ± 0.3	0.88 ± 0.1	0.79 ± 0.1	0.91 ± 0.1	0.91 ± 0.3	1.01 ± 0.06	0.41 ± 0.1	0.87 ± 0.2
	Median	0.7	0.82	No Sample Data	1.24	0.73	0.63	0.88	0.98	1.01	0.38	0.87
	1st/3rd Q	0.49/1	0.41/0.92	No Sample Data	0.94/1.6	0.71/1.2	0.63/0.95	0.7/1.1	0.5/1	0.86/1.2	0.21/0.49	0.68/1.1
	n	135	10	No Sample Data	4	20	15	26	5	31	15	9
100,001+	Mean	0.95 ± 0.05	0.97 ± 0.2	No Sample Data	No Sample Data	0.97 ± 0.1	0.86 ± 0.07	1 ± 0.2	1.21 ± 0.1	0.89 ± 0.08	0.82 ± 1	0.87 ± 0.2
	Median	0.88	0.97	No Sample Data	No Sample Data	1.05	0.83	0.91	1.22	0.84	0.93	0.86
	1st/3rd Q	0.77/1.1	0.78/1.3	No Sample Data	No Sample Data	0.76/1.1	0.71/1.1	0.69/0.93	0.81/1.6	0.69/1	0.93/0.93	0.68/0.87
	n	165	15	No Sample Data	No Sample Data	31	28	16	37	21	2	15

Units: Indoor Lighting Power Density (W/Sq Ft), error band shown at the 90% confidence level

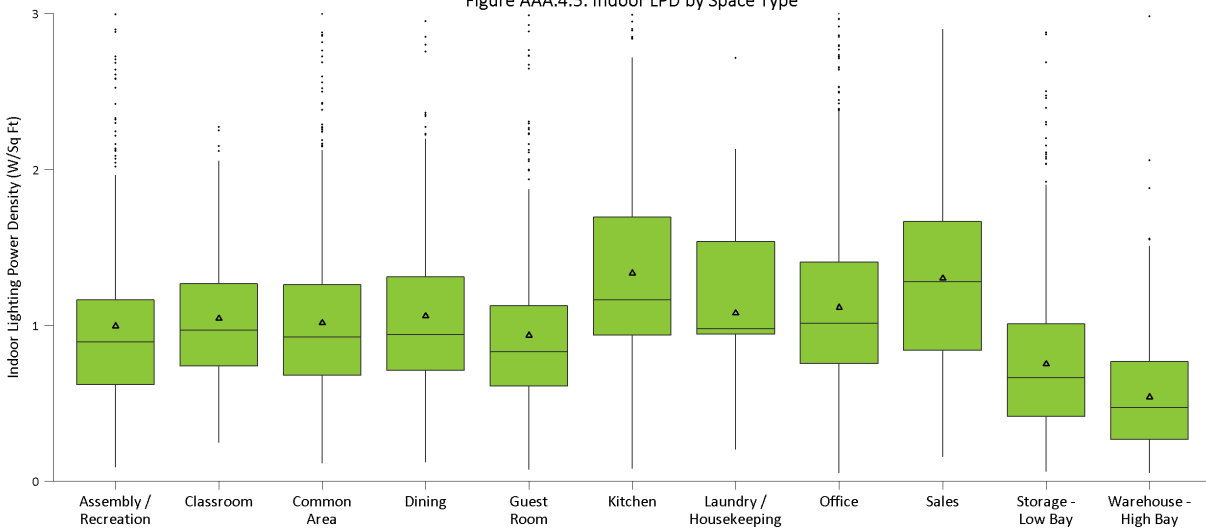
Figure AAA.4.4: Indoor LPD by Building Type and Urban/Rural



	Statistic	All	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
Urban	Mean	0.96 ± 0.02	0.97 ± 0.07	1.14 ± 0.06	1.27 ± 0.06	0.88 ± 0.08	1.04 ± 0.06	1.03 ± 0.09	1.2 ± 0.07	0.92 ± 0.05	0.59 ± 0.06	0.89 ± 0.08
	Median	0.91	0.98	1.18	1.18	0.89	1	0.93	1.18	0.85	0.51	0.83
	1st/3rd Q	0.67/1.2	0.73/1.1	0.76/1.4	1.1/1.6	0.63/1.1	0.71/1.2	0.7/1.2	0.81/1.5	0.8/1	0.38/0.81	0.62/1.1
	n	803	87	118	77	50	118	56	87	79	65	66
Rural	Mean	1.03 ± 0.03	1.07 ± 0.08	1.13 ± 0.1	1.12 ± 0.08	0.98 ± 0.09	1.12 ± 0.09	1.16 ± 0.1	1.14 ± 0.1	1 ± 0.07	0.7 ± 0.1	0.94 ± 0.08
	Median	0.96	0.98	1.03	1.13	0.87	1	1.03	1.04	0.95	0.93	0.86
	1st/3rd Q	0.74/1.3	0.87/1.3	0.68/1.5	0.94/1.3	0.71/1.2	0.84/1.5	0.86/1.6	0.73/1.5	0.84/1.2	0.22/0.96	0.68/1.1
	n	475	50	41	52	50	53	41	65	38	40	45

Units: Indoor Lighting Power Density (W/Sq Ft), error band shown at the 90% confidence level

Figure AAA.4.5: Indoor LPD by Space Type



Statistic	Assembly / Recreation	Classroom	Common Area	Dining	Guest Room	Kitchen	Laundry / Housekeeping	Office	Sales	Storage - Low Bay	Warehouse - High Bay
Mean	1 ± 0.05	1.04 ± 0.06	1.02 ± 0.03	1.06 ± 0.06	0.94 ± 0.05	1.33 ± 0.05	1.08 ± 0.1	1.12 ± 0.03	1.3 ± 0.05	0.75 ± 0.04	0.54 ± 0.05
Median	0.89	0.97	0.92	0.94	0.83	1.16	0.98	1.01	1.28	0.66	0.47
1st/3rd Q	0.62/1.2	0.74/1.3	0.68/1.3	0.71/1.3	0.61/1.1	0.94/1.7	0.94/1.5	0.75/1.4	0.84/1.7	0.41/1	0.27/0.77
n	354	201	707	234	239	340	22	849	321	399	151

Units: Indoor Lighting Power Density (W/Sq Ft), error band shown at the 90% confidence level

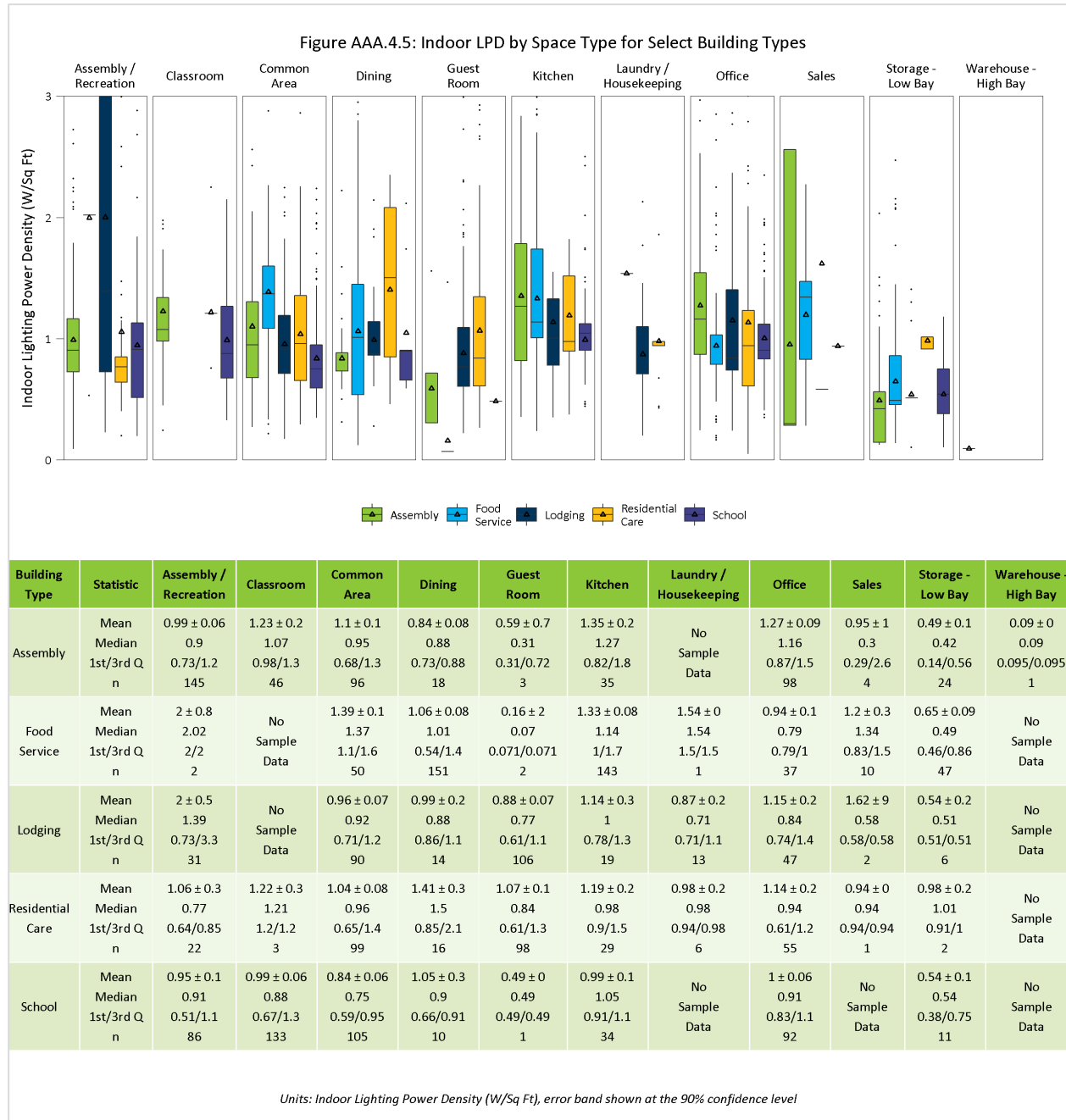
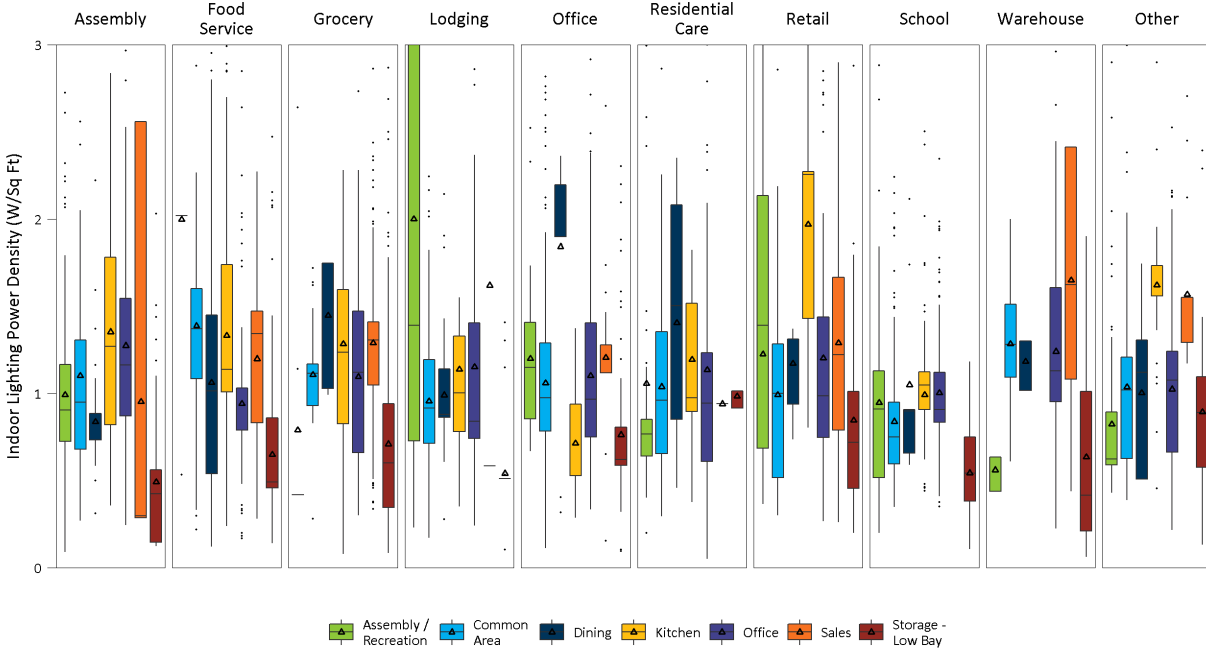
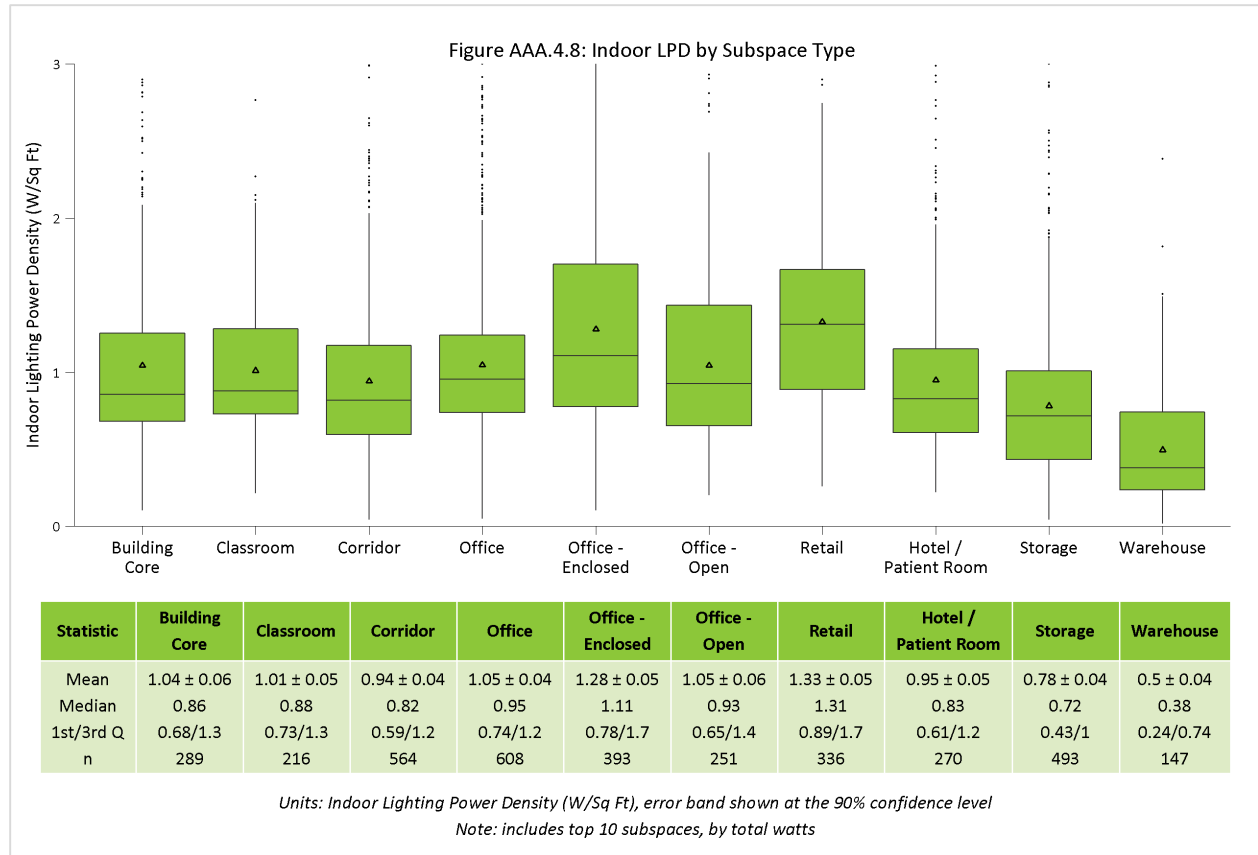


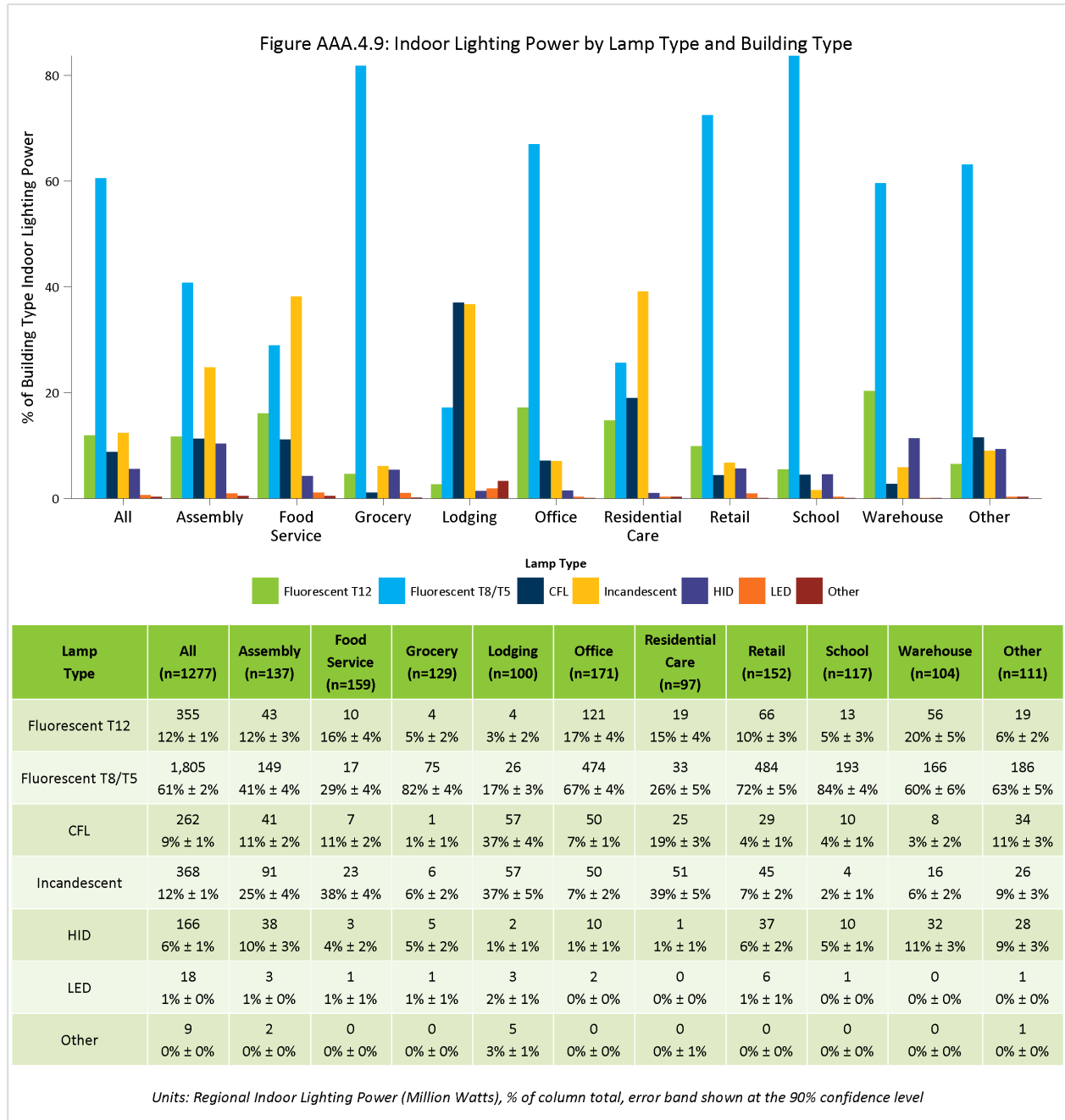
Figure AAA.4.7: Indoor LPD by Building Type for Select Space Types



Space Type	Statistic	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
Assembly / Recreation	Mean	0.99 ± 0.06	2 ± 0.8	0.79 ± 1	2 ± 0.5	1.2 ± 0.2	1.06 ± 0.3	1.23 ± 0.4	0.95 ± 0.1	0.56 ± 0.4	0.82 ± 0.1
	Median	0.9	2.02	0.42	1.39	1.15	0.77	1.39	0.91	0.63	0.62
	1st/3rd Q	0.73/1.2	2/2	0.42/0.42	0.73/3.3	0.85/1.4	0.64/0.85	0.68/2.1	0.51/1.1	0.44/0.63	0.59/0.89
	n	145	2	3	31	18	22	9	86	2	36
Common Area	Mean	1.1 ± 0.1	1.39 ± 0.1	1.11 ± 0.2	0.96 ± 0.07	1.06 ± 0.06	1.04 ± 0.08	0.99 ± 0.1	0.84 ± 0.06	1.28 ± 0.1	1.04 ± 0.1
	Median	0.95	1.37	1.12	0.92	0.98	0.96	1	0.75	1.28	1.02
	1st/3rd Q	0.68/1.3	1.1/1.6	0.93/1.2	0.71/1.2	0.78/1.3	0.65/1.4	0.52/1.3	0.59/0.95	1.1/1.5	0.63/1.2
	n	96	50	13	90	132	99	39	105	21	62
Dining	Mean	0.84 ± 0.08	1.06 ± 0.08	1.45 ± 0.4	0.99 ± 0.2	1.84 ± 0.5	1.41 ± 0.3	1.17 ± 0.2	1.05 ± 0.3	1.18 ± 0.6	1 ± 0.4
	Median	0.88	1.01	1.75	0.88	1.9	1.5	1.31	0.9	1.3	1.12
	1st/3rd Q	0.73/0.88	0.54/1.4	1/1.7	0.86/1.1	1.9/2.2	0.85/2.1	0.94/1.3	0.66/0.91	1/1.3	0.51/1.3
	n	18	151	4	14	5	16	7	10	2	7
Kitchen	Mean	1.35 ± 0.2	1.33 ± 0.08	1.28 ± 0.1	1.14 ± 0.3	0.71 ± 0.3	1.19 ± 0.2	1.97 ± 0.4	0.99 ± 0.1	3.64 ± 0	1.62 ± 0.2
	Median	1.27	1.14	1.24	1	0.53	0.98	2.26	1.05	3.64	1.73
	1st/3rd Q	0.82/1.8	1/1.7	0.83/1.6	0.78/1.3	0.53/0.94	0.9/1.5	1.4/2.3	0.91/1.1	3.6/3.6	1.6/1.7
	n	35	143	49	19	5	29	11	34	1	14
Office	Mean	1.27 ± 0.09	0.94 ± 0.1	1.1 ± 0.1	1.15 ± 0.2	1.1 ± 0.06	1.14 ± 0.2	1.2 ± 0.2	1 ± 0.06	1.24 ± 0.09	1.02 ± 0.08
	Median	1.16	0.79	1.12	0.84	0.96	0.94	0.98	0.91	1.13	1.08
	1st/3rd Q	0.87/1.5	0.79/1	0.66/1.5	0.74/1.4	0.75/1.4	0.61/1.2	0.75/1.4	0.83/1.1	0.95/1.6	0.66/1.2
	n	98	37	41	47	188	55	91	92	96	104
Sales	Mean	0.95 ± 1	1.2 ± 0.3	1.29 ± 0.06	1.62 ± 9	1.21 ± 0.3	0.94 ± 0	1.29 ± 0.08	No Sample Data	1.65 ± 0.3	1.57 ± 0.3
	Median	0.3	1.34	1.31	0.58	1.12	0.94	1.22		1.62	1.29
	1st/3rd Q	0.29/2.6	0.83/1.5	1/1.4	0.58/0.58	1.1/1.3	0.94/0.94	0.79/1.7		1.1/2.4	1.3/1.6
	n	4	10	133	2	9	1	140		15	7
Storage - Low Bay	Mean	0.49 ± 0.1	0.65 ± 0.09	0.71 ± 0.07	0.54 ± 0.2	0.76 ± 0.1	0.98 ± 0.2	0.85 ± 0.09	0.54 ± 0.1	0.64 ± 0.1	0.89 ± 0.1
	Median	0.42	0.49	0.6	0.51	0.62	1.01	0.72	0.54	0.41	0.89
	1st/3rd Q	0.14/0.56	0.46/0.86	0.35/0.94	0.51/0.51	0.59/0.81	0.91/1	0.45/1	0.38/0.75	0.21/1	0.58/1.1
	n	24	47	104	6	43	2	85	11	43	34

Units: Indoor Lighting Power Density (W/Sq Ft), error band shown at the 90% confidence level





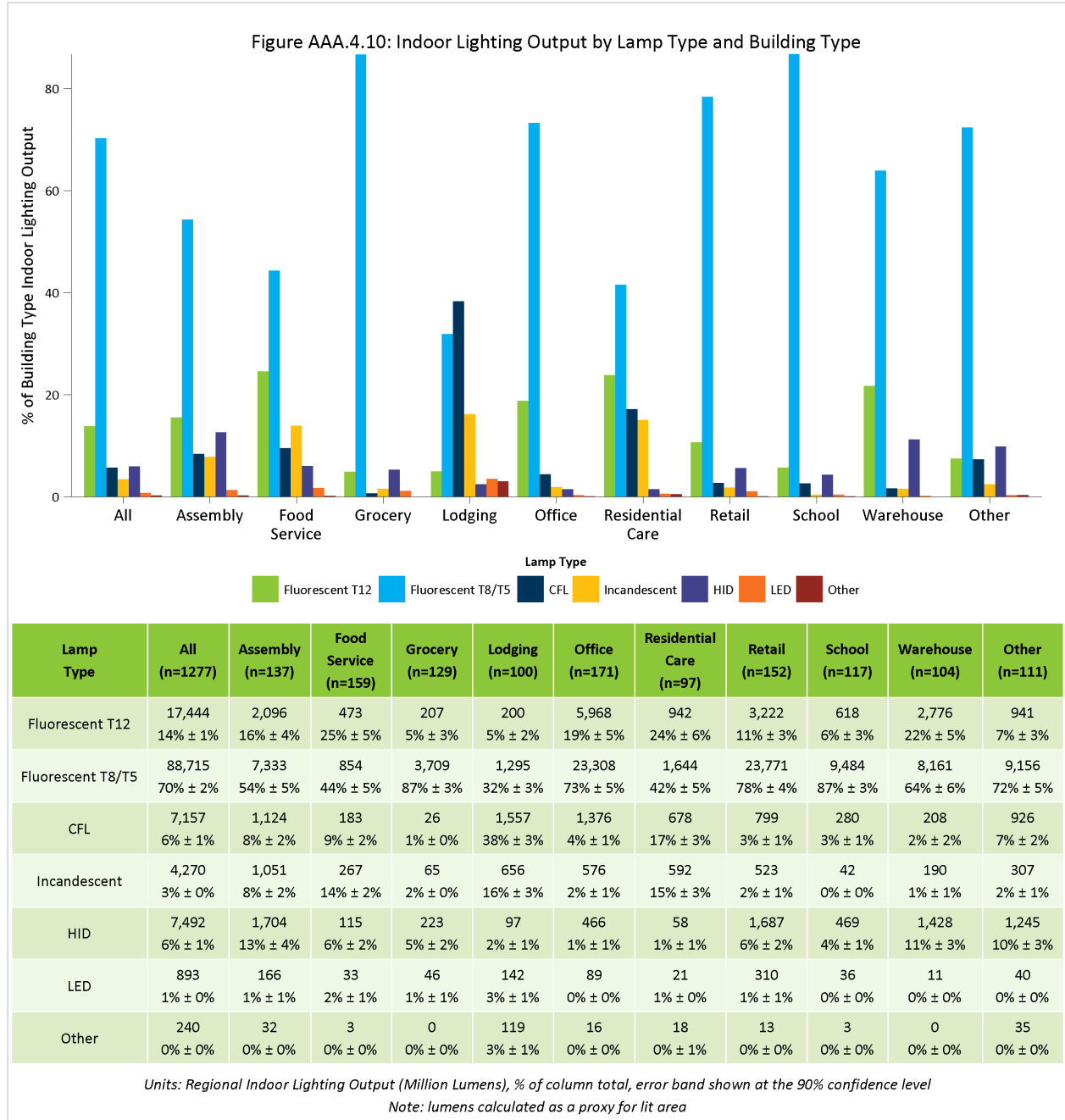
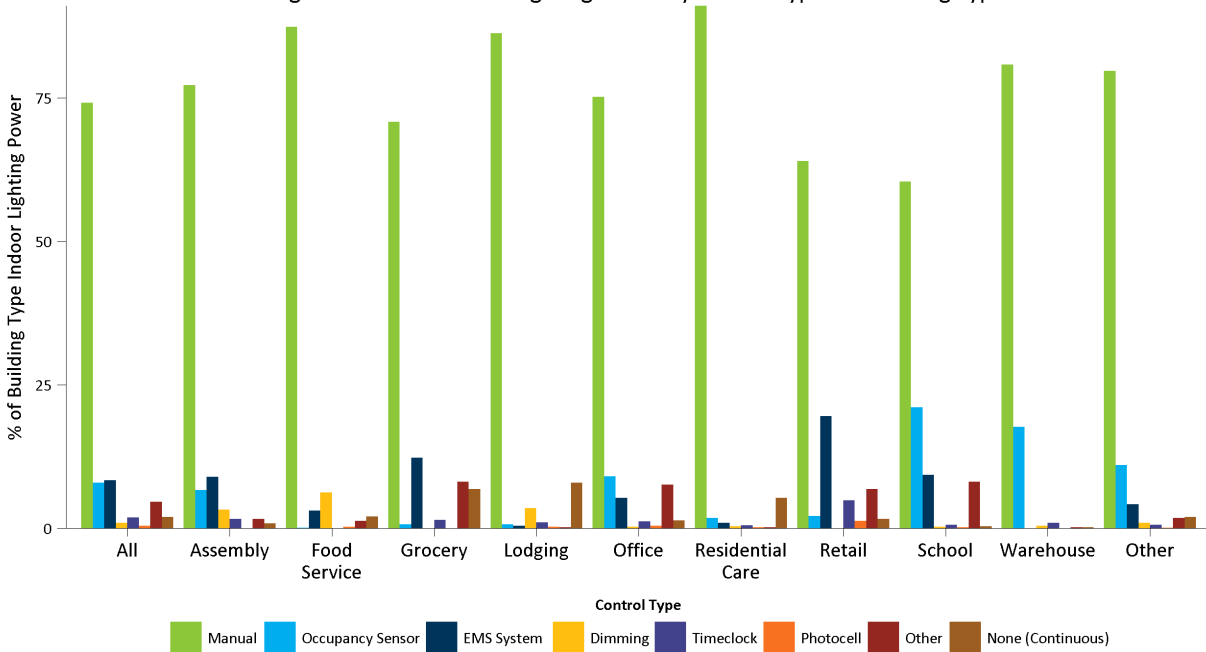
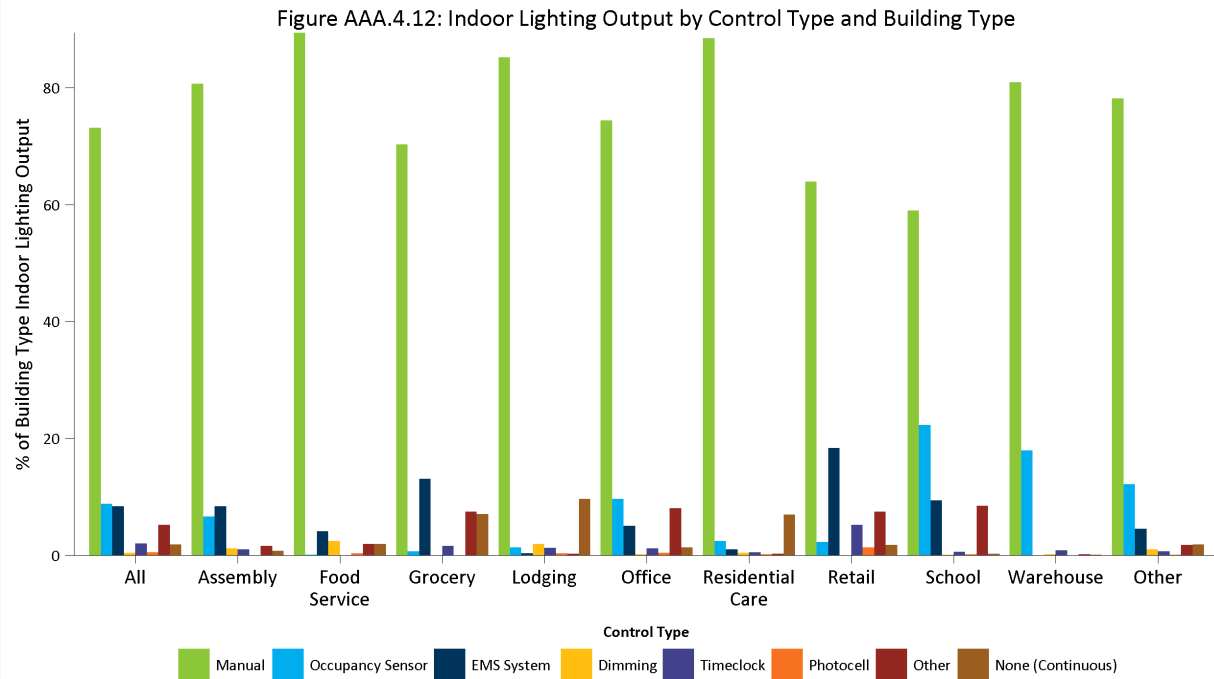


Figure AAA.4.11: Indoor Lighting Power by Control Type and Building Type



Control Type	All (n=1249)	Assembly (n=136)	Food Service (n=158)	Grocery (n=121)	Lodging (n=97)	Office (n=167)	Residential Care (n=94)	Retail (n=149)	School (n=114)	Warehouse (n=102)	Other (n=111)
Manual	2,156 74% ± 2%	279 77% ± 5%	51 87% ± 4%	63 71% ± 6%	131 86% ± 3%	509 75% ± 5%	115 91% ± 2%	417 64% ± 6%	134 60% ± 7%	224 81% ± 5%	233 80% ± 5%
Occupancy Sensor	230 8% ± 1%	24 7% ± 3%	0 0% ± 0%	1 1% ± 0%	1 1% ± 1%	61 9% ± 3%	2 2% ± 1%	13 2% ± 1%	47 21% ± 5%	49 18% ± 5%	32 11% ± 3%
EMS System	242 8% ± 1%	32 9% ± 3%	2 3% ± 2%	11 12% ± 5%	1 0% ± 1%	35 5% ± 2%	1 1% ± 1%	127 20% ± 5%	21 9% ± 4%	0 0% ± 0%	12 4% ± 2%
Dimming	27 1% ± 0%	12 3% ± 2%	4 6% ± 3%	0 0% ± 0%	5 3% ± 2%	2 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	1 0% ± 0%	3 1% ± 1%
Timeclock	54 2% ± 1%	6 2% ± 1%	0 0% ± 0%	1 1% ± 2%	2 1% ± 1%	8 1% ± 1%	1 1% ± 0%	32 5% ± 3%	1 1% ± 1%	3 1% ± 1%	2 1% ± 1%
Photocell	11 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	2 0% ± 1%	0 0% ± 0%	8 1% ± 1%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%
Other	133 5% ± 1%	6 2% ± 1%	1 1% ± 1%	7 8% ± 3%	0 0% ± 0%	51 8% ± 3%	0 0% ± 0%	44 7% ± 3%	18 8% ± 3%	0 0% ± 0%	5 2% ± 1%
None (Continuous)	55 2% ± 0%	3 1% ± 0%	1 2% ± 1%	6 7% ± 3%	12 8% ± 2%	9 1% ± 1%	7 5% ± 2%	10 2% ± 1%	1 0% ± 0%	0 0% ± 0%	6 2% ± 1%

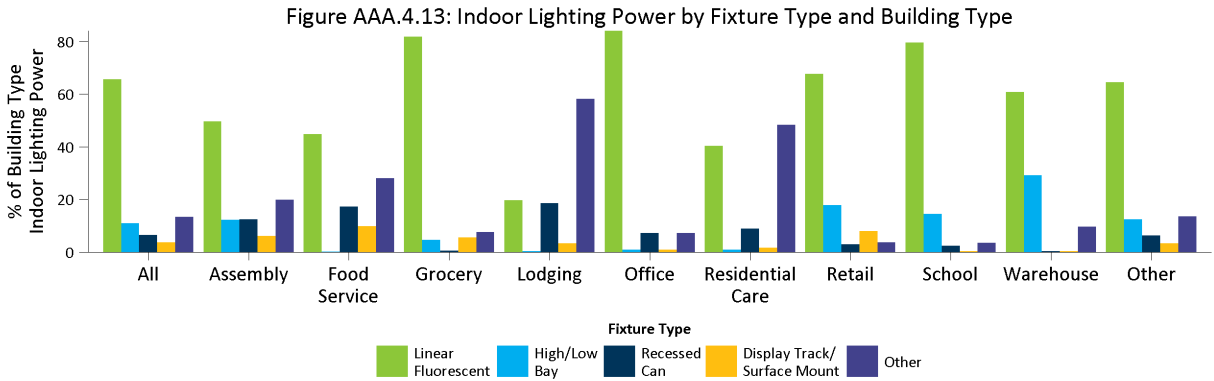
Units: Regional Indoor Lighting Power (Million Watts), % of column total, error band shown at the 90% confidence level



Control Type	All (n=1249)	Assembly (n=136)	Food Service (n=158)	Grocery (n=121)	Lodging (n=97)	Office (n=167)	Residential Care (n=94)	Retail (n=149)	School (n=114)	Warehouse (n=102)	Other (n=111)
Manual	88,413 73% ± 2%	10,543 81% ± 5%	1,642 89% ± 4%	2,882 70% ± 6%	3,105 85% ± 3%	22,457 74% ± 5%	3,418 88% ± 3%	18,614 64% ± 6%	6,035 59% ± 7%	10,299 81% ± 5%	9,418 78% ± 5%
Occupancy Sensor	10,589 9% ± 1%	862 7% ± 3%	1 0% ± 0%	25 1% ± 1%	47 1% ± 1%	2,902 10% ± 3%	93 2% ± 2%	645 2% ± 1%	2,275 22% ± 5%	2,281 18% ± 5%	1,459 12% ± 4%
EMS System	10,079 8% ± 1%	1,090 8% ± 3%	75 4% ± 2%	535 13% ± 5%	10 0% ± 1%	1,507 5% ± 2%	37 1% ± 1%	5,328 18% ± 5%	956 9% ± 4%	0 0% ± 0%	541 4% ± 2%
Dimming	449 0% ± 0%	146 1% ± 1%	44 2% ± 2%	0 0% ± 0%	67 2% ± 1%	39 0% ± 0%	15 0% ± 0%	0 0% ± 0%	6 0% ± 0%	17 0% ± 0%	113 1% ± 1%
Timeclock	2,337 2% ± 1%	131 1% ± 1%	0 0% ± 0%	63 2% ± 2%	44 1% ± 1%	344 1% ± 1%	18 0% ± 0%	1,507 5% ± 3%	53 1% ± 0%	102 1% ± 1%	75 1% ± 1%
Photocell	533 0% ± 0%	0 0% ± 0%	5 0% ± 0%	0 0% ± 0%	12 0% ± 0%	118 0% ± 1%	6 0% ± 0%	377 1% ± 1%	12 0% ± 0%	0 0% ± 0%	3 0% ± 0%
Other	6,222 5% ± 1%	203 2% ± 1%	35 2% ± 2%	306 7% ± 3%	7 0% ± 0%	2,414 8% ± 3%	9 0% ± 0%	2,154 7% ± 3%	864 8% ± 3%	17 0% ± 0%	212 2% ± 1%
None (Continuous)	2,176 2% ± 0%	92 1% ± 0%	34 2% ± 1%	288 7% ± 3%	350 10% ± 2%	397 1% ± 1%	267 7% ± 2%	491 2% ± 1%	24 0% ± 0%	11 0% ± 0%	222 2% ± 1%

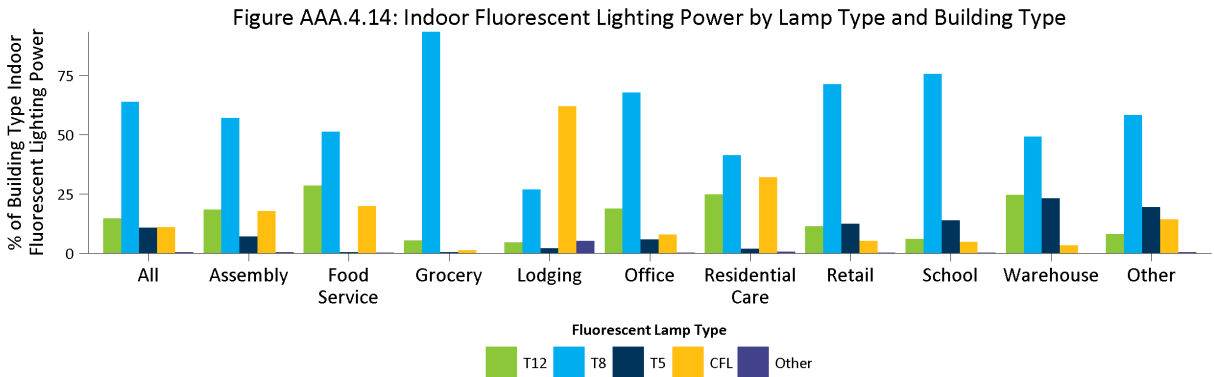
Units: Regional Indoor Lighting Output (Million Lumens), % of column total, error band shown at the 90% confidence level

Note: lumens calculated as a proxy for lit area



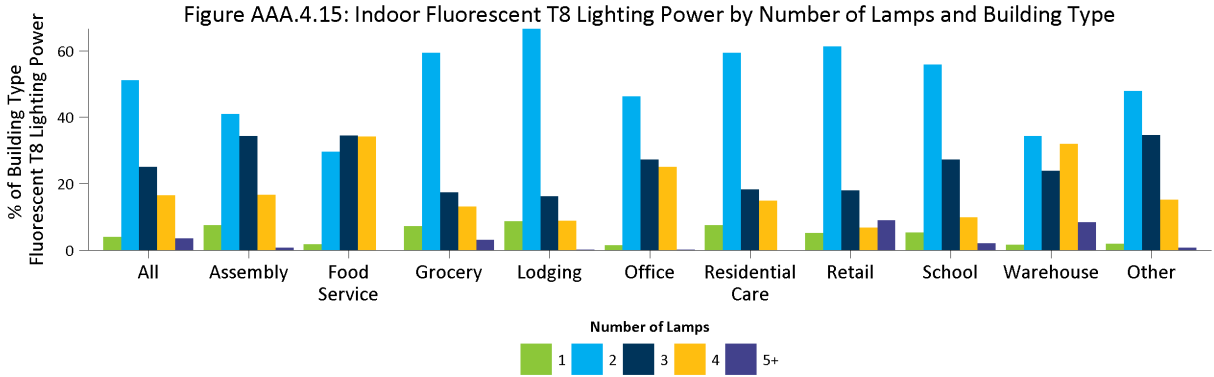
Fixture Type	All (n=1277)	Assembly (n=137)	Food Service (n=159)	Grocery (n=129)	Lodging (n=100)	Office (n=171)	Residential Care (n=97)	Retail (n=152)	School (n=117)	Warehouse (n=104)	Other (n=111)
Linear Fluorescent	1,956 66% ± 1%	181 50% ± 4%	27 45% ± 4%	76 82% ± 4%	30 20% ± 3%	595 84% ± 2%	53 40% ± 5%	452 68% ± 4%	184 80% ± 3%	169 61% ± 5%	190 65% ± 5%
High/Low Bay	327 11% ± 1%	45 12% ± 3%	0 0% ± 0%	4 5% ± 2%	0 0% ± 0%	7 1% ± 1%	1 1% ± 1%	119 18% ± 4%	33 14% ± 2%	81 29% ± 5%	36 12% ± 4%
Recessed Can	191 6% ± 1%	45 12% ± 2%	10 17% ± 3%	0 0% ± 0%	29 19% ± 3%	51 7% ± 2%	12 9% ± 2%	20 3% ± 1%	5 2% ± 1%	1 0% ± 0%	19 6% ± 2%
Display Track/Surface Mount	110 4% ± 1%	22 6% ± 2%	6 10% ± 2%	5 5% ± 2%	5 3% ± 2%	6 1% ± 0%	2 2% ± 1%	53 8% ± 2%	1 0% ± 0%	1 0% ± 0%	10 3% ± 2%
Other	398 13% ± 1%	72 20% ± 3%	17 28% ± 3%	7 8% ± 2%	90 58% ± 4%	50 7% ± 1%	63 48% ± 5%	24 4% ± 1%	8 3% ± 1%	27 10% ± 3%	40 14% ± 3%

Units: Regional Indoor Lighting Power (Million Watts), % of column total, error band shown at the 90% confidence level



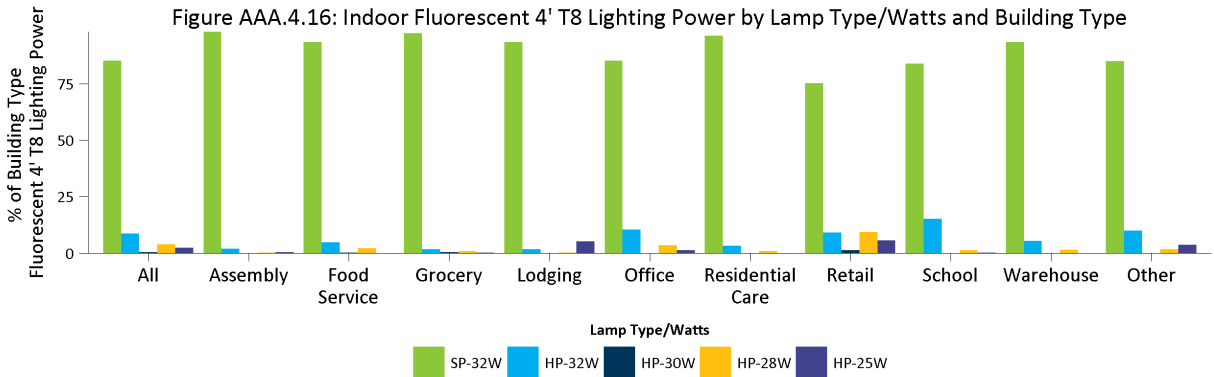
Fluorescent Lamp Type	All (n=1269)	Assembly (n=137)	Food Service (n=158)	Grocery (n=127)	Lodging (n=99)	Office (n=170)	Residential Care (n=97)	Retail (n=152)	School (n=117)	Warehouse (n=101)	Other (n=111)
T12	355 15% ± 1%	43 18% ± 5%	10 29% ± 5%	4 5% ± 3%	4 4% ± 2%	121 19% ± 5%	19 25% ± 6%	66 11% ± 4%	13 6% ± 3%	56 25% ± 6%	19 8% ± 3%
T8	1,548 64% ± 2%	133 57% ± 5%	17 51% ± 5%	75 93% ± 3%	25 27% ± 3%	438 68% ± 5%	32 41% ± 5%	412 71% ± 5%	163 76% ± 5%	113 49% ± 6%	140 58% ± 6%
T5	257 11% ± 1%	16 7% ± 3%	0 0% ± 1%	0 0% ± 1%	2 2% ± 1%	36 6% ± 2%	1 2% ± 1%	71 12% ± 4%	30 14% ± 4%	53 23% ± 6%	47 19% ± 5%
CFL	262 11% ± 1%	41 18% ± 3%	7 20% ± 3%	1 1% ± 1%	57 62% ± 3%	50 8% ± 1%	25 32% ± 5%	29 5% ± 2%	10 5% ± 1%	8 3% ± 3%	34 14% ± 3%
Other	7 0% ± 0%	1 0% ± 0%	0 0% ± 0%	0 0% ± 0%	5 5% ± 2%	0 0% ± 0%	0 0% ± 1%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	1 0% ± 0%

Units: Regional Indoor Fluorescent Lighting Power (Million Watts), % of column total, error band shown at the 90% confidence level



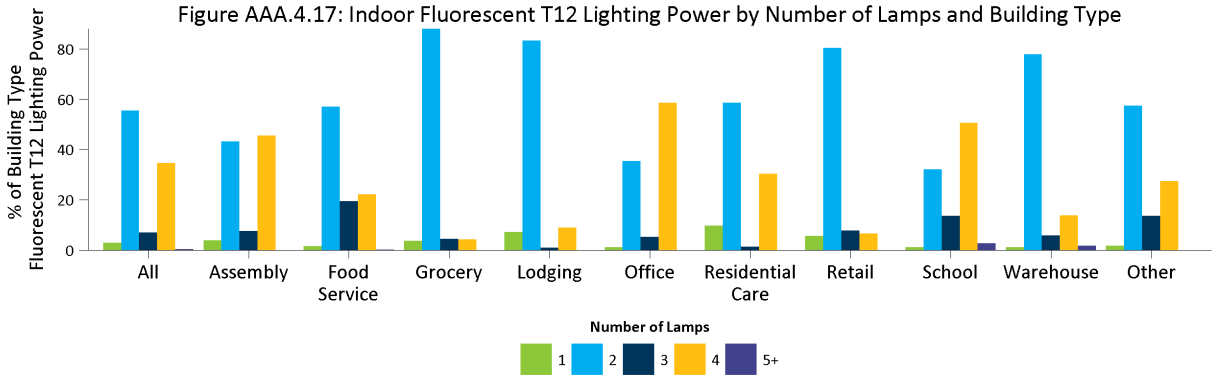
Number of Lamps	All (n=1092)	Assembly (n=116)	Food Service (n=114)	Grocery (n=116)	Lodging (n=80)	Office (n=155)	Residential Care (n=85)	Retail (n=135)	School (n=106)	Warehouse (n=85)	Other (n=100)
1	60,307 4% ± 1%	9,885 7% ± 3%	304 2% ± 1%	5,370 7% ± 3%	2,109 9% ± 3%	6,442 1% ± 1%	2,391 7% ± 2%	21,037 5% ± 2%	8,441 5% ± 2%	1,759 2% ± 1%	2,570 2% ± 1%
2	791,310 51% ± 2%	54,504 41% ± 5%	5,125 30% ± 6%	44,669 59% ± 6%	16,336 67% ± 6%	202,581 46% ± 6%	19,059 59% ± 6%	252,462 61% ± 5%	90,956 56% ± 5%	38,761 34% ± 7%	66,858 48% ± 6%
3	387,479 25% ± 2%	45,727 34% ± 5%	5,957 34% ± 7%	13,075 17% ± 5%	3,960 16% ± 5%	119,231 27% ± 5%	5,846 18% ± 5%	74,017 18% ± 4%	44,469 27% ± 6%	26,906 24% ± 5%	48,292 35% ± 6%
4	255,168 16% ± 2%	22,177 17% ± 5%	5,907 34% ± 7%	9,765 13% ± 4%	2,143 9% ± 3%	109,462 25% ± 5%	4,774 15% ± 4%	27,834 7% ± 2%	15,890 10% ± 4%	36,172 32% ± 6%	21,043 15% ± 4%
5+	54,217 4% ± 1%	796 1% ± 1%	0 0% ± 0%	2,327 3% ± 2%	12 0% ± 0%	370 0% ± 0%	0 0% ± 0%	36,914 9% ± 3%	3,321 2% ± 1%	9,460 8% ± 3%	1,018 1% ± 1%

Units: Regional Indoor Fluorescent T8 Lighting Power (Thousand Watts), % of column total, error band shown at the 90% confidence level



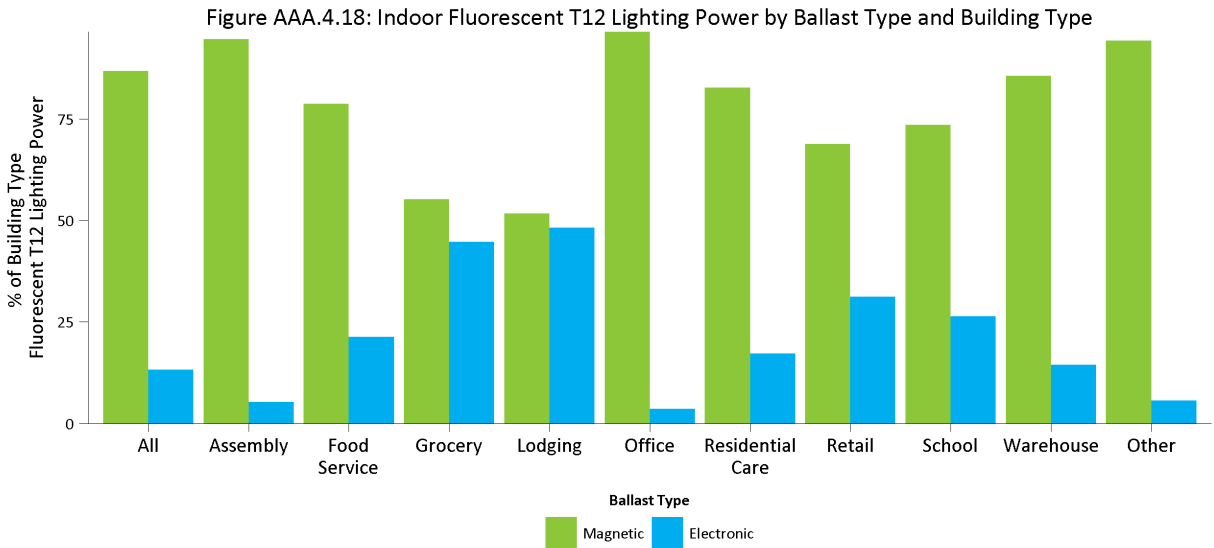
Lamp Type/ Watts	All (n=987)	Assembly (n=107)	Food Service (n=102)	Grocery (n=102)	Lodging (n=74)	Office (n=140)	Residential Care (n=77)	Retail (n=124)	School (n=95)	Warehouse (n=77)	Other (n=89)
SP-32W	1,105,035 85% ± 2%	111,512 98% ± 2%	15,187 93% ± 4%	60,794 97% ± 3%	16,385 93% ± 4%	322,794 85% ± 5%	26,440 96% ± 3%	243,411 75% ± 6%	118,686 84% ± 6%	85,593 93% ± 4%	104,233 85% ± 6%
HP-32W	112,019 9% ± 1%	2,020 2% ± 2%	750 5% ± 3%	954 2% ± 2%	301 2% ± 2%	39,464 10% ± 4%	866 3% ± 3%	29,481 9% ± 4%	21,254 15% ± 6%	4,880 5% ± 4%	12,048 10% ± 5%
HP-30W	3,868 0% ± 0%	0 0% ± 0%	2 0% ± 0%	153 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	3,712 1% ± 2%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%
HP-28W	48,631 4% ± 1%	196 0% ± 1%	335 2% ± 2%	521 1% ± 1%	4 0% ± 0%	12,533 3% ± 2%	190 1% ± 1%	29,875 9% ± 4%	1,647 1% ± 2%	1,205 1% ± 2%	2,126 2% ± 2%
HP-25W	28,283 2% ± 1%	327 0% ± 1%	0 0% ± 0%	41 0% ± 0%	880 5% ± 3%	4,817 1% ± 2%	0 0% ± 0%	17,649 5% ± 3%	101 0% ± 0%	0 0% ± 0%	4,468 4% ± 3%

Units: Regional Indoor Fluorescent 4' T8 Lighting Power (Thousand Watts), % of column total, error band shown at the 90% confidence level



Number of Lamps	All (n=411)	Assembly (n=54)	Food Service (n=66)	Grocery (n=29)	Lodging (n=29)	Office (n=43)	Residential Care (n=36)	Retail (n=60)	School (n=28)	Warehouse (n=36)	Other (n=30)
1	9,904 3% ± 1%	1,600 4% ± 2%	145 2% ± 1%	149 4% ± 5%	286 7% ± 7%	1,223 1% ± 2%	1,860 10% ± 5%	3,625 6% ± 4%	129 1% ± 1%	563 1% ± 1%	323 2% ± 3%
2	196,750 55% ± 3%	18,428 43% ± 10%	5,487 57% ± 8%	3,705 88% ± 9%	3,388 83% ± 10%	42,841 35% ± 10%	11,240 59% ± 8%	52,698 80% ± 6%	4,031 32% ± 12%	43,938 78% ± 9%	10,992 57% ± 12%
3	24,443 7% ± 2%	3,187 7% ± 4%	1,858 19% ± 8%	187 4% ± 5%	39 1% ± 2%	6,382 5% ± 5%	253 1% ± 3%	5,013 8% ± 4%	1,712 14% ± 9%	3,230 6% ± 6%	2,582 13% ± 8%
4	122,553 35% ± 3%	19,440 46% ± 9%	2,123 22% ± 7%	176 4% ± 5%	360 9% ± 7%	71,008 58% ± 10%	5,822 30% ± 9%	4,235 6% ± 4%	6,365 51% ± 14%	7,777 14% ± 8%	5,247 27% ± 12%
5+	1,330 0% ± 0%	0 0% ± 0%	18 0% ± 1%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	338 3% ± 5%	974 2% ± 3%	0 0% ± 0%

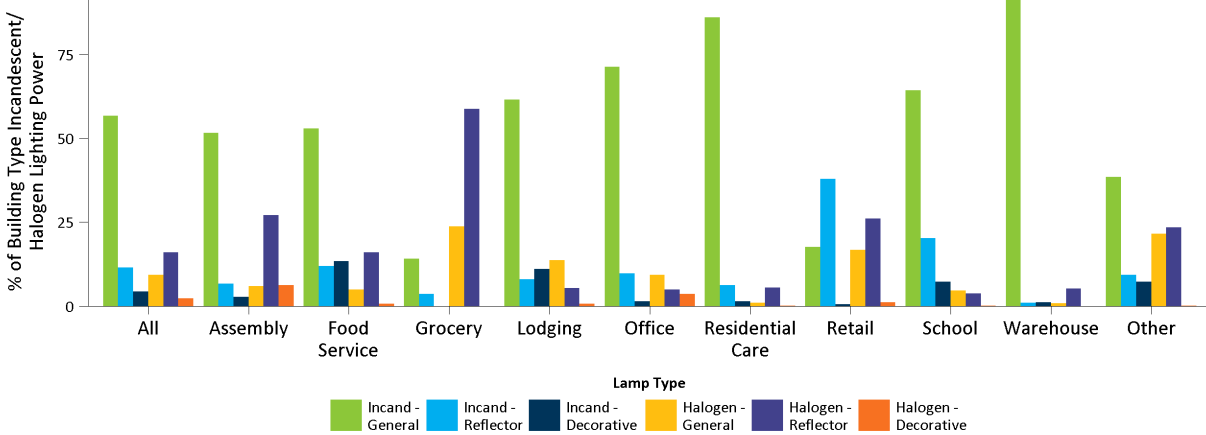
Units: Regional Indoor Fluorescent T12 Lighting Power (Thousand Watts), % of column total, error band shown at the 90% confidence level



Ballast Type	All (n=337)	Assembly (n=45)	Food Service (n=52)	Grocery (n=26)	Lodging (n=21)	Office (n=36)	Residential Care (n=33)	Retail (n=49)	School (n=23)	Warehouse (n=28)	Other (n=24)
Magnetic	270,647 87% ± 3%	33,964 95% ± 5%	7,256 79% ± 9%	2,212 55% ± 16%	1,076 52% ± 17%	110,847 96% ± 4%	15,598 83% ± 11%	37,109 69% ± 10%	7,251 74% ± 16%	41,075 86% ± 11%	14,259 94% ± 8%
Electronic	41,118 13% ± 3%	1,892 5% ± 5%	1,959 21% ± 9%	1,788 45% ± 16%	1,005 48% ± 17%	4,060 4% ± 4%	3,247 17% ± 11%	16,811 31% ± 10%	2,606 26% ± 16%	6,898 14% ± 11%	853 6% ± 8%

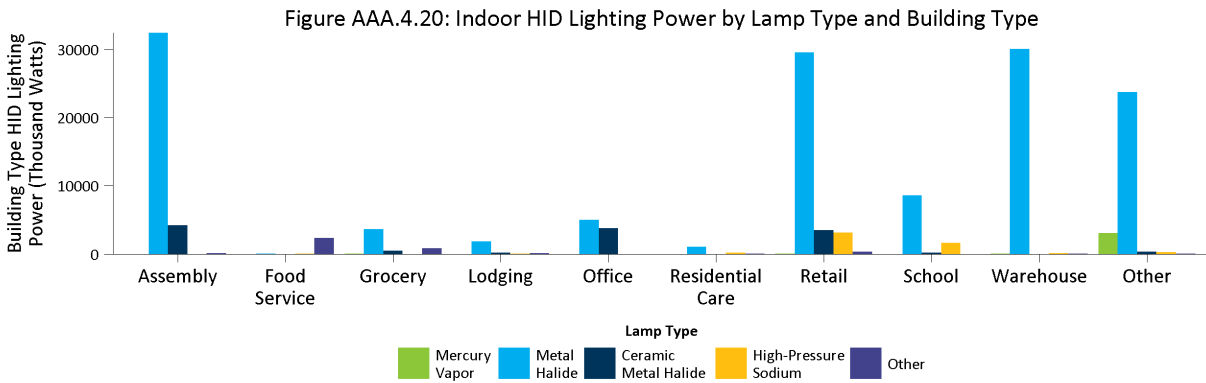
Units: Regional Indoor Fluorescent T12 Lighting Power (Thousand Watts), % of column total, error band shown at the 90% confidence level

Figure AAA.4.19: Indoor Incandescent/Halogen Lighting Power by Lamp Type and Building Type



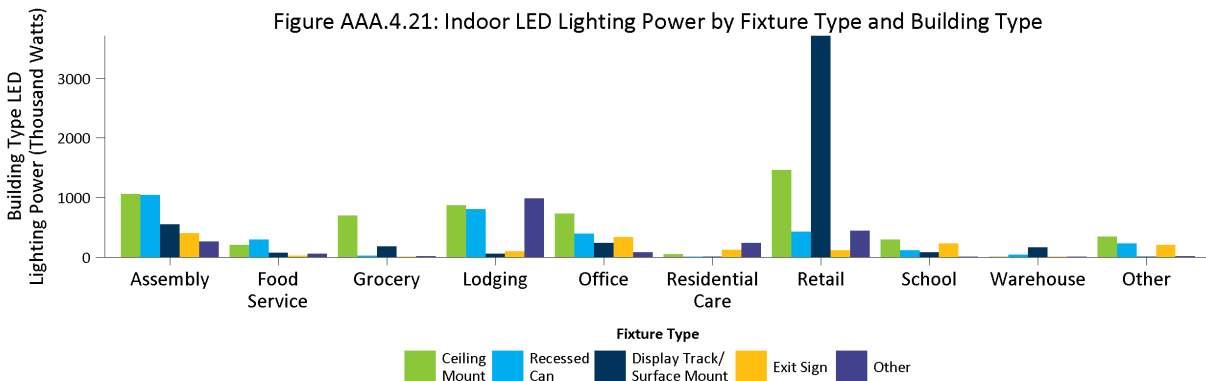
Lamp Type	All (n=734)	Assembly (n=113)	Food Service (n=113)	Grocery (n=40)	Lodging (n=82)	Office (n=86)	Residential Care (n=78)	Retail (n=70)	School (n=48)	Warehouse (n=50)	Other (n=54)
Incand - General	204,841 57% ± 3%	46,011 52% ± 6%	12,015 53% ± 6%	766 14% ± 9%	33,830 61% ± 8%	35,057 71% ± 7%	42,987 86% ± 5%	7,898 18% ± 7%	2,112 64% ± 11%	14,229 92% ± 5%	9,937 38% ± 10%
Incand - Reflector	41,269 11% ± 2%	5,943 7% ± 3%	2,716 12% ± 3%	195 4% ± 4%	4,354 8% ± 4%	4,769 10% ± 4%	3,072 6% ± 4%	17,024 38% ± 9%	661 20% ± 9%	139 1% ± 2%	2,395 9% ± 5%
Incand - Decorative	15,313 4% ± 1%	2,373 3% ± 1%	3,048 13% ± 4%	0 0% ± 0%	6,027 11% ± 5%	649 1% ± 2%	690 1% ± 2%	246 1% ± 0%	237 7% ± 6%	169 1% ± 1%	1,876 7% ± 4%
Halogen - General	33,560 9% ± 2%	5,225 6% ± 3%	1,126 5% ± 3%	1,290 24% ± 11%	7,541 14% ± 5%	4,545 9% ± 4%	477 1% ± 1%	7,528 17% ± 7%	151 5% ± 4%	117 1% ± 1%	5,561 22% ± 9%
Halogen - Reflector	57,689 16% ± 2%	24,119 27% ± 6%	3,635 16% ± 5%	3,200 59% ± 13%	2,925 5% ± 3%	2,408 5% ± 3%	2,760 6% ± 3%	11,693 26% ± 8%	120 4% ± 4%	797 5% ± 4%	6,031 23% ± 7%
Halogen - Decorative	8,334 2% ± 1%	5,594 6% ± 3%	155 1% ± 1%	0 0% ± 0%	336 1% ± 0%	1,738 4% ± 2%	3 0% ± 0%	494 1% ± 2%	2 0% ± 0%	0 0% ± 0%	12 0% ± 0%

Units: Regional Indoor Incandescent/Halogen Lighting Power (Thousand Watts), % of column total, error band shown at the 90% confidence level



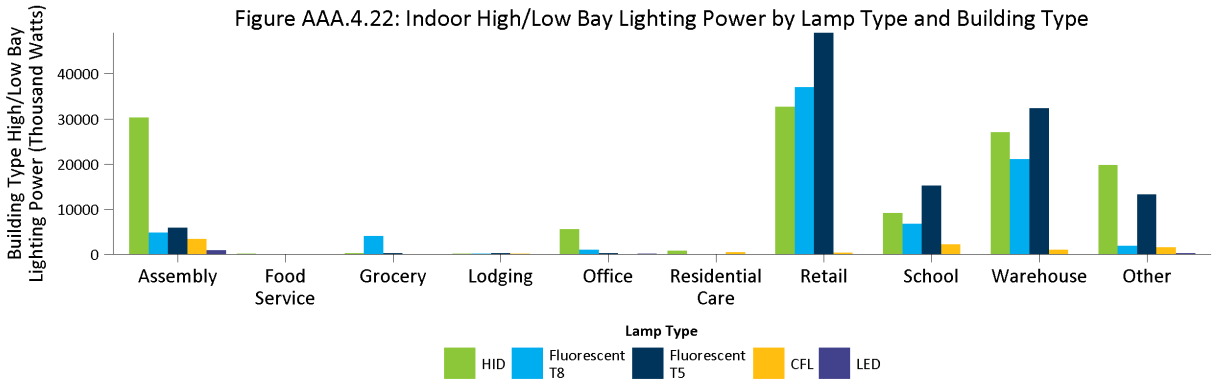
Lamp Type	All (n=209)	Assembly (n=29)	Food Service (n=16)	Grocery (n=15)	Lodging (n=22)	Office (n=16)	Residential Care (n=7)	Retail (n=30)	School (n=25)	Warehouse (n=24)	Other (n=25)
Mercury Vapor	3,095 2% ± 1%	0 0% ± 0%	0 0% ± 0%	5 0% ± 1%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	32 0% ± 0%	0 0% ± 0%	28 0% ± 1%	3,030 11% ± 8%
Metal Halide	135,972 84% ± 4%	32,426 88% ± 10%	55 2% ± 7%	3,639 74% ± 20%	1,811 85% ± 12%	4,977 57% ± 22%	1,022 80% ± 29%	29,603 81% ± 12%	8,563 83% ± 13%	30,101 100% ± 2%	23,774 87% ± 10%
Ceramic Metal Halide	12,631 8% ± 3%	4,178 11% ± 10%	0 0% ± 0%	451 9% ± 13%	199 9% ± 10%	3,792 43% ± 22%	0 0% ± 0%	3,480 10% ± 8%	184 2% ± 4%	0 0% ± 0%	347 1% ± 4%
High-Pressure Sodium	5,427 3% ± 2%	0 0% ± 0%	36 1% ± 5%	0 0% ± 0%	30 1% ± 4%	3 0% ± 0%	195 15% ± 26%	3,164 9% ± 8%	1,631 16% ± 12%	89 0% ± 2%	280 1% ± 1%
Other	3,823 2% ± 2%	79 0% ± 1%	2,353 96% ± 8%	835 17% ± 17%	83 4% ± 7%	0 0% ± 0%	59 5% ± 15%	344 1% ± 3%	0 0% ± 0%	19 0% ± 1%	52 0% ± 1%

Units: Regional Indoor HID Lighting Power (Thousand Watts), % of column total, error band shown at the 90% confidence level



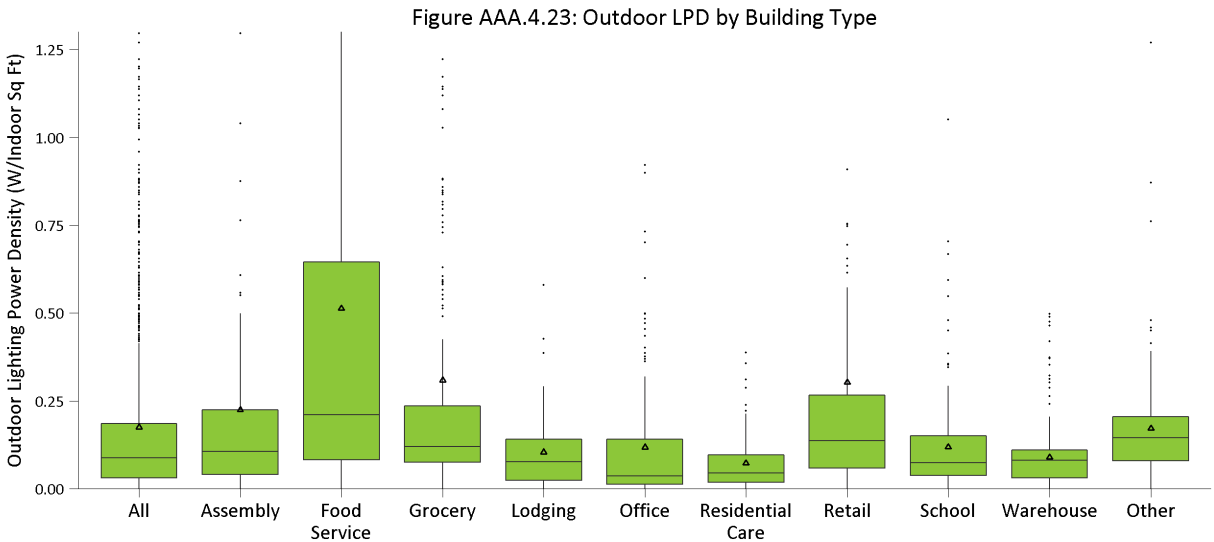
Fixture Type	All (n=351)	Assembly (n=47)	Food Service (n=49)	Grocery (n=38)	Lodging (n=43)	Office (n=44)	Residential Care (n=28)	Retail (n=44)	School (n=28)	Warehouse (n=9)	Other (n=21)
Ceiling Mount	5,699 32% ± 4%	1,055 32% ± 10%	200 31% ± 9%	696 77% ± 11%	870 31% ± 9%	730 41% ± 12%	48 12% ± 9%	1,458 24% ± 10%	296 41% ± 15%	6 3% ± 10%	340 43% ± 17%
Recessed Can	3,346 19% ± 3%	1,039 31% ± 10%	296 46% ± 10%	18 2% ± 3%	804 29% ± 9%	392 22% ± 10%	3 1% ± 2%	425 7% ± 4%	109 15% ± 11%	34 16% ± 21%	226 29% ± 15%
Display Track/Surface Mount	5,040 28% ± 4%	547 17% ± 9%	72 11% ± 6%	173 19% ± 11%	52 2% ± 3%	234 13% ± 8%	6 1% ± 1%	3,708 60% ± 10%	82 11% ± 9%	162 75% ± 27%	1 0% ± 0%
Exit Sign	1,537 9% ± 2%	398 12% ± 7%	22 3% ± 3%	8 1% ± 2%	96 3% ± 4%	337 19% ± 10%	118 29% ± 15%	115 2% ± 3%	230 32% ± 15%	7 3% ± 11%	205 26% ± 16%
Other	2,095 12% ± 2%	263 8% ± 4%	57 9% ± 6%	9 1% ± 2%	986 35% ± 9%	77 4% ± 4%	237 58% ± 15%	439 7% ± 3%	6 1% ± 3%	8 4% ± 8%	12 2% ± 3%

Units: Regional Indoor LED Lighting Power (Thousand Watts), % of column total, error band shown at the 90% confidence level



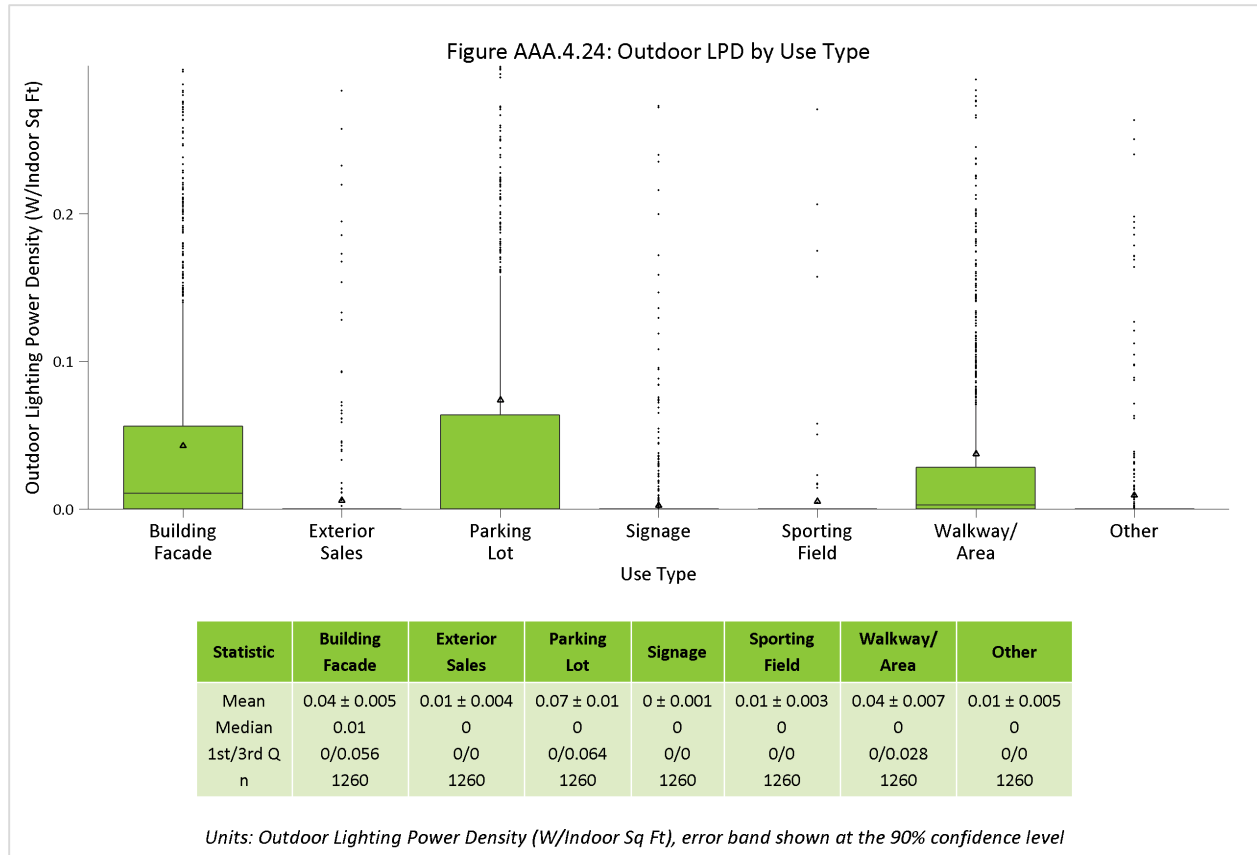
Lamp Type	All (n=275)	Assembly (n=38)	Food Service (n=1)	Grocery (n=10)	Lodging (n=8)	Office (n=12)	Residential Care (n=6)	Retail (n=50)	School (n=69)	Warehouse (n=48)	Other (n=33)
HID	125,363 38% ± 5%	30,251 67% ± 11%	55 100%	132 3% ± 10%	69 16% ± 25%	5,493 83% ± 19%	736 66% ± 39%	32,705 27% ± 10%	9,129 27% ± 8%	27,012 33% ± 10%	19,781 54% ± 15%
Fluorescent T8	76,243 23% ± 4%	4,748 11% ± 8%	0 0%	3,939 92% ± 16%	49 11% ± 21%	961 15% ± 17%	0 0% ± 0%	36,996 31% ± 11%	6,684 20% ± 8%	21,036 26% ± 8%	1,830 5% ± 6%
Fluorescent T5	116,090 35% ± 5%	5,791 13% ± 7%	0 0%	221 5% ± 13%	211 48% ± 34%	154 2% ± 5%	0 0% ± 0%	49,021 41% ± 12%	15,220 46% ± 10%	32,302 40% ± 11%	13,170 36% ± 14%
CFL	8,622 3% ± 2%	3,282 7% ± 7%	0 0%	0 0% ± 0%	107 24% ± 29%	0 0% ± 0%	383 34% ± 39%	241 0% ± 1%	2,174 7% ± 5%	943 1% ± 3%	1,492 4% ± 6%
LED	969 0% ± 0%	833 2% ± 2%	0 0%	3 0% ± 2%	0 0% ± 0%	5 0% ± 1%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	128 0% ± 0%

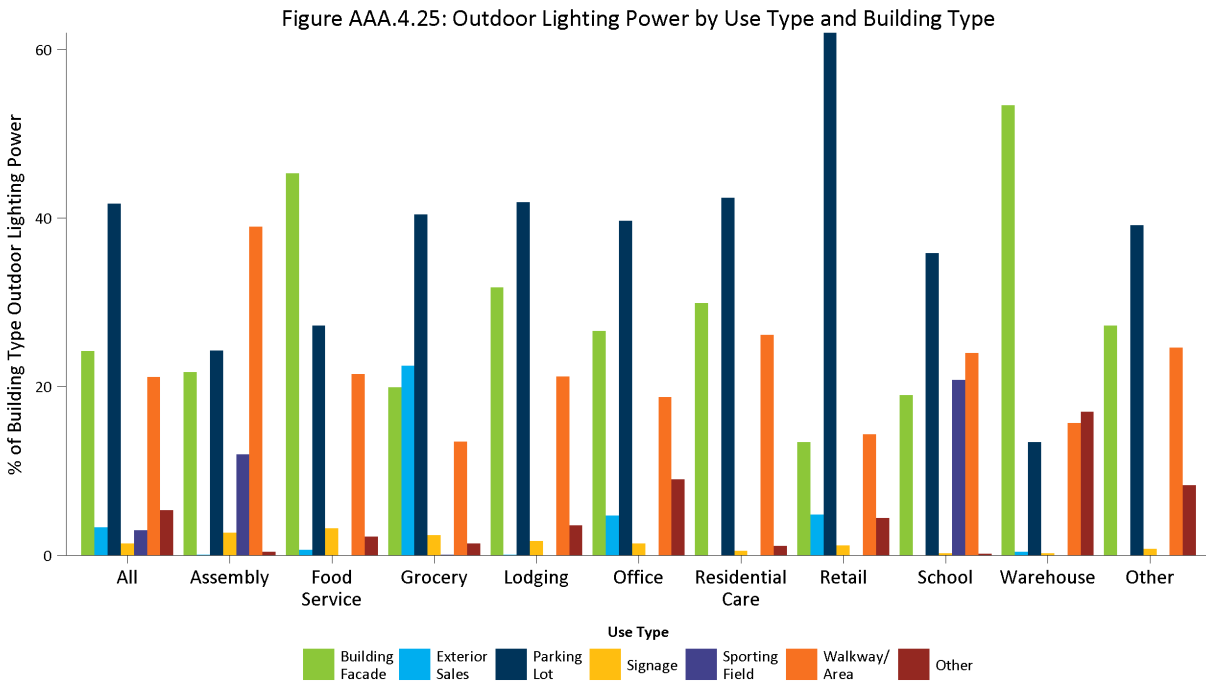
Units: Regional Indoor High/Low Bay Lighting Power (Thousand Watts), % of column total, error band shown at the 90% confidence level



Statistic	All	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
Mean	0.18 ± 0.02	0.23 ± 0.07	0.51 ± 0.1	0.31 ± 0.1	0.1 ± 0.02	0.12 ± 0.03	0.07 ± 0.01	0.3 ± 0.08	0.12 ± 0.02	0.09 ± 0.02	0.17 ± 0.03
Median	0.09	0.11	0.21	0.12	0.08	0.04	0.04	0.14	0.07	0.08	0.15
1st/3rd Q	0.03/0.19	0.04/0.22	0.083/0.65	0.075/0.24	0.024/0.14	0.012/0.14	0.018/0.096	0.059/0.27	0.038/0.15	0.03/0.11	0.079/0.2
n	1260	134	159	128	99	168	94	150	116	105	107

Units: Outdoor Lighting Power Density (W/Indoor Sq Ft), error band shown at the 90% confidence level

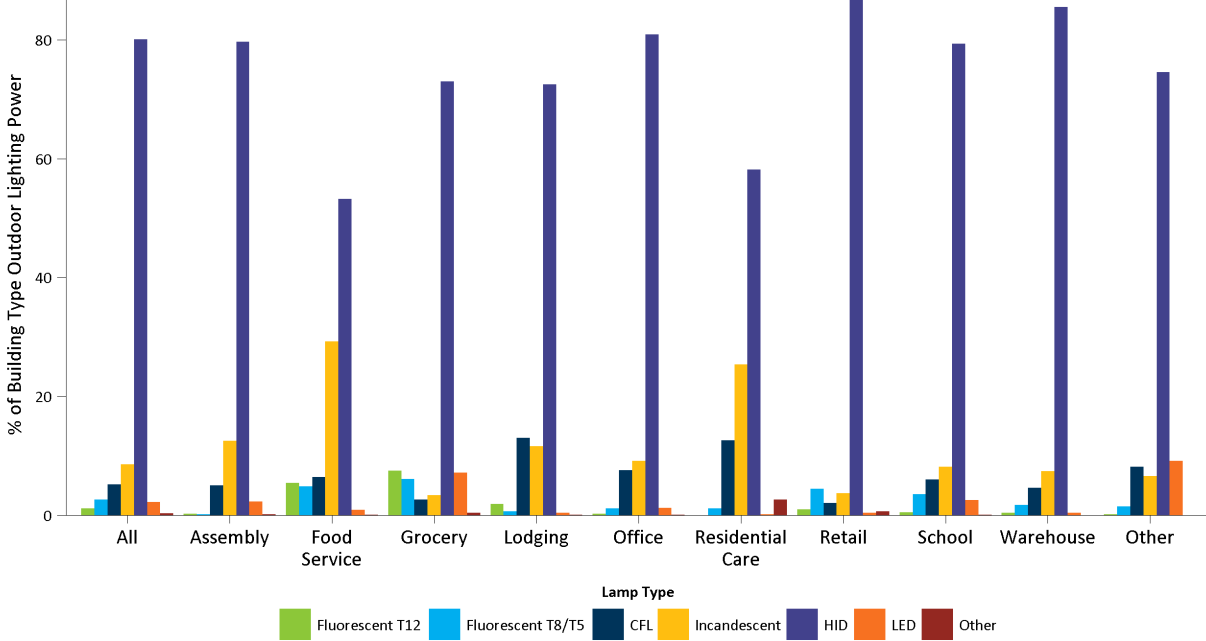




Use Type	All (n=1186)	Assembly (n=127)	Food Service (n=148)	Grocery (n=127)	Lodging (n=94)	Office (n=154)	Residential Care (n=91)	Retail (n=134)	School (n=115)	Warehouse (n=93)	Other (n=103)
Building Facade	126,691 24% ± 2%	16,888 22% ± 4%	12,234 45% ± 5%	4,711 20% ± 3%	5,346 32% ± 4%	20,697 27% ± 5%	2,453 30% ± 6%	22,343 13% ± 3%	5,498 19% ± 4%	21,188 53% ± 7%	15,332 27% ± 6%
Exterior Sales	17,299 3% ± 1%	36 0% ± 0%	172 1% ± 0%	5,312 22% ± 5%	5 0% ± 0%	3,642 5% ± 2%	0 0% ± 0%	7,992 5% ± 2%	0 0% ± 0%	140 0% ± 1%	0 0% ± 0%
Parking Lot	218,217 42% ± 2%	18,883 24% ± 5%	7,352 27% ± 4%	9,566 40% ± 5%	7,054 42% ± 5%	30,885 40% ± 5%	3,474 42% ± 6%	103,267 62% ± 5%	10,374 36% ± 6%	5,325 13% ± 5%	22,037 39% ± 6%
Signage	7,300 1% ± 0%	2,082 3% ± 2%	853 3% ± 2%	559 2% ± 2%	282 2% ± 1%	1,056 1% ± 1%	39 0% ± 0%	1,887 1% ± 1%	61 0% ± 0%	84 0% ± 0%	397 1% ± 1%
Sporting Field	15,330 3% ± 1%	9,295 12% ± 5%	0 0% ± 0%	12 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	6,023 21% ± 5%	0 0% ± 0%	0 0% ± 0%
Walkway/Area	110,510 21% ± 1%	30,317 39% ± 6%	5,808 22% ± 4%	3,191 13% ± 3%	3,567 21% ± 4%	14,608 19% ± 4%	2,142 26% ± 5%	23,847 14% ± 3%	6,946 24% ± 5%	6,214 16% ± 4%	13,871 25% ± 6%
Other	27,711 5% ± 1%	317 0% ± 1%	590 2% ± 2%	317 1% ± 1%	588 3% ± 2%	6,972 9% ± 4%	90 1% ± 1%	7,356 4% ± 2%	49 0% ± 0%	6,760 17% ± 6%	4,672 8% ± 4%

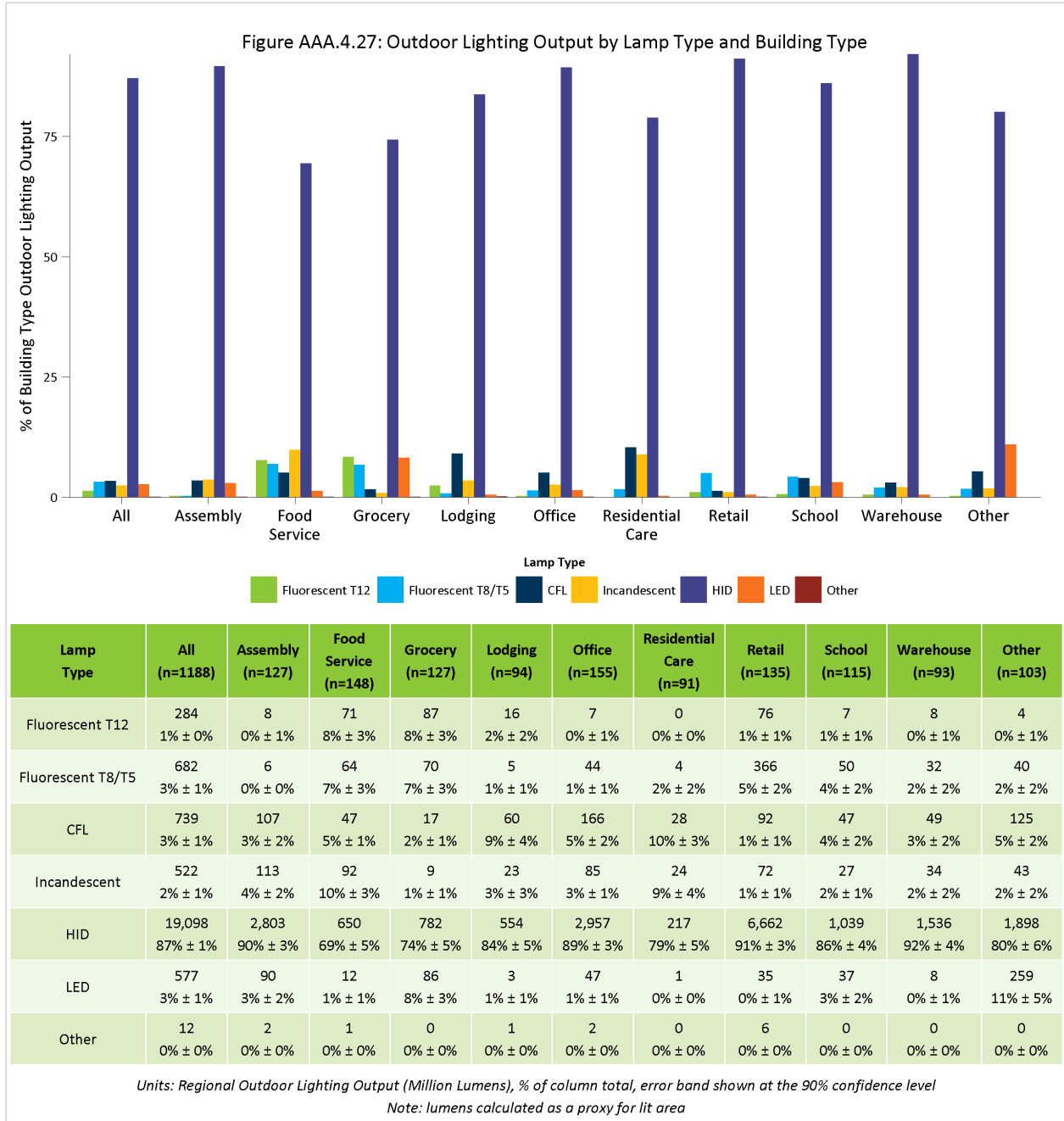
Units: Regional Outdoor Lighting Power (Thousand Watts), % of column total, error band shown at the 90% confidence level

Figure AAA.4.26: Outdoor Lighting Power by Lamp Type and Building Type

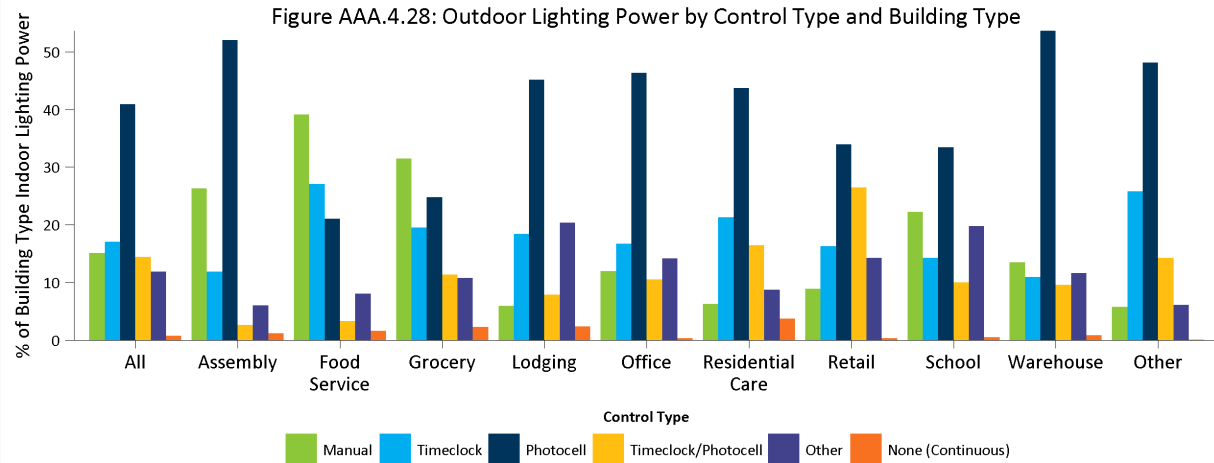


Lamp Type	All (n=1188)	Assembly (n=127)	Food Service (n=148)	Grocery (n=127)	Lodging (n=94)	Office (n=155)	Residential Care (n=91)	Retail (n=135)	School (n=115)	Warehouse (n=93)	Other (n=103)
Fluorescent T12	5,788 1% ± 0%	163 0% ± 0%	1,452 5% ± 2%	1,776 7% ± 3%	320 2% ± 2%	144 0% ± 0%	0 0% ± 0%	1,543 1% ± 1%	136 0% ± 1%	164 0% ± 1%	90 0% ± 1%
Fluorescent T8/T5	13,886 3% ± 1%	115 0% ± 0%	1,311 5% ± 2%	1,427 6% ± 3%	101 1% ± 1%	886 1% ± 1%	91 1% ± 1%	7,449 4% ± 2%	1,025 4% ± 2%	660 2% ± 2%	820 1% ± 1%
CFL	27,029 5% ± 1%	3,901 5% ± 2%	1,722 6% ± 2%	621 3% ± 1%	2,192 13% ± 4%	6,075 8% ± 2%	1,037 13% ± 3%	3,376 2% ± 1%	1,724 6% ± 2%	1,802 5% ± 2%	4,579 8% ± 3%
Incandescent	44,974 9% ± 1%	9,752 13% ± 4%	7,897 29% ± 5%	785 3% ± 2%	1,958 12% ± 5%	7,356 9% ± 3%	2,091 25% ± 6%	6,166 4% ± 2%	2,347 8% ± 3%	2,940 7% ± 4%	3,684 7% ± 3%
HID	422,538 80% ± 1%	62,026 80% ± 4%	14,383 53% ± 6%	17,301 73% ± 5%	12,260 72% ± 6%	65,428 81% ± 4%	4,794 58% ± 7%	147,385 88% ± 3%	22,984 79% ± 4%	33,985 86% ± 5%	41,992 75% ± 6%
LED	11,453 2% ± 1%	1,784 2% ± 1%	230 1% ± 1%	1,698 7% ± 3%	67 0% ± 0%	940 1% ± 1%	13 0% ± 0%	690 0% ± 1%	727 3% ± 2%	160 0% ± 1%	5,144 9% ± 4%
Other	1,547 0% ± 0%	108 0% ± 0%	14 0% ± 0%	87 0% ± 1%	14 0% ± 0%	48 0% ± 0%	214 3% ± 2%	1,055 1% ± 1%	7 0% ± 0%	0 0% ± 0%	0 0% ± 0%

Units: Regional Outdoor Lighting Power (Thousand Watts), % of column total, error band shown at the 90% confidence level



2014 Northwest Commercial Building Stock Assessment



Control Type	All (n=1188)	Assembly (n=127)	Food Service (n=148)	Grocery (n=127)	Lodging (n=94)	Office (n=155)	Residential Care (n=91)	Retail (n=135)	School (n=115)	Warehouse (n=93)	Other (n=103)
Manual	79,651 15% ± 2%	20,493 26% ± 6%	10,559 39% ± 6%	7,450 31% ± 7%	1,000 6% ± 3%	9,671 12% ± 3%	515 6% ± 4%	14,951 9% ± 4%	6,425 22% ± 6%	5,362 14% ± 5%	3,225 6% ± 3%
Timeclock	89,742 17% ± 2%	9,254 12% ± 5%	7,300 27% ± 6%	4,613 19% ± 5%	3,109 18% ± 6%	13,519 17% ± 5%	1,751 21% ± 7%	27,212 16% ± 5%	4,111 14% ± 5%	4,338 11% ± 5%	14,536 26% ± 7%
Photocell	215,689 41% ± 2%	40,525 52% ± 7%	5,685 21% ± 5%	5,859 25% ± 6%	7,637 45% ± 8%	37,491 46% ± 6%	3,599 44% ± 8%	56,869 34% ± 6%	9,673 33% ± 7%	21,280 54% ± 8%	27,070 48% ± 8%
Timeclock/Photocell	75,811 14% ± 2%	2,016 3% ± 2%	883 3% ± 2%	2,687 11% ± 5%	1,326 8% ± 4%	8,494 11% ± 4%	1,355 16% ± 6%	44,336 26% ± 6%	2,901 10% ± 4%	3,805 10% ± 5%	8,008 14% ± 6%
Other	62,539 12% ± 1%	4,662 6% ± 3%	2,159 8% ± 4%	2,543 11% ± 4%	3,440 20% ± 7%	11,438 14% ± 4%	718 9% ± 4%	23,815 14% ± 5%	5,707 20% ± 6%	4,614 12% ± 5%	3,443 6% ± 3%
None (Continuous)	3,784 1% ± 0%	900 1% ± 0%	423 2% ± 1%	542 2% ± 2%	401 2% ± 2%	264 0% ± 1%	302 4% ± 3%	482 0% ± 0%	133 0% ± 1%	311 1% ± 1%	28 0% ± 0%

Units: Regional Indoor Lighting Power (Million Watts), % of column total, error band shown at the 90% confidence level

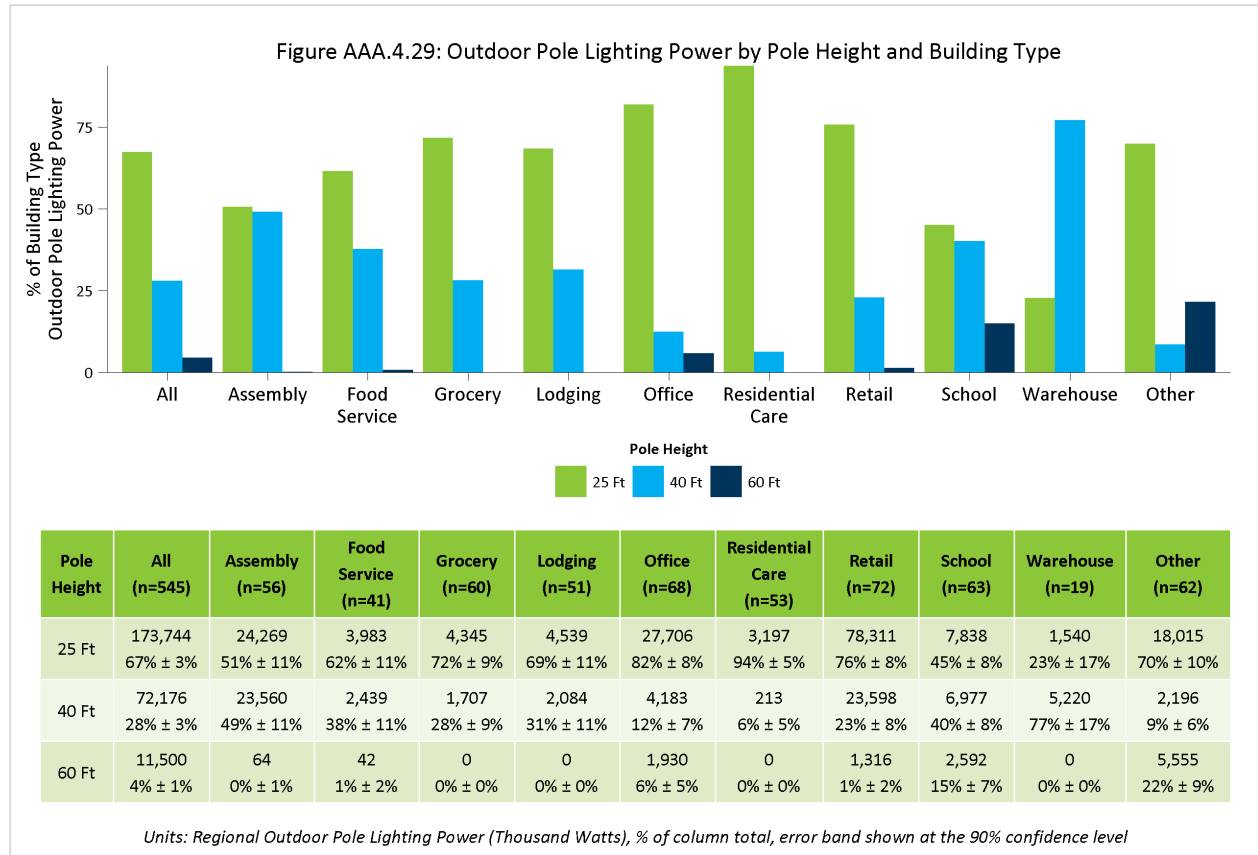
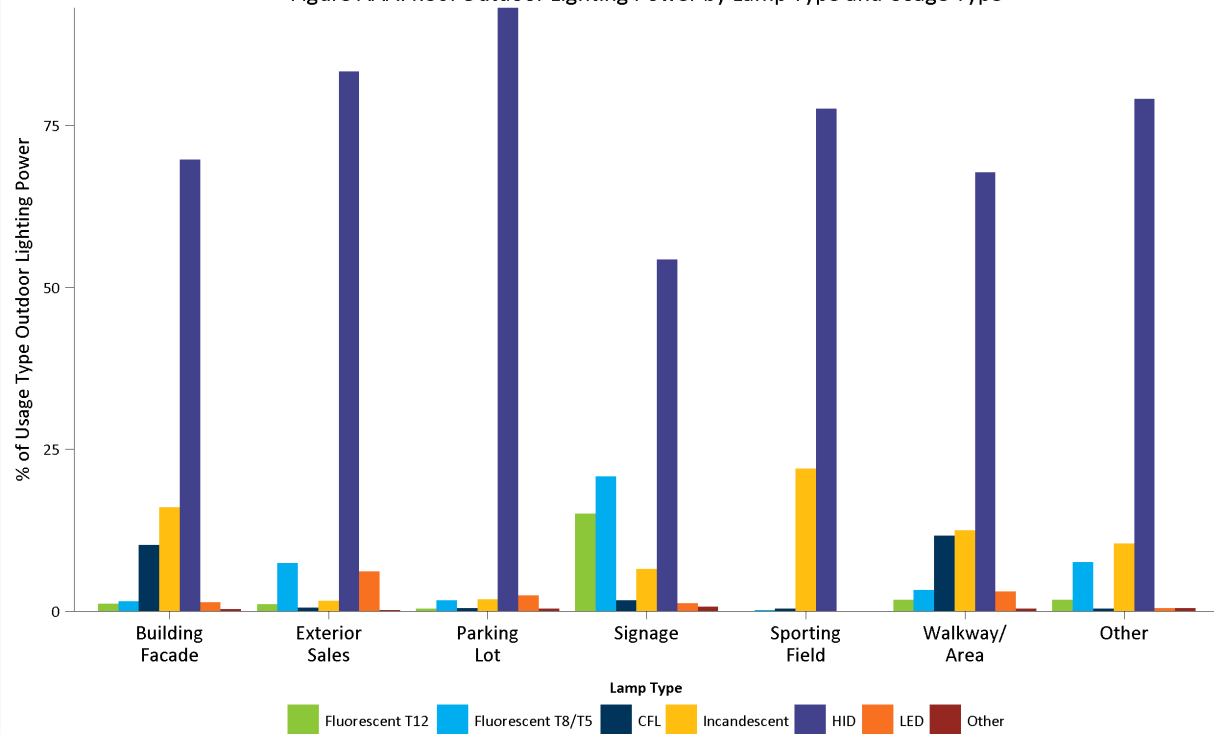
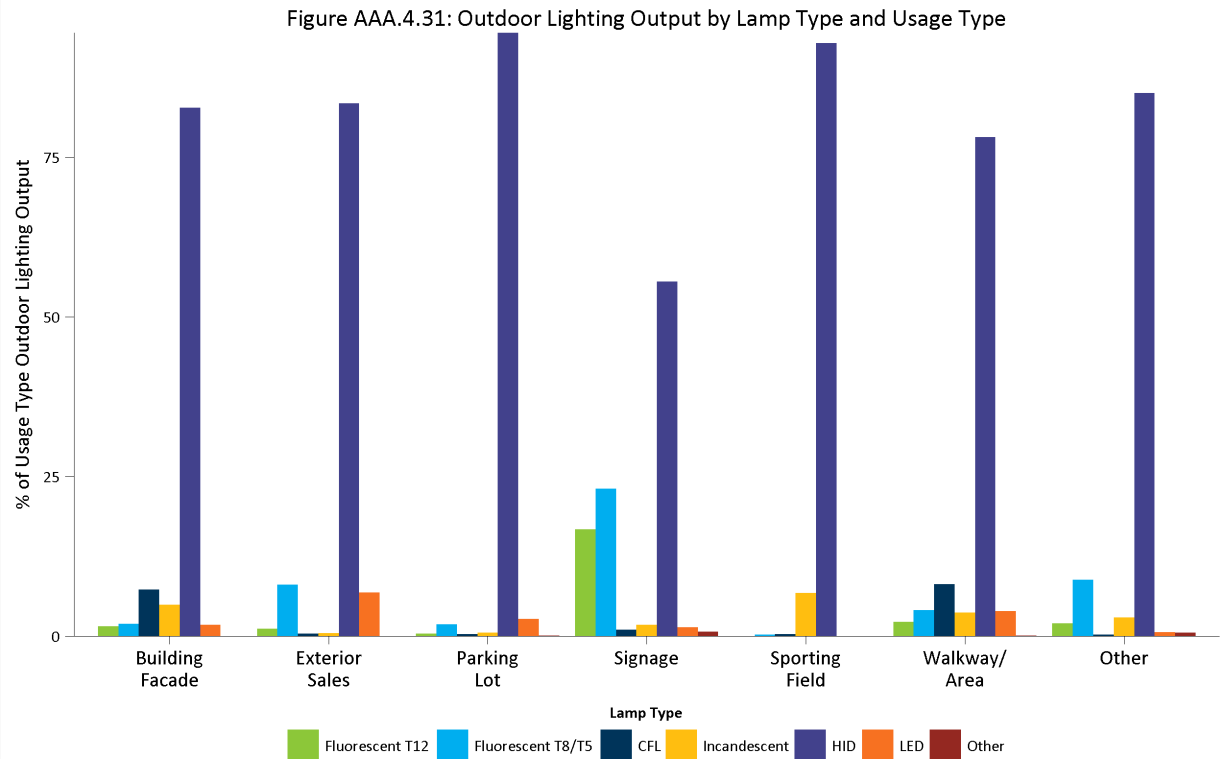


Figure AAA.4.30: Outdoor Lighting Power by Lamp Type and Usage Type



Lamp Type	Building Facade (n=774)	Exterior Sales (n=66)	Parking Lot (n=580)	Signage (n=110)	Sporting Field (n=16)	Walkway/ Area (n=706)	Other (n=76)
Fluorescent T12	1,441 1% ± 0%	172 1% ± 1%	697 0% ± 0%	1,097 15% ± 2%	0 0% ± 0%	1,909 2% ± 0%	470 2% ± 1%
Fluorescent T8/T5	1,847 1% ± 0%	1,275 7% ± 2%	3,544 2% ± 1%	1,518 21% ± 2%	20 0% ± 0%	3,523 3% ± 1%	2,083 8% ± 1%
CFL	12,856 10% ± 1%	89 1% ± 1%	948 0% ± 0%	118 2% ± 0%	50 0% ± 1%	12,831 12% ± 1%	93 0% ± 0%
Incandescent	20,285 16% ± 1%	267 2% ± 1%	3,933 2% ± 1%	471 6% ± 1%	3,366 22% ± 14%	13,720 12% ± 1%	2,888 10% ± 2%
HID	88,287 70% ± 2%	14,420 83% ± 7%	203,218 93% ± 2%	3,965 54% ± 4%	11,895 78% ± 18%	74,835 68% ± 2%	21,927 79% ± 7%
LED	1,683 1% ± 0%	1,049 6% ± 3%	5,165 2% ± 1%	86 1% ± 0%	0 0% ± 0%	3,345 3% ± 0%	125 0% ± 0%
Other	292 0% ± 0%	25 0% ± 0%	713 0% ± 0%	45 1% ± 0%	0 0% ± 0%	347 0% ± 0%	124 0% ± 0%

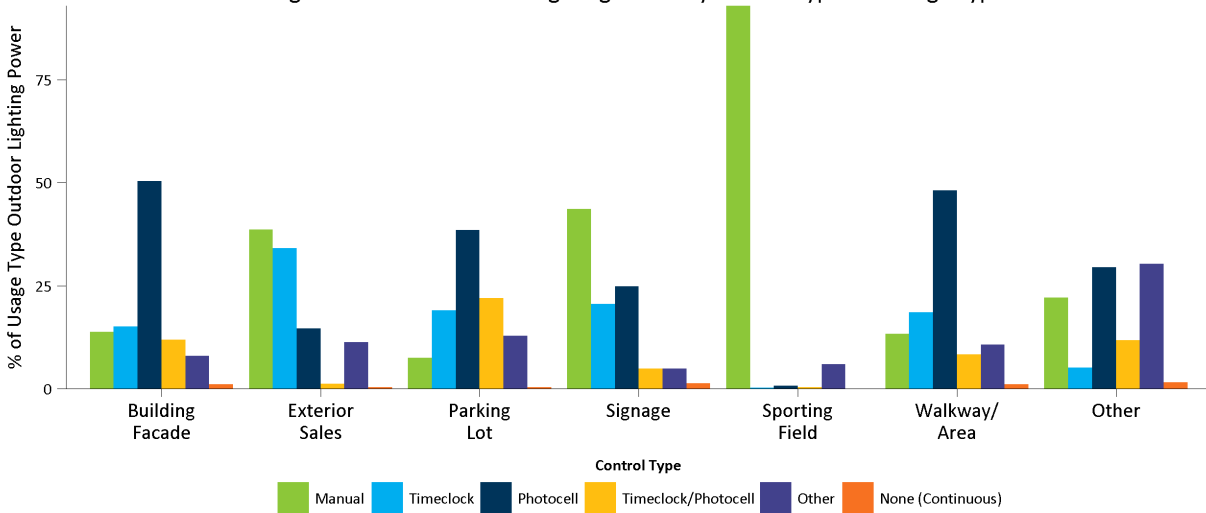
Units: Regional Outdoor Lighting Power (Thousand Watts), % of column total, error band shown at the 90% confidence level



Lamp Type	Building Facade (n=774)	Exterior Sales (n=66)	Parking Lot (n=580)	Signage (n=110)	Sporting Field (n=16)	Walkway/ Area (n=706)	Other (n=76)
Fluorescent T12	71 1% ± 0%	8 1% ± 1%	34 0% ± 0%	54 17% ± 2%	0 0% ± 0%	94 2% ± 0%	23 2% ± 1%
Fluorescent T8/T5	91 2% ± 0%	63 8% ± 2%	174 2% ± 1%	75 23% ± 2%	1 0% ± 1%	173 4% ± 1%	102 9% ± 1%
CFL	351 7% ± 1%	2 0% ± 1%	26 0% ± 0%	3 1% ± 0%	1 0% ± 0%	351 8% ± 1%	3 0% ± 0%
Incandescent	236 5% ± 1%	3 0% ± 1%	46 0% ± 0%	5 2% ± 0%	39 7% ± 7%	159 4% ± 0%	34 3% ± 1%
HID	3,990 83% ± 2%	652 83% ± 8%	9,185 94% ± 2%	179 55% ± 4%	538 93% ± 16%	3,382 78% ± 2%	991 85% ± 7%
LED	85 2% ± 0%	53 7% ± 3%	260 3% ± 1%	4 1% ± 0%	0 0% ± 0%	169 4% ± 1%	6 1% ± 0%
Other	0 0% ± 0%	0 0% ± 0%	1 0% ± 0%	2 1% ± 0%	0 0% ± 0%	3 0% ± 0%	6 1% ± 0%

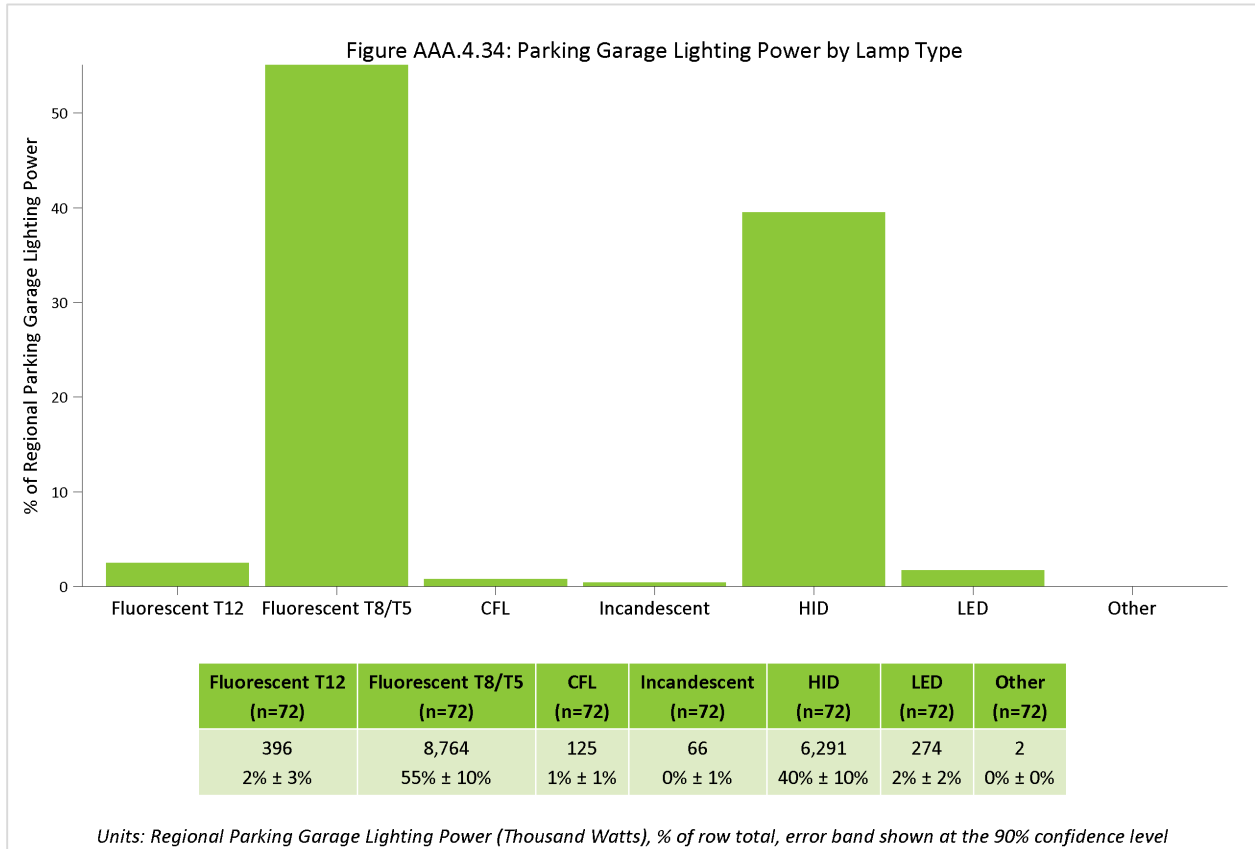
Units: Regional Outdoor Lighting Output (Million Lumens), % of column total, error band shown at the 90% confidence level
 Note: lumens calculated as a proxy for lit area

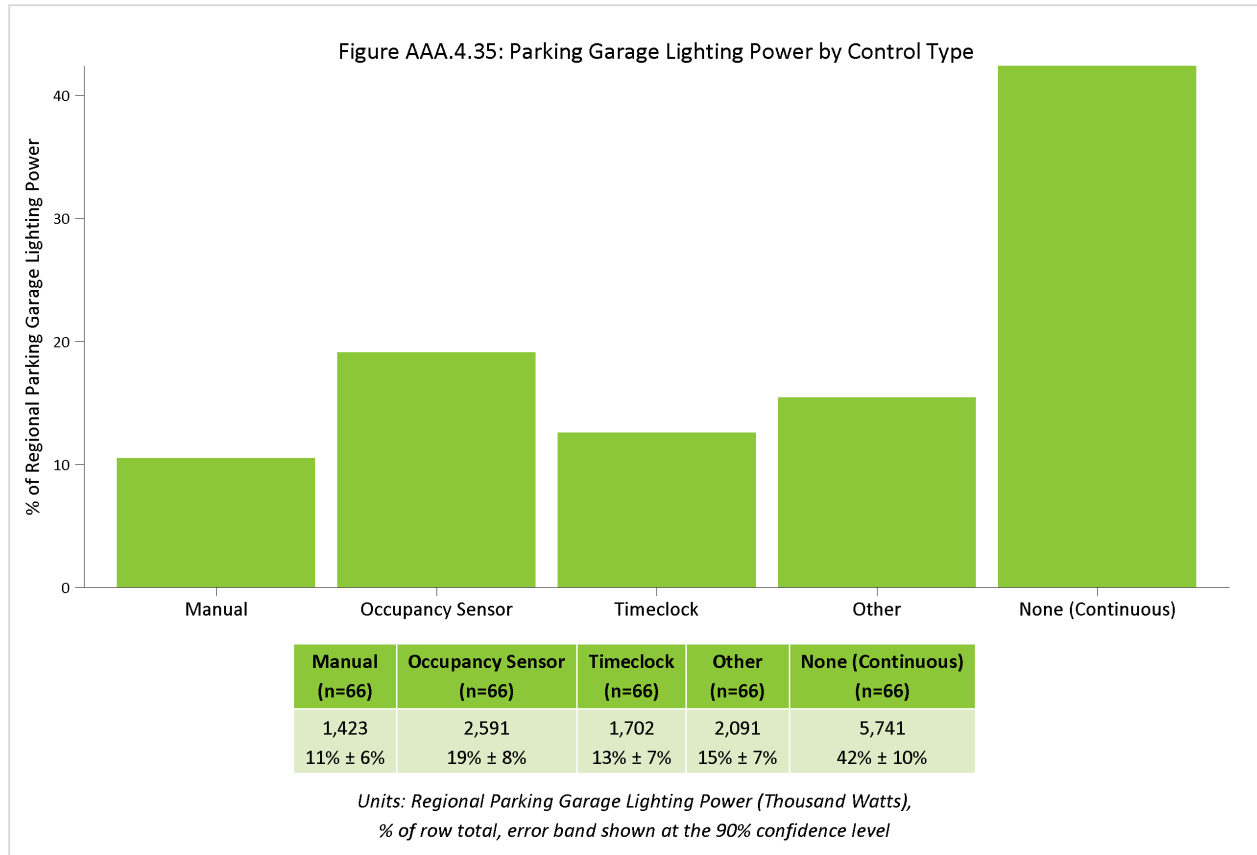
Figure AAA.4.32: Outdoor Lighting Power by Control Type and Usage Type



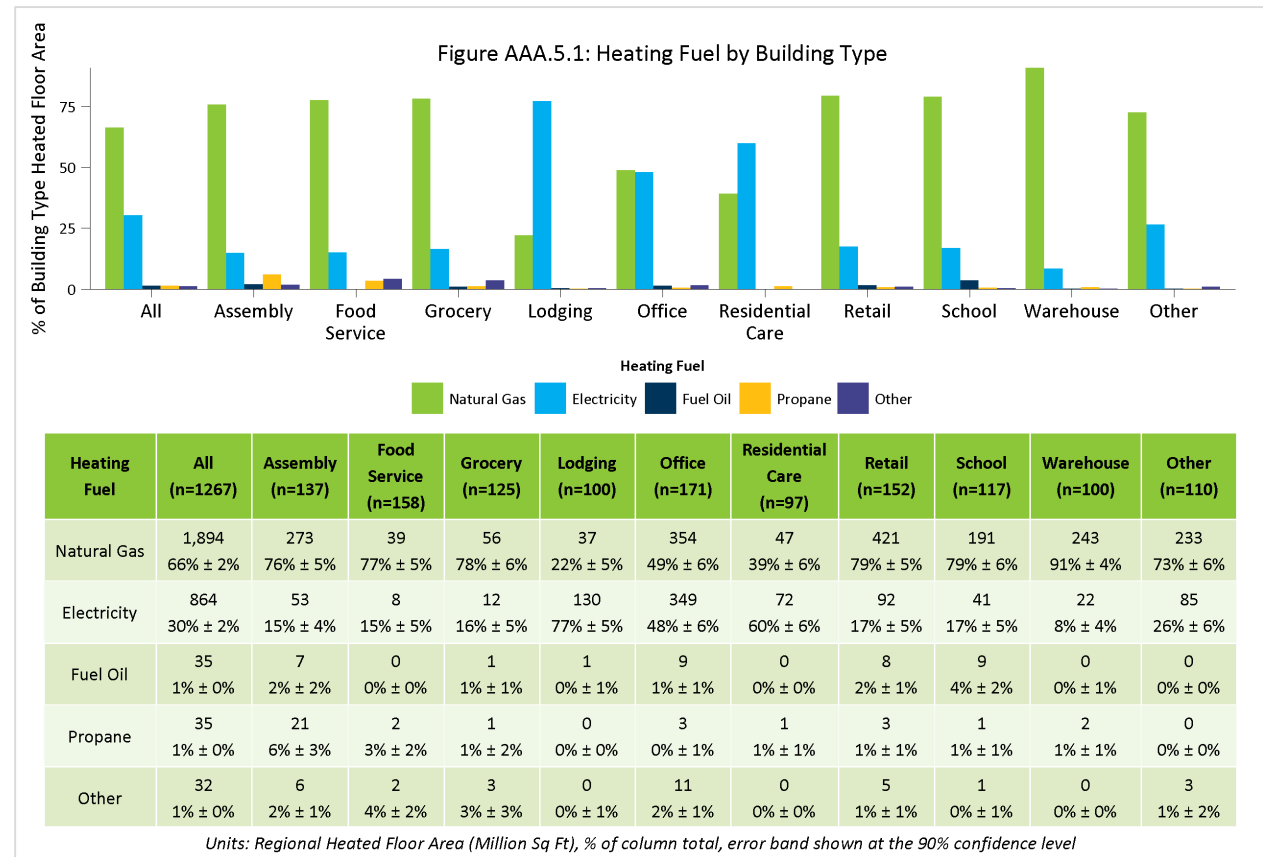
Control Type	Building Facade (n=774)	Exterior Sales (n=66)	Parking Lot (n=580)	Signage (n=110)	Sporting Field (n=16)	Walkway/ Area (n=706)	Other (n=76)
Manual	17,472 14% ± 1%	6,683 39% ± 7%	16,299 7% ± 1%	3,189 44% ± 4%	14,252 93% ± 18%	14,731 13% ± 1%	6,105 22% ± 3%
Timeclock	19,132 15% ± 1%	5,904 34% ± 6%	41,351 19% ± 2%	1,502 21% ± 2%	27 0% ± 1%	20,439 18% ± 1%	1,387 5% ± 2%
Photocell	63,940 50% ± 2%	2,529 15% ± 3%	83,984 38% ± 2%	1,808 25% ± 2%	93 1% ± 2%	53,171 48% ± 2%	8,164 29% ± 5%
Timeclock/Photocell	14,957 12% ± 1%	190 1% ± 1%	47,811 22% ± 2%	356 5% ± 1%	50 0% ± 1%	9,194 8% ± 1%	3,253 12% ± 3%
Other	9,972 8% ± 1%	1,945 11% ± 3%	27,994 13% ± 2%	349 5% ± 1%	909 6% ± 4%	11,791 11% ± 1%	8,396 30% ± 4%
None (Continuous)	1,218 1% ± 0%	49 0% ± 0%	779 0% ± 0%	95 1% ± 0%	0 0% ± 0%	1,184 1% ± 0%	405 1% ± 1%

Units: Regional Outdoor Lighting Power (Thousand Watts), % of column total, error band shown at the 90% confidence level





AAA.6 HVAC



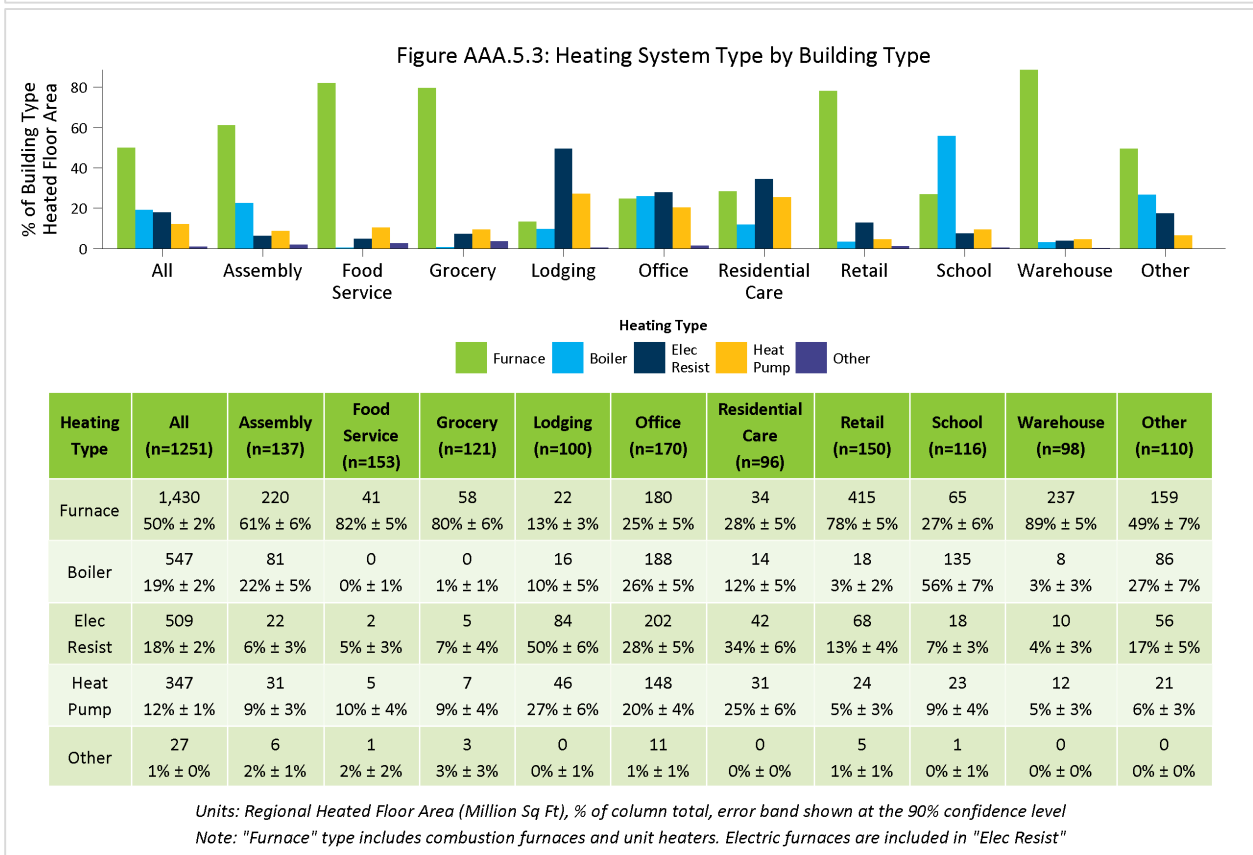
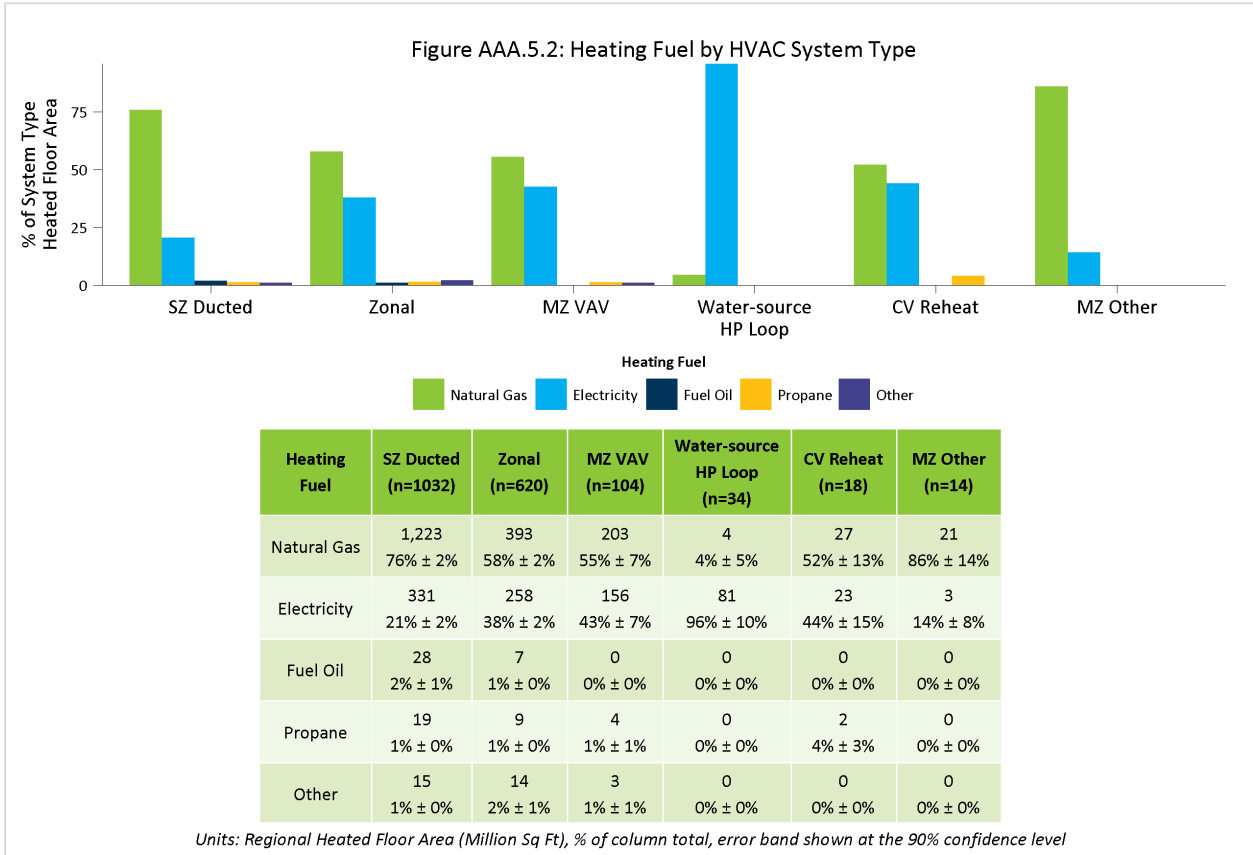
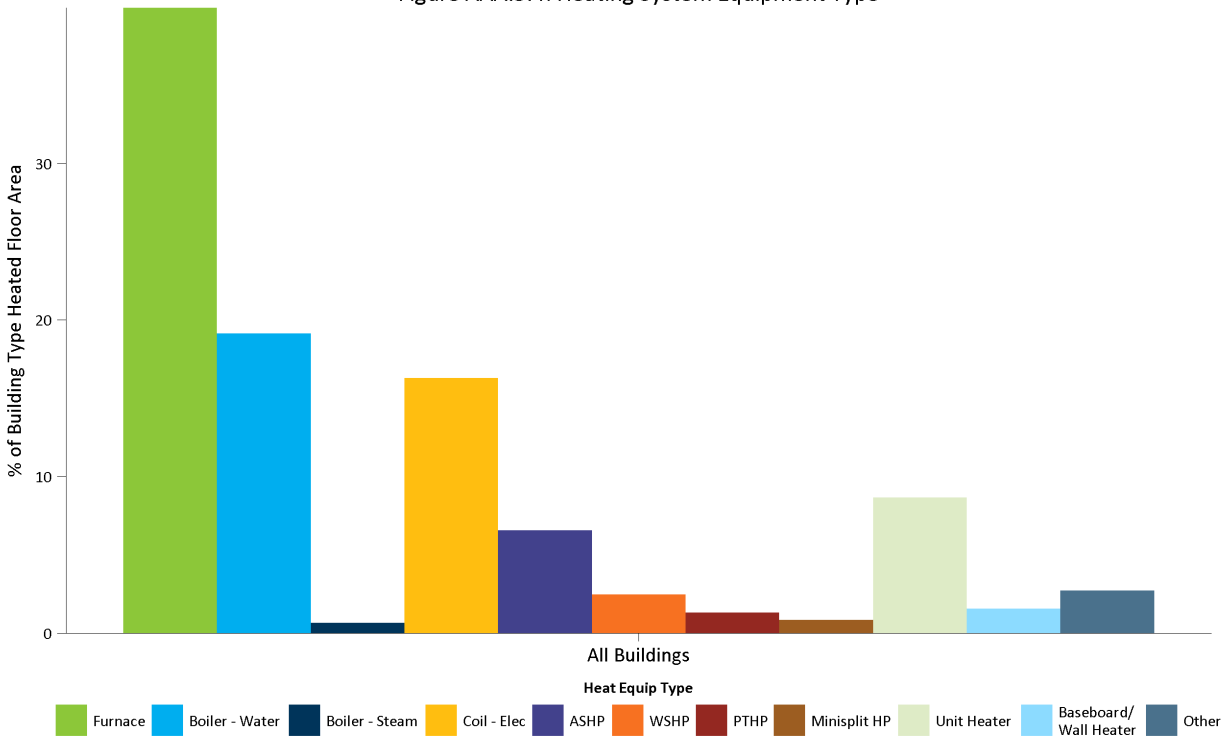
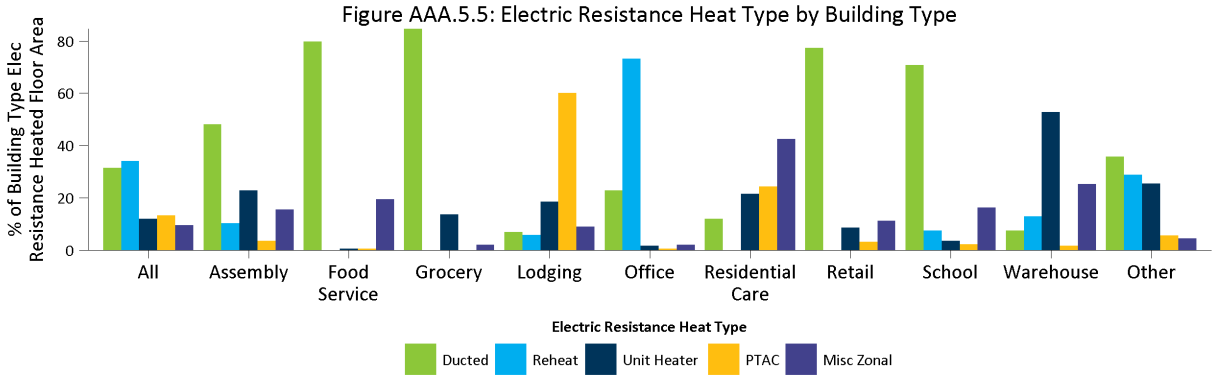


Figure AAA.5.4: Heating System Equipment Type



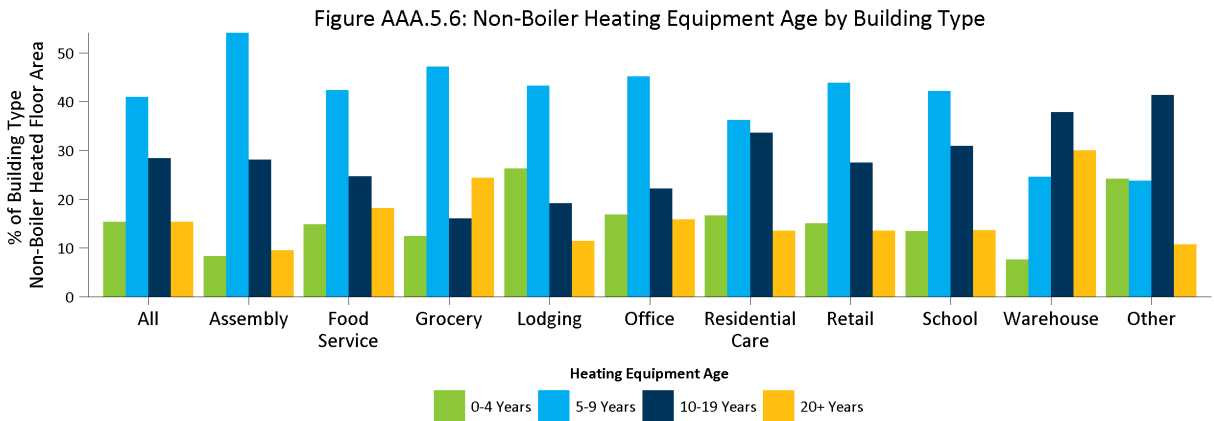
Heat Equip Type	All (n=1253)	Assembly (n=137)	Food Service (n=154)	Grocery (n=123)	Lodging (n=100)	Office (n=171)	Residential Care (n=96)	Retail (n=149)	School (n=116)	Warehouse (n=97)	Other (n=110)
Furnace	1,136 40% ± 2%	216 60% ± 6%	39 78% ± 5%	49 69% ± 6%	22 13% ± 3%	175 24% ± 5%	34 28% ± 5%	326 63% ± 6%	62 26% ± 6%	97 36% ± 7%	115 36% ± 7%
Boiler - Water	544 19% ± 2%	79 22% ± 5%	0 0% ± 1%	0 1% ± 1%	14 9% ± 4%	198 27% ± 5%	14 11% ± 5%	18 3% ± 2%	126 52% ± 7%	8 3% ± 3%	86 27% ± 7%
Boiler - Steam	18 1% ± 0%	6 2% ± 1%	0 0% ± 0%	0 0% ± 0%	2 1% ± 2%	0 0% ± 0%	1 0% ± 1%	0 0% ± 0%	10 4% ± 3%	0 0% ± 0%	0 0% ± 0%
Coil - Elec	463 16% ± 2%	19 5% ± 2%	2 4% ± 3%	5 7% ± 4%	77 46% ± 6%	199 27% ± 5%	24 20% ± 6%	60 12% ± 4%	15 6% ± 3%	8 3% ± 2%	54 17% ± 5%
ASHP	187 7% ± 1%	27 7% ± 3%	4 8% ± 4%	5 7% ± 4%	9 5% ± 3%	89 12% ± 4%	9 7% ± 4%	17 3% ± 2%	10 4% ± 2%	7 3% ± 2%	10 3% ± 2%
WSHP	70 2% ± 1%	2 1% ± 1%	0 0% ± 0%	0 0% ± 0%	11 7% ± 4%	37 5% ± 3%	7 6% ± 3%	0 0% ± 0%	9 4% ± 3%	0 0% ± 0%	3 1% ± 1%
PTHP	37 1% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	24 14% ± 5%	0 0% ± 0%	12 10% ± 4%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	1 0% ± 0%
Minisplit HP	23 1% ± 0%	1 0% ± 0%	1 2% ± 2%	0 0% ± 0%	0 0% ± 0%	6 1% ± 1%	2 2% ± 1%	2 0% ± 1%	1 0% ± 1%	5 2% ± 2%	5 1% ± 1%
Unit Heater	246 9% ± 1%	3 1% ± 1%	1 2% ± 2%	9 12% ± 4%	0 0% ± 0%	3 0% ± 1%	0 0% ± 0%	81 16% ± 4%	3 1% ± 1%	113 42% ± 7%	33 10% ± 4%
Baseboard/Wall Heater	44 2% ± 0%	3 1% ± 1%	0 1% ± 1%	0 0% ± 0%	7 4% ± 2%	3 0% ± 1%	17 14% ± 5%	6 1% ± 1%	3 1% ± 1%	2 1% ± 1%	2 0% ± 1%
Other	77 3% ± 1%	2 0% ± 1%	2 4% ± 2%	3 4% ± 3%	1 1% ± 1%	18 2% ± 2%	1 1% ± 1%	8 1% ± 1%	2 1% ± 1%	27 10% ± 5%	14 4% ± 2%

Units: Regional Heated Floor Area (Million Sq Ft), % of column total, error band shown at the 90% confidence level



Electric Res Heat Type	All (n=404)	Assembly (n=34)	Food Service (n=18)	Grocery (n=31)	Lodging (n=70)	Office (n=67)	Residential Care (n=52)	Retail (n=37)	School (n=29)	Warehouse (n=26)	Other (n=40)
Ducted	163 31% ± 4%	11 48% ± 14%	2 80% ± 20%	4 85% ± 11%	6 7% ± 4%	46 23% ± 8%	5 12% ± 5%	52 77% ± 11%	13 71% ± 12%	1 7% ± 9%	23 36% ± 12%
Reheat	176 34% ± 4%	2 10% ± 9%	0 0% ± 0%	0 0% ± 0%	5 6% ± 4%	148 73% ± 9%	0 0% ± 0%	0 0% ± 0%	1 7% ± 4%	1 13% ± 12%	18 29% ± 11%
Unit Heater	62 12% ± 2%	5 23% ± 12%	0 0% ± 3%	1 14% ± 10%	16 18% ± 7%	3 2% ± 2%	9 21% ± 8%	6 8% ± 6%	1 3% ± 5%	5 53% ± 17%	16 25% ± 11%
PTAC	69 13% ± 3%	1 3% ± 5%	0 0% ± 4%	0 0% ± 0%	51 60% ± 9%	1 1% ± 2%	10 24% ± 9%	2 3% ± 5%	0 2% ± 4%	0 2% ± 3%	4 6% ± 6%
Misc Zonal	49 9% ± 2%	3 16% ± 10%	0 19% ± 20%	0 2% ± 3%	7 9% ± 6%	4 2% ± 3%	18 43% ± 12%	8 11% ± 8%	3 16% ± 11%	3 25% ± 15%	3 5% ± 5%

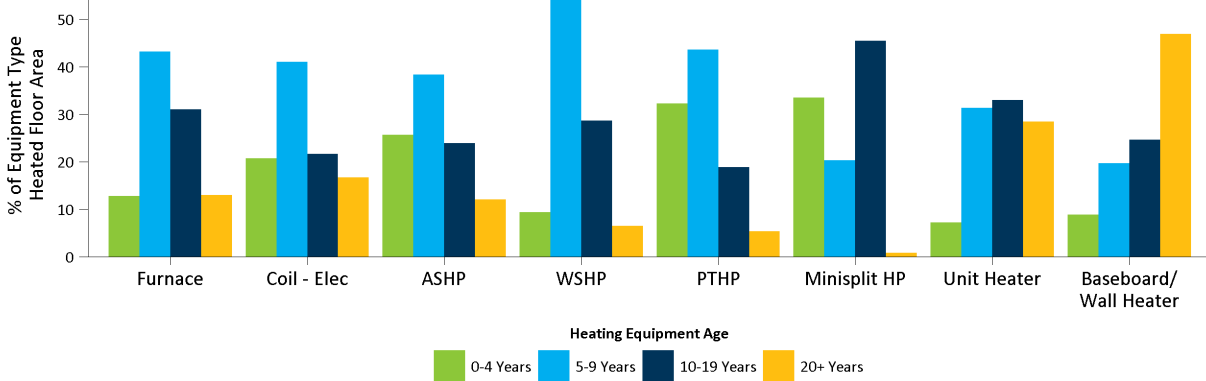
Units: Regional Elec Resistance Heated Floor Area (Million Sq Ft), % of column total, error band shown at the 90% confidence level



Heating Equip Age	All (n=986)	Assembly (n=115)	Food Service (n=122)	Grocery (n=87)	Lodging (n=85)	Office (n=124)	Residential Care (n=82)	Retail (n=124)	School (n=80)	Warehouse (n=83)	Other (n=84)
0-4 Years	284 15% ± 2%	20 8% ± 4%	6 15% ± 5%	7 12% ± 5%	33 26% ± 7%	73 17% ± 5%	15 17% ± 7%	57 15% ± 5%	12 13% ± 6%	16 8% ± 4%	45 24% ± 7%
5-9 Years	756 41% ± 3%	131 54% ± 7%	17 42% ± 7%	25 47% ± 9%	54 43% ± 9%	196 45% ± 7%	34 36% ± 9%	166 44% ± 7%	39 42% ± 9%	50 25% ± 8%	44 24% ± 7%
10-19 Years	525 28% ± 2%	68 28% ± 7%	10 25% ± 6%	9 16% ± 6%	24 19% ± 7%	96 22% ± 6%	31 34% ± 8%	104 28% ± 6%	29 31% ± 8%	77 38% ± 9%	77 41% ± 8%
20+ Years	284 15% ± 2%	23 10% ± 4%	7 18% ± 6%	13 24% ± 7%	14 11% ± 5%	68 16% ± 5%	13 14% ± 6%	51 14% ± 5%	13 14% ± 6%	61 30% ± 8%	20 11% ± 5%

Units: Regional Non-Boiler Heated Floor Area (Million Sq Ft), % of column total, error band shown at the 90% confidence level

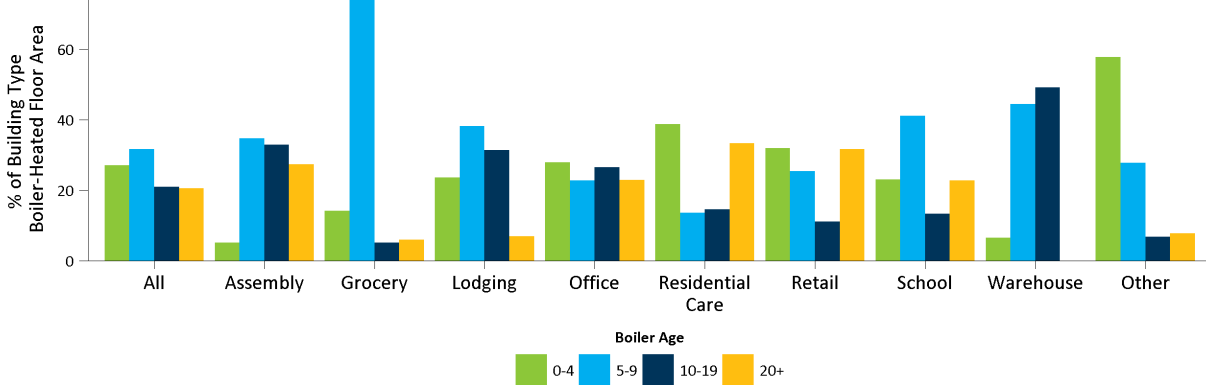
Figure AAA.5.7: Non-Boiler Heating Equipment Age by Equipment Type



Heating Equip Age	Furnace (n=1196)	Coil - Elec (n=520)	ASHP (n=418)	WSHP (n=54)	PTHP (n=86)	Minisplit HP (n=176)	Unit Heater (n=252)	Baseboard/Wall Heater (n=162)
0-4 Years	245 13% ± 1%	160 21% ± 2%	82 26% ± 2%	13 9% ± 5%	21 32% ± 7%	14 34% ± 2%	27 7% ± 1%	5 9% ± 2%
5-9 Years	828 43% ± 2%	318 41% ± 3%	123 38% ± 2%	75 56% ± 10%	28 44% ± 6%	9 20% ± 2%	120 31% ± 3%	12 20% ± 3%
10-19 Years	594 31% ± 2%	167 22% ± 2%	76 24% ± 2%	39 29% ± 9%	12 19% ± 4%	19 45% ± 2%	126 33% ± 3%	15 25% ± 3%
20+ Years	249 13% ± 1%	129 17% ± 2%	39 12% ± 1%	9 6% ± 4%	3 5% ± 2%	0 1% ± 0%	109 28% ± 3%	29 47% ± 4%

Units: Regional Heated Floor Area (Million Sq Ft), % of column total, error band shown at the 90% confidence level

Figure AAA.5.8: Boiler Age by Building Type



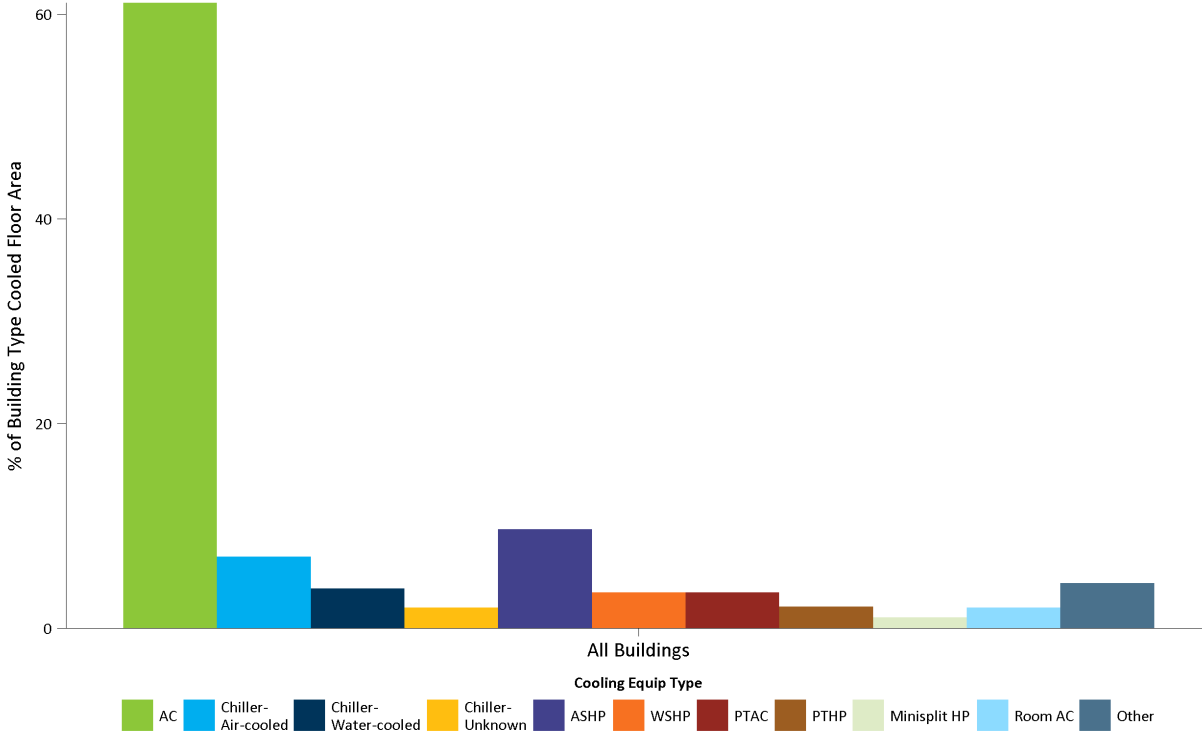
Boiler Age	All (n=249)	Assembly (n=42)	Grocery (n=4)	Lodging (n=33)	Office (n=39)	Residential Care (n=22)	Retail (n=9)	School (n=66)	Warehouse (n=6)	Other (n=27)
0-4	193 27% ± 5%	6 5% ± 6%	1 14% ± 44%	13 24% ± 13%	53 28% ± 12%	11 39% ± 18%	9 32% ± 29%	40 23% ± 9%	1 7% ± 21%	59 58% ± 16%
5-9	227 32% ± 5%	42 35% ± 12%	5 75% ± 55%	21 38% ± 14%	43 23% ± 11%	4 14% ± 13%	8 25% ± 27%	72 41% ± 10%	5 44% ± 43%	28 28% ± 15%
10-19	150 21% ± 4%	39 33% ± 12%	0 5% ± 28%	17 31% ± 14%	51 27% ± 12%	4 15% ± 13%	3 11% ± 20%	23 13% ± 7%	5 49% ± 43%	7 7% ± 8%
20+	147 20% ± 4%	33 27% ± 12%	0 6% ± 30%	4 7% ± 8%	44 23% ± 11%	9 33% ± 18%	9 32% ± 29%	40 23% ± 9%	0 0% ± 0%	8 8% ± 9%

Units: Regional Boiler-Heated Floor Area (Million Sq Ft), % of column total, error band shown at the 90% confidence level

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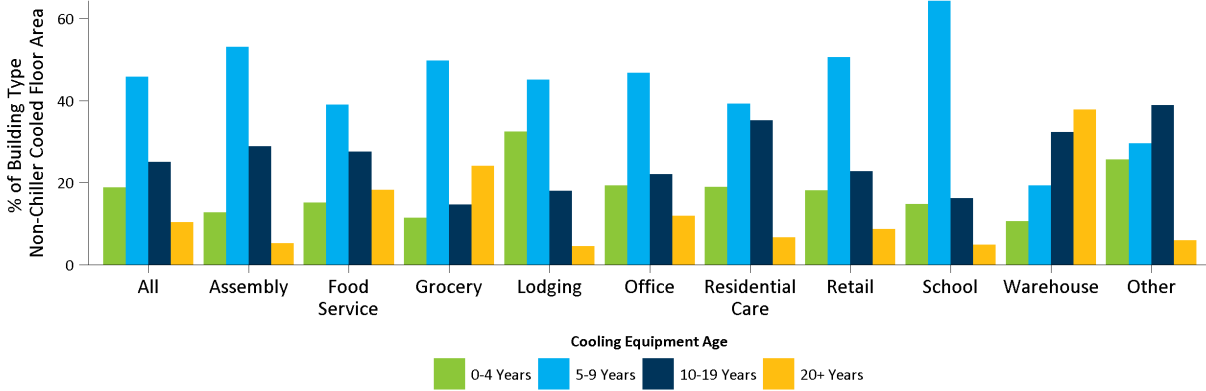
Figure AAA.5.10: Cooling System Equipment Type



Cooling Equip Type	All (n=1087)	Assembly (n=106)	Food Service (n=138)	Grocery (n=110)	Lodging (n=88)	Office (n=159)	Residential Care (n=91)	Retail (n=126)	School (n=93)	Warehouse (n=79)	Other (n=97)
AC	1,307 61% ± 2%	182 69% ± 7%	39 84% ± 5%	55 87% ± 5%	29 21% ± 4%	314 47% ± 6%	39 39% ± 6%	337 87% ± 5%	82 53% ± 8%	72 85% ± 6%	157 68% ± 7%
Chiller-Air-cooled	149 7% ± 1%	29 11% ± 5%	0 0% ± 0%	0 0% ± 0%	1 1% ± 1%	93 14% ± 4%	0 0% ± 0%	0 0% ± 0%	10 7% ± 4%	0 0% ± 0%	16 7% ± 3%
Chiller-Water-cooled	83 4% ± 1%	11 4% ± 3%	0 0% ± 0%	0 0% ± 0%	4 3% ± 3%	57 9% ± 4%	2 2% ± 1%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	8 4% ± 3%
Chiller-Unknown	43 2% ± 1%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	2 1% ± 2%	11 2% ± 2%	3 3% ± 2%	0 0% ± 0%	28 18% ± 6%	0 0% ± 0%	0 0% ± 0%
ASHP	206 10% ± 1%	28 11% ± 4%	4 9% ± 4%	6 9% ± 4%	9 7% ± 3%	101 15% ± 4%	9 9% ± 5%	18 5% ± 3%	12 8% ± 4%	8 9% ± 5%	12 5% ± 3%
WSHP	74 3% ± 1%	2 1% ± 1%	0 0% ± 0%	0 0% ± 0%	11 8% ± 4%	40 6% ± 3%	8 8% ± 4%	0 0% ± 0%	10 6% ± 4%	0 0% ± 0%	3 1% ± 2%
PTAC	75 3% ± 1%	1 0% ± 0%	0 0% ± 1%	0 0% ± 1%	51 37% ± 7%	3 0% ± 0%	11 11% ± 4%	2 1% ± 1%	0 0% ± 1%	1 1% ± 1%	4 2% ± 2%
PTHP	45 2% ± 1%	3 1% ± 2%	0 0% ± 0%	0 1% ± 1%	24 17% ± 5%	1 0% ± 0%	12 12% ± 4%	1 0% ± 1%	2 2% ± 1%	0 0% ± 0%	1 0% ± 1%
Minisplit HP	22 1% ± 0%	1 0% ± 0%	1 2% ± 2%	0 0% ± 0%	2 2% ± 2%	5 1% ± 1%	2 2% ± 2%	2 0% ± 1%	1 1% ± 1%	1 2% ± 2%	6 3% ± 2%
Room AC	43 2% ± 1%	4 1% ± 2%	0 1% ± 1%	1 2% ± 2%	1 0% ± 1%	9 1% ± 1%	13 13% ± 5%	9 2% ± 2%	1 1% ± 1%	2 3% ± 2%	3 1% ± 2%
Other	94 4% ± 1%	2 1% ± 1%	2 4% ± 2%	1 1% ± 1%	5 4% ± 2%	36 5% ± 3%	1 1% ± 1%	17 4% ± 3%	8 5% ± 4%	0 0% ± 0%	22 10% ± 5%

Units: Regional Cooled Floor Area (Million Sq Ft), % of column total, error band shown at the 90% confidence level

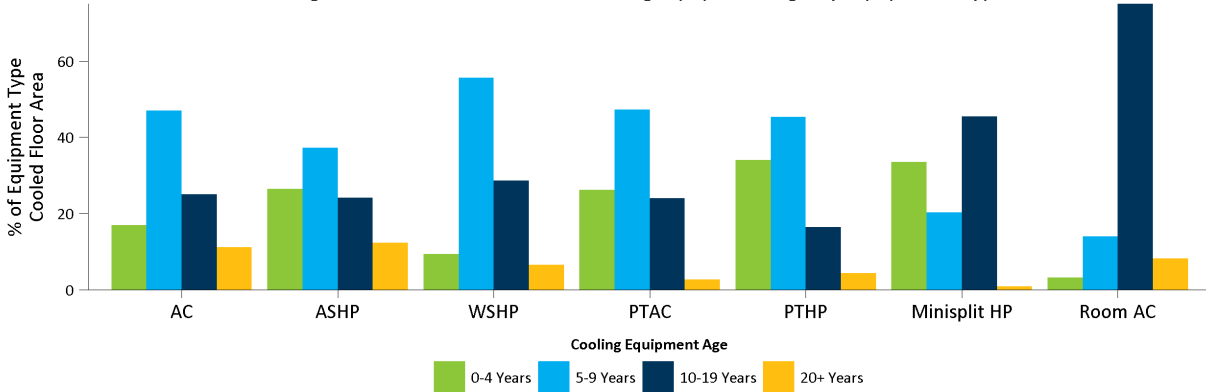
Figure AAA.5.11: Non-Chiller Cooling Equipment Age by Building Type



Cooling Equip Age	All (n=874)	Assembly (n=94)	Food Service (n=109)	Grocery (n=75)	Lodging (n=73)	Office (n=117)	Residential Care (n=83)	Retail (n=103)	School (n=73)	Warehouse (n=68)	Other (n=79)
0-4 Years	258 19% ± 2%	21 13% ± 5%	5 15% ± 6%	5 11% ± 5%	32 32% ± 9%	73 19% ± 6%	13 19% ± 7%	50 18% ± 6%	14 15% ± 7%	7 11% ± 6%	37 26% ± 8%
5-9 Years	629 46% ± 3%	87 53% ± 8%	14 39% ± 8%	22 50% ± 9%	45 45% ± 10%	177 47% ± 7%	27 39% ± 9%	141 51% ± 8%	60 64% ± 9%	13 19% ± 8%	42 30% ± 8%
10-19 Years	344 25% ± 2%	47 29% ± 7%	10 28% ± 7%	7 15% ± 6%	18 18% ± 7%	84 22% ± 6%	24 35% ± 9%	64 23% ± 7%	15 16% ± 7%	21 32% ± 9%	55 39% ± 9%
20+ Years	142 10% ± 2%	9 5% ± 3%	6 18% ± 6%	11 24% ± 8%	4 4% ± 3%	45 12% ± 5%	4 7% ± 4%	24 9% ± 4%	5 5% ± 3%	25 38% ± 10%	8 6% ± 4%

Units: Regional Non-Chiller Cooled Floor Area (Million Sq Ft), % of column total, error band shown at the 90% confidence level

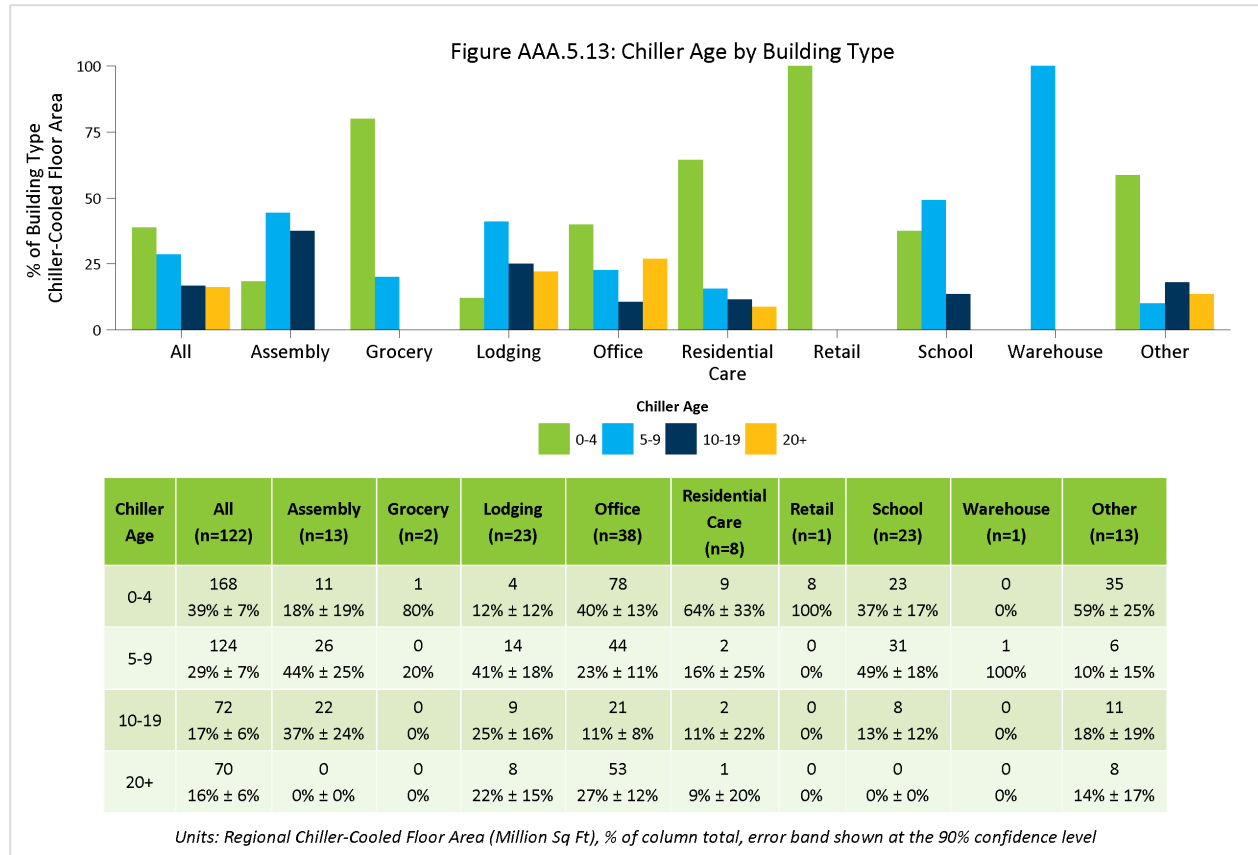
Figure AAA.5.12: Non-Chiller Cooling Equipment Age by Equipment Type



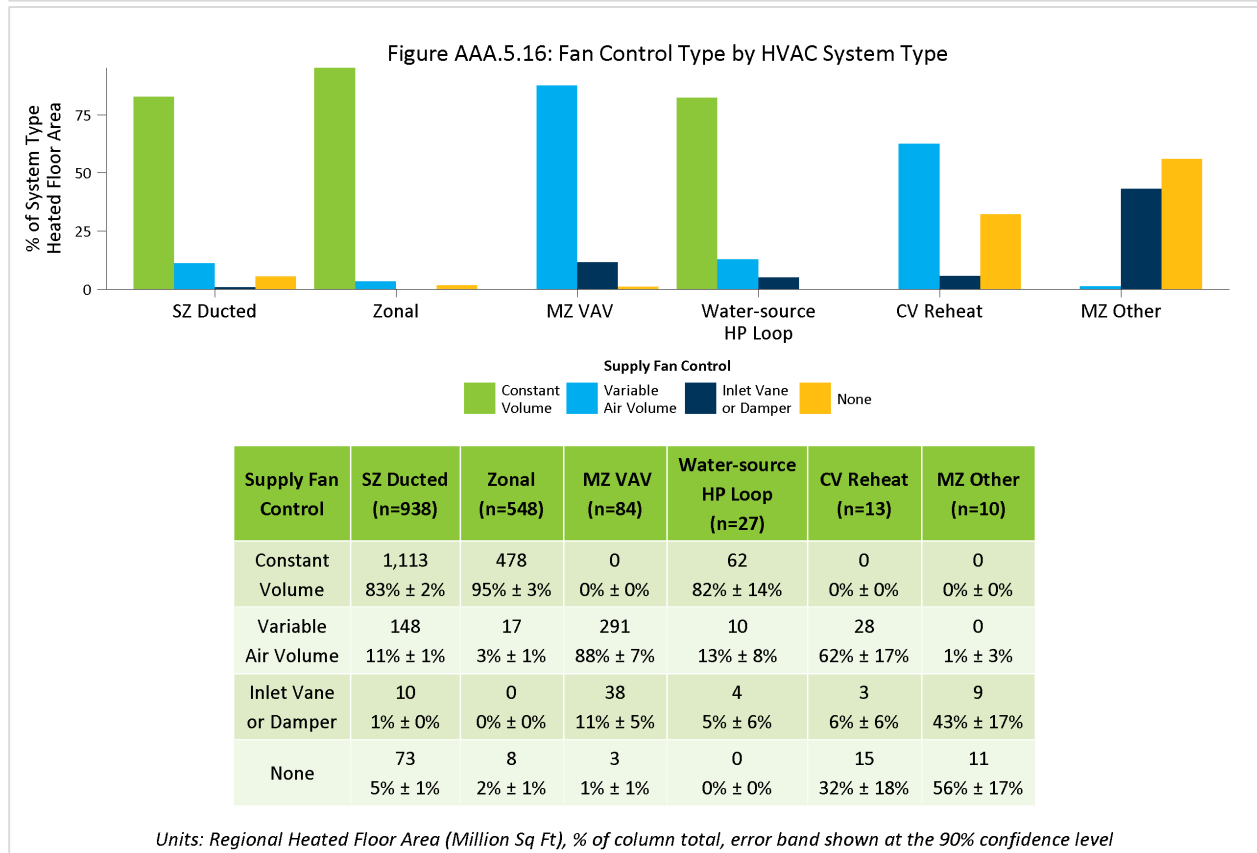
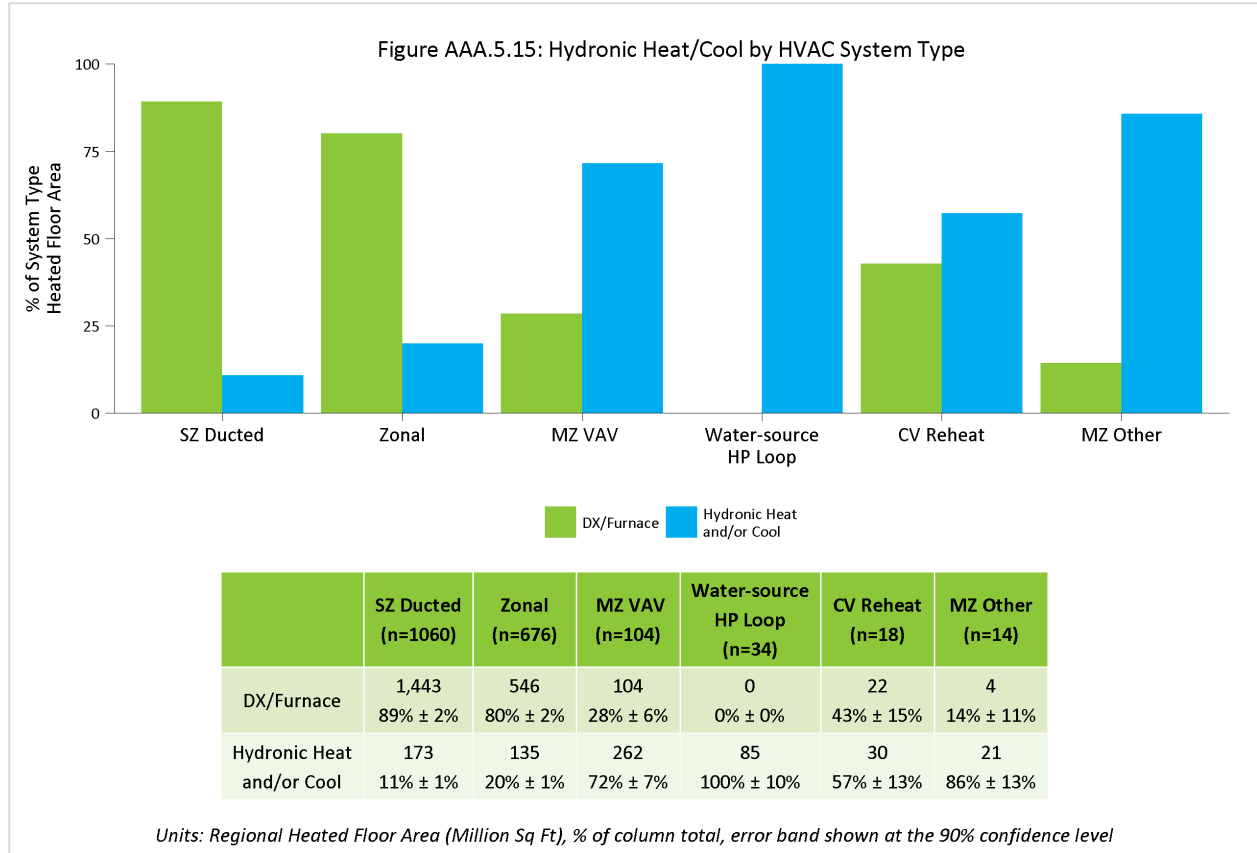
Cooling Equip Age	AC (n=1244)	ASHP (n=396)	WSHP (n=54)	PTAC (n=142)	PTHP (n=104)	Minisplit HP (n=176)	Room AC (n=158)
0-4 Years	349 17% ± 2%	82 26% ± 3%	13 9% ± 6%	30 26% ± 4%	27 34% ± 5%	14 34% ± 3%	0 3% ± 0%
5-9 Years	968 47% ± 2%	116 37% ± 3%	75 56% ± 11%	55 47% ± 5%	36 45% ± 5%	9 20% ± 2%	0 14% ± 1%
10-19 Years	513 25% ± 2%	75 24% ± 3%	39 29% ± 10%	28 24% ± 4%	13 16% ± 3%	19 45% ± 3%	1 75% ± 1%
20+ Years	229 11% ± 1%	39 12% ± 2%	9 6% ± 5%	3 3% ± 1%	3 4% ± 2%	0 1% ± 0%	0 8% ± 0%

Units: Regional Cooled Floor Area (Million Sq Ft), % of column total, error band shown at the 90% confidence level

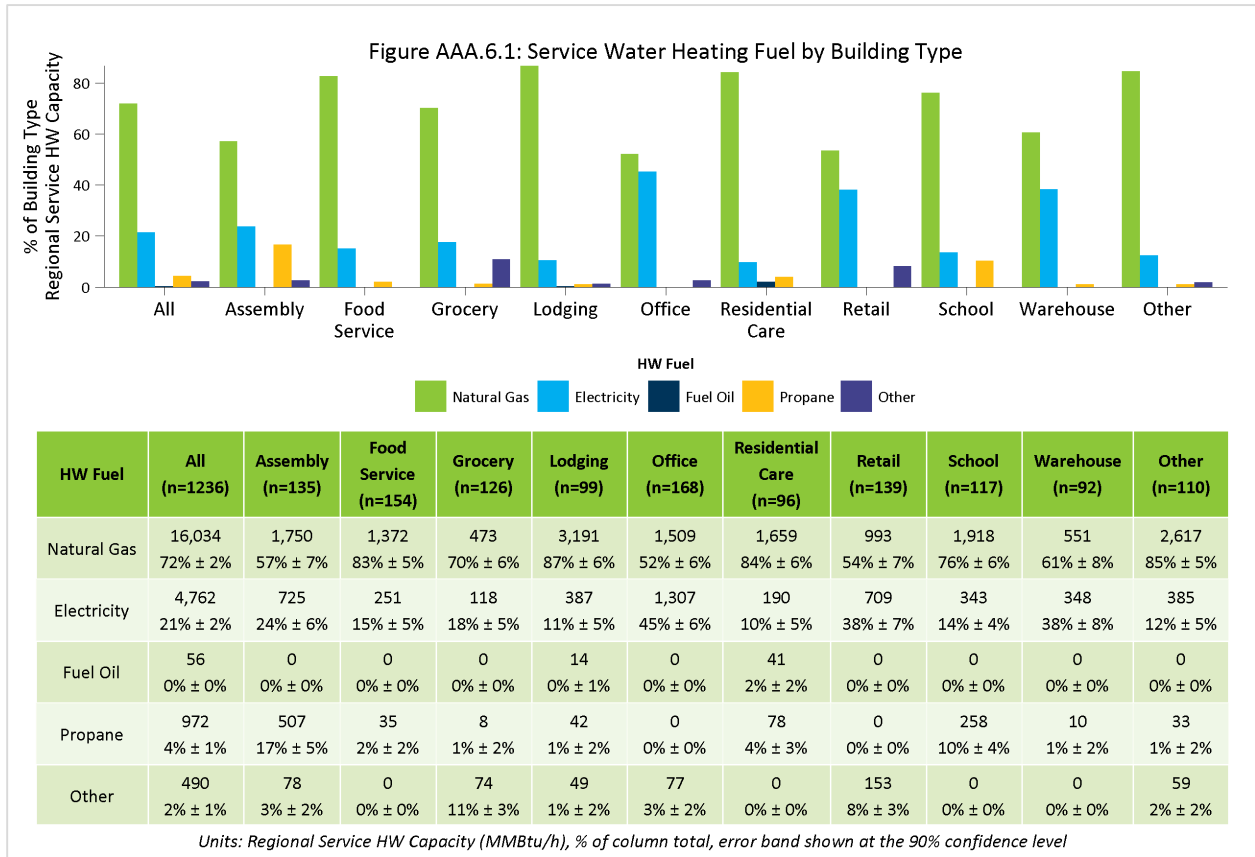
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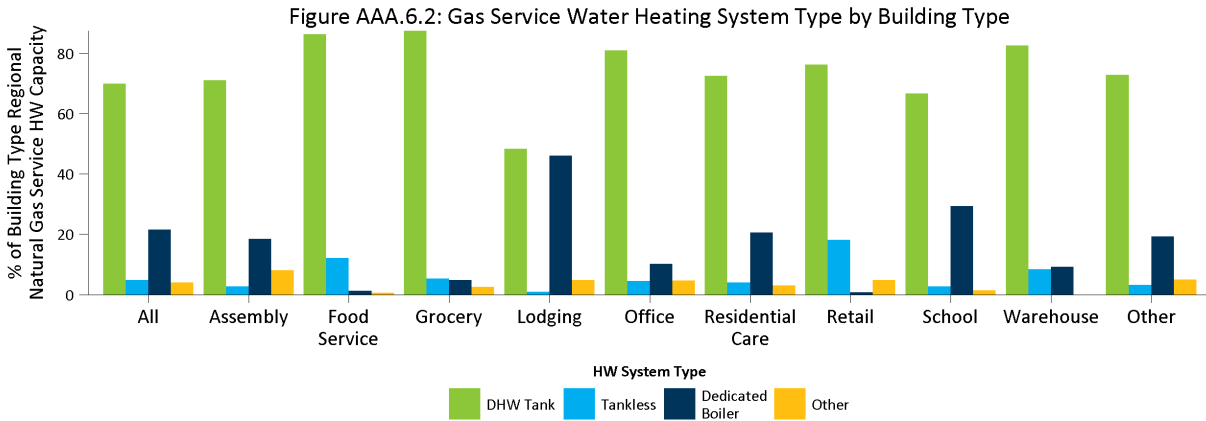






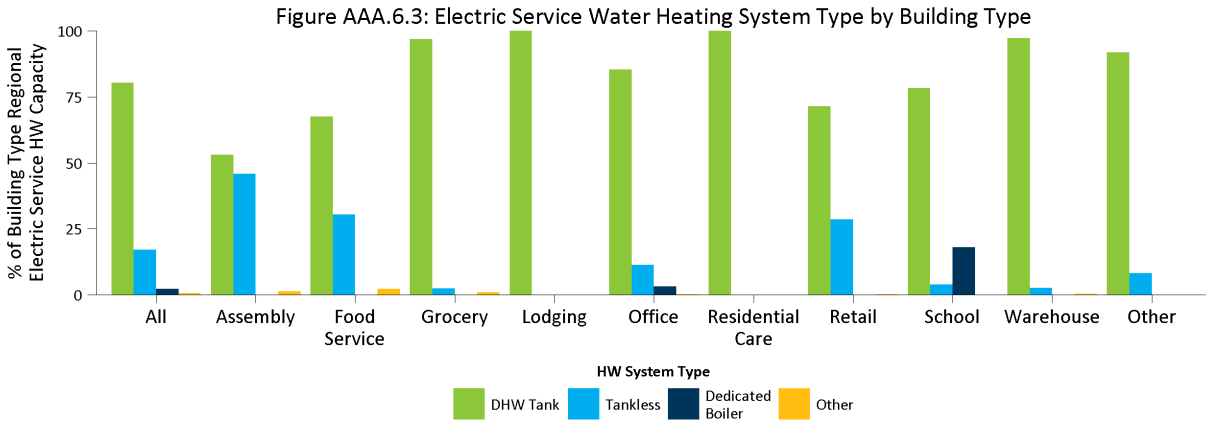
AAA.7 Service Hot Water





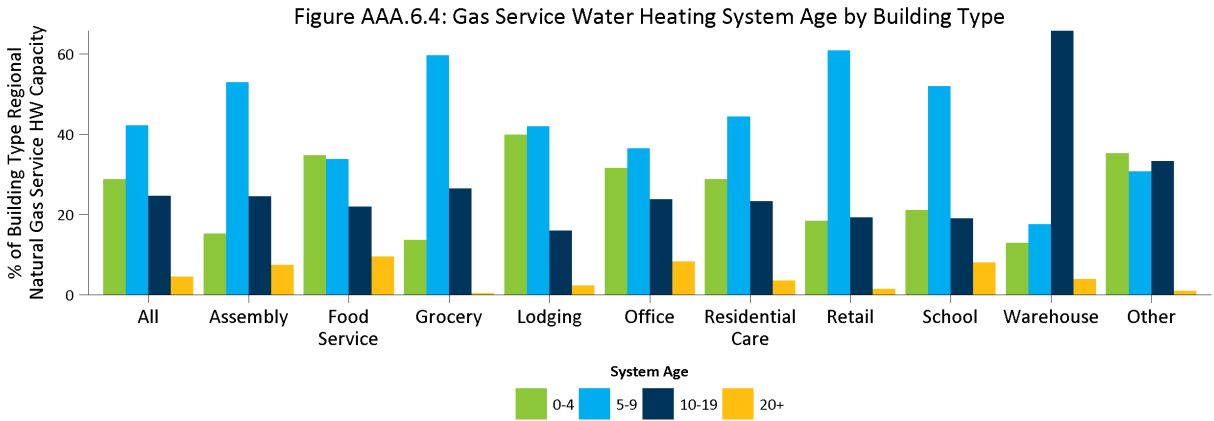
HW System Type	All (n=665)	Assembly (n=58)	Food Service (n=110)	Grocery (n=54)	Lodging (n=81)	Office (n=50)	Residential Care (n=85)	Retail (n=53)	School (n=86)	Warehouse (n=22)	Other (n=66)
DHW Tank	11,127 70% ± 3%	1,243 71% ± 10%	1,183 86% ± 5%	413 87% ± 7%	1,542 48% ± 8%	1,221 81% ± 9%	1,132 72% ± 8%	757 76% ± 10%	1,278 67% ± 8%	455 82% ± 14%	1,903 73% ± 9%
Tankless	752 5% ± 1%	46 3% ± 3%	165 12% ± 5%	25 5% ± 5%	29 1% ± 2%	66 4% ± 5%	62 4% ± 3%	180 18% ± 9%	50 3% ± 3%	46 8% ± 10%	82 3% ± 4%
Dedicated Boiler	3,426 21% ± 3%	322 18% ± 9%	17 1% ± 1%	23 5% ± 5%	1,469 46% ± 8%	153 10% ± 7%	321 21% ± 7%	8 1% ± 2%	562 29% ± 8%	50 9% ± 11%	502 19% ± 8%
Other	633 4% ± 1%	140 8% ± 6%	7 1% ± 1%	12 3% ± 3%	151 5% ± 4%	69 5% ± 5%	48 3% ± 3%	48 5% ± 5%	28 1% ± 2%	0 0% ± 0%	130 5% ± 4%

Units: Regional Natural Gas Service HW Capacity (MMBtu/h), % of column total, error band shown at the 90% confidence level



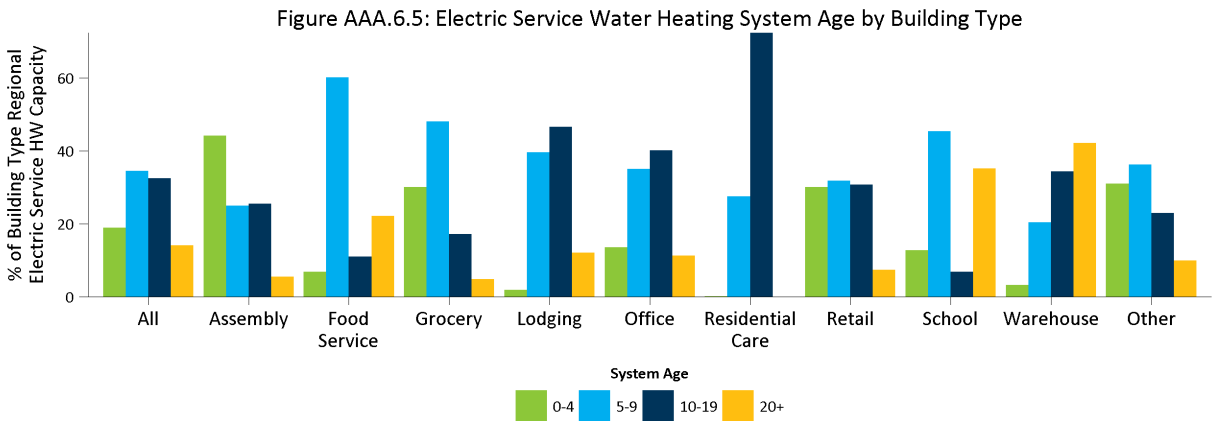
HW System Type	All (n=640)	Assembly (n=90)	Food Service (n=46)	Grocery (n=77)	Lodging (n=19)	Office (n=129)	Residential Care (n=10)	Retail (n=94)	School (n=52)	Warehouse (n=72)	Other (n=51)
DHW Tank	3,826 80% ± 2%	385 53% ± 8%	169 68% ± 12%	112 97% ± 3%	387 100% ± 0%	1,118 85% ± 5%	190 100% ± 0%	506 71% ± 8%	268 78% ± 9%	338 97% ± 3%	353 92% ± 5%
Tankless	813 17% ± 2%	332 46% ± 8%	76 30% ± 11%	3 2% ± 3%	0 0% ± 0%	147 11% ± 4%	0 0% ± 0%	202 28% ± 8%	13 4% ± 3%	9 3% ± 3%	31 8% ± 5%
Dedicated Boiler	102 2% ± 1%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	41 3% ± 2%	0 0% ± 0%	0 0% ± 0%	62 18% ± 9%	0 0% ± 0%	0 0% ± 0%
Other	18 0% ± 0%	8 1% ± 2%	5 2% ± 4%	1 1% ± 2%	0 0% ± 0%	2 0% ± 1%	0 0% ± 0%	1 0% ± 1%	0 0% ± 0%	1 0% ± 1%	0 0% ± 0%

Units: Regional Electric Service HW Capacity (MMBtu/h), % of column total, error band shown at the 90% confidence level



System Age	All (n=585)	Assembly (n=51)	Food Service (n=91)	Grocery (n=46)	Lodging (n=73)	Office (n=44)	Residential Care (n=81)	Retail (n=46)	School (n=77)	Warehouse (n=20)	Other (n=56)
0-4	4,137 29% ± 3%	257 15% ± 8%	430 35% ± 8%	59 14% ± 8%	1,132 40% ± 9%	425 32% ± 12%	459 29% ± 8%	175 18% ± 10%	284 21% ± 7%	70 13% ± 13%	846 35% ± 11%
5-9	6,074 42% ± 3%	895 53% ± 12%	418 34% ± 8%	259 60% ± 12%	1,191 42% ± 9%	491 36% ± 12%	707 44% ± 9%	578 61% ± 12%	702 52% ± 9%	96 18% ± 15%	738 31% ± 10%
10-19	3,540 25% ± 3%	414 24% ± 9%	271 22% ± 7%	115 26% ± 11%	453 16% ± 6%	320 24% ± 11%	371 23% ± 7%	183 19% ± 10%	256 19% ± 7%	358 66% ± 18%	800 33% ± 11%
20+	637 4% ± 1%	126 7% ± 6%	117 9% ± 5%	1 0% ± 1%	63 2% ± 3%	110 8% ± 7%	56 4% ± 3%	13 1% ± 3%	108 8% ± 5%	21 4% ± 7%	21 1% ± 2%

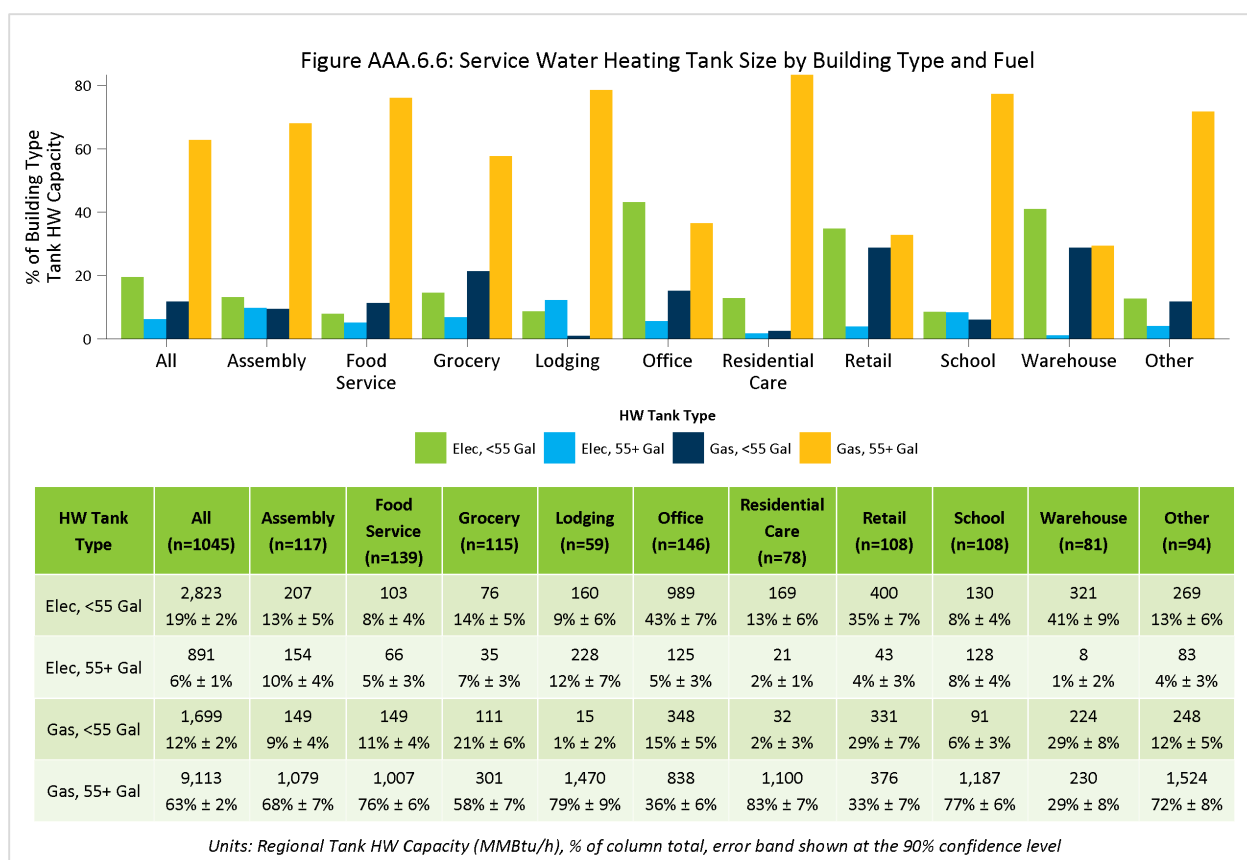
Units: Regional Natural Gas Service HW Capacity (MMBtu/h), % of column total, error band shown at the 90% confidence level



System Age	All (n=505)	Assembly (n=72)	Food Service (n=33)	Grocery (n=46)	Lodging (n=16)	Office (n=101)	Residential Care (n=9)	Retail (n=81)	School (n=44)	Warehouse (n=59)	Other (n=44)
0-4	707 19% ± 3%	201 44% ± 9%	15 7% ± 7%	23 30% ± 11%	4 2% ± 4%	151 14% ± 5%	0 0% ± 1%	180 30% ± 8%	34 13% ± 8%	10 3% ± 4%	89 31% ± 11%
5-9	1,292 35% ± 3%	113 25% ± 7%	128 60% ± 14%	37 48% ± 12%	93 40% ± 19%	390 35% ± 8%	51 28% ± 26%	190 32% ± 8%	123 45% ± 12%	62 20% ± 9%	104 36% ± 11%
10-19	1,217 33% ± 3%	116 25% ± 8%	23 11% ± 9%	13 17% ± 9%	109 47% ± 21%	449 40% ± 8%	134 72% ± 26%	184 31% ± 8%	18 7% ± 5%	105 34% ± 10%	66 23% ± 11%
20+	526 14% ± 2%	25 5% ± 4%	47 22% ± 12%	4 5% ± 5%	28 12% ± 10%	126 11% ± 5%	0 0% ± 0%	44 7% ± 5%	96 35% ± 12%	128 42% ± 11%	28 10% ± 8%

Units: Regional Electric Service HW Capacity (MMBtu/h), % of column total, error band shown at the 90% confidence level

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AAA.8 Building Envelope

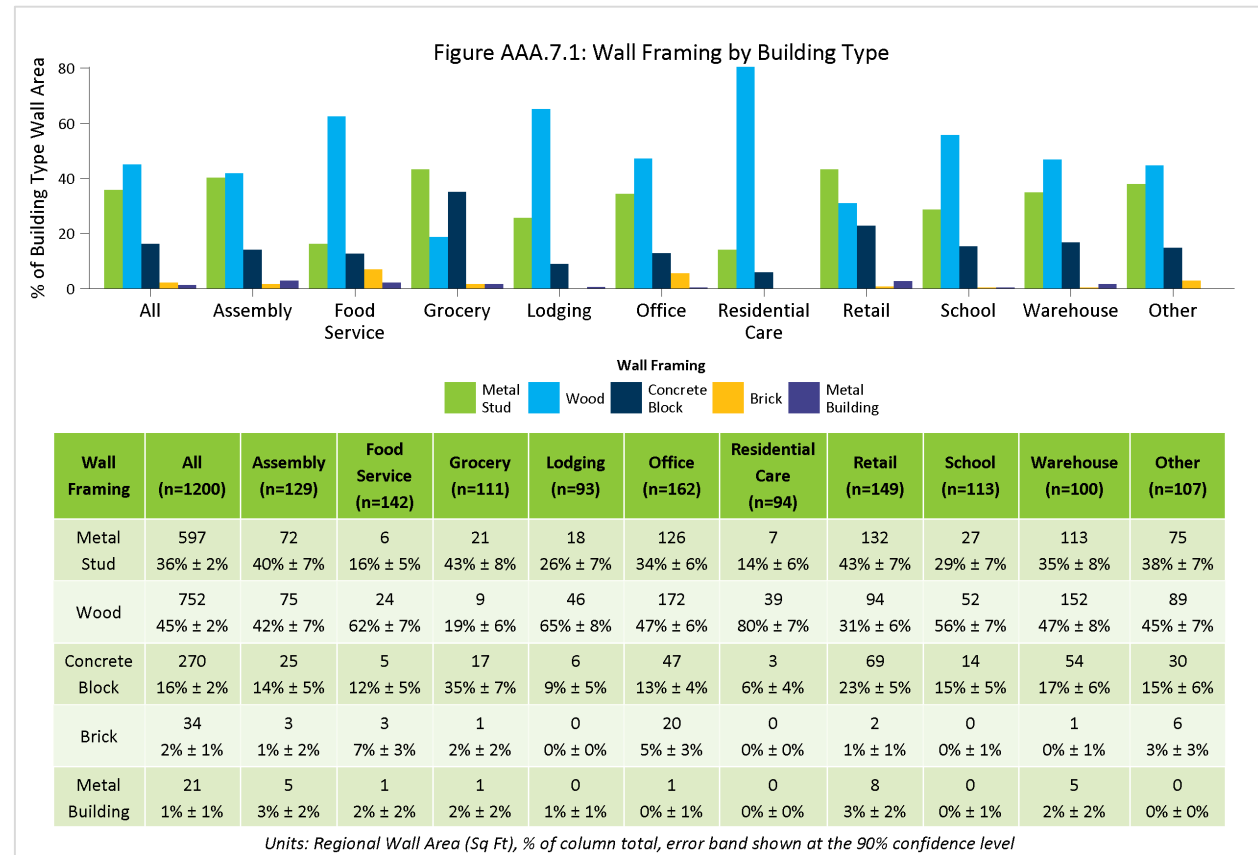
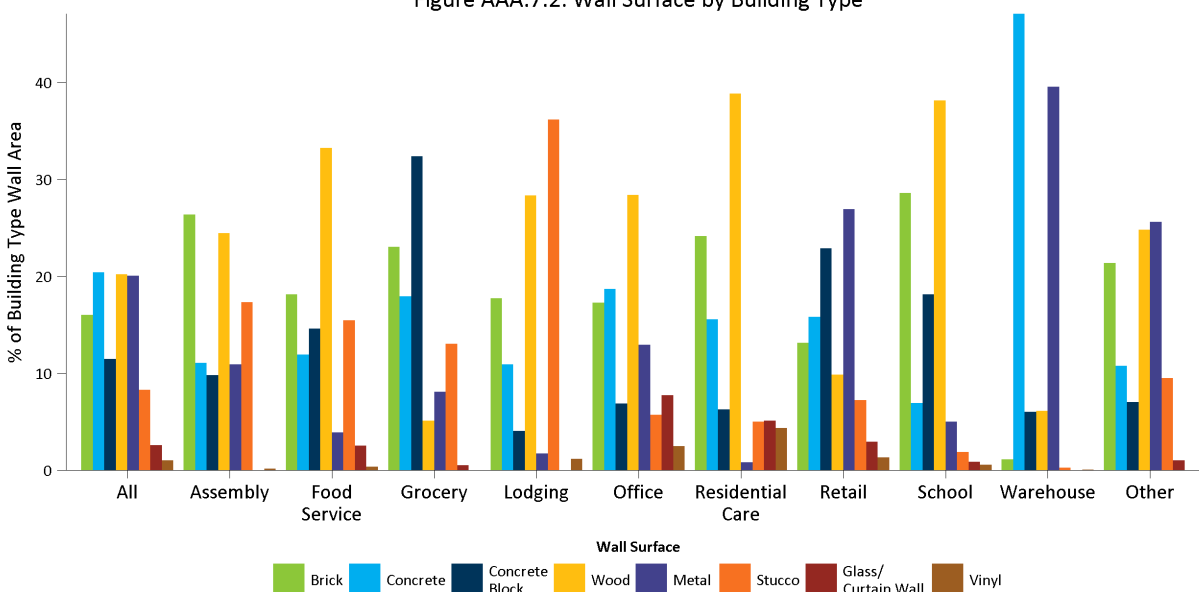
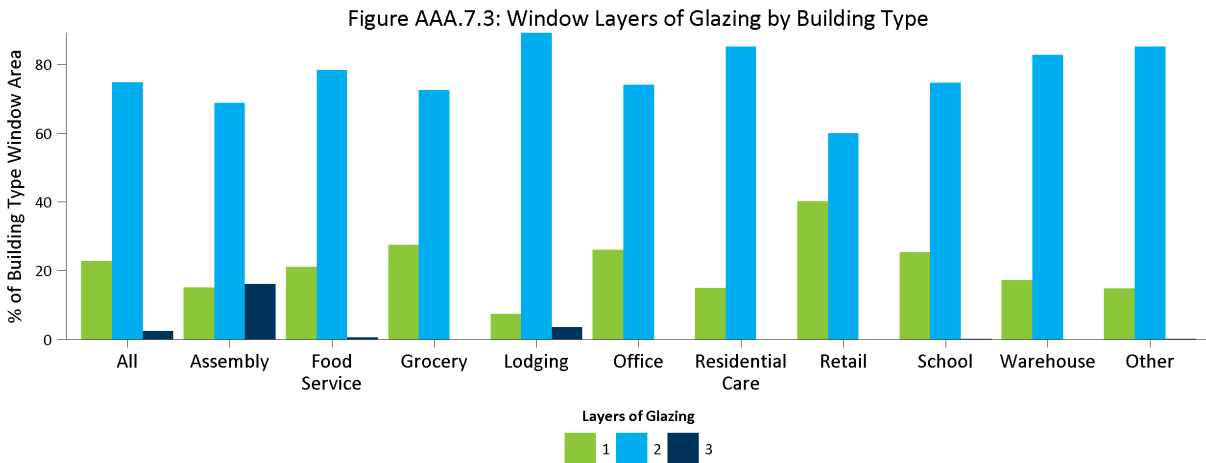


Figure AAA.7.2: Wall Surface by Building Type



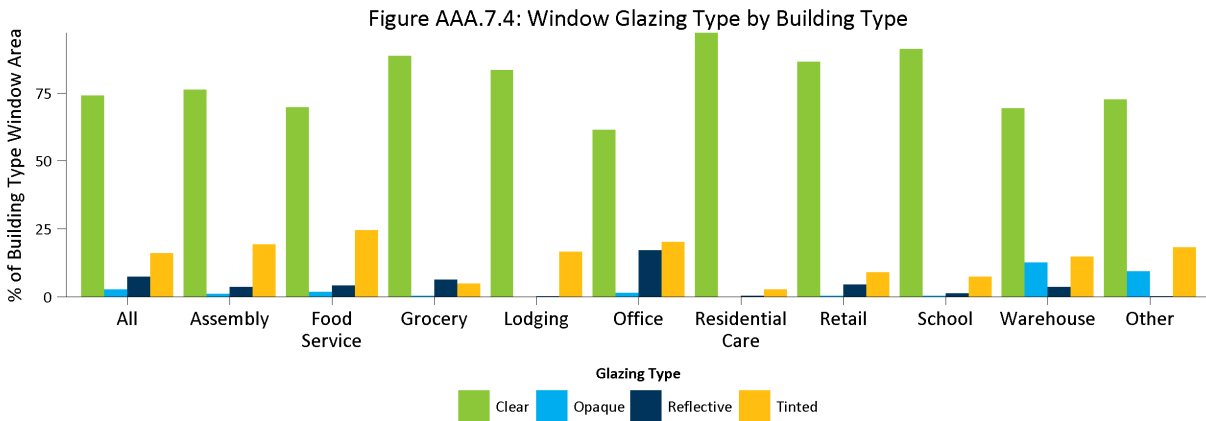
Wall Surface	All (n=1276)	Assembly (n=137)	Food Service (n=159)	Grocery (n=129)	Lodging (n=100)	Office (n=170)	Residential Care (n=96)	Retail (n=152)	School (n=117)	Warehouse (n=105)	Other (n=111)
Brick	282 16% ± 2%	51 26% ± 6%	8 18% ± 5%	13 23% ± 6%	14 18% ± 6%	66 17% ± 5%	12 24% ± 7%	42 13% ± 4%	29 29% ± 6%	4 1% ± 1%	44 21% ± 6%
Concrete	359 20% ± 2%	22 11% ± 4%	5 12% ± 4%	10 18% ± 6%	9 11% ± 5%	71 19% ± 5%	8 16% ± 6%	50 16% ± 5%	7 7% ± 3%	156 47% ± 8%	22 11% ± 5%
Concrete Block	201 11% ± 1%	19 10% ± 4%	6 15% ± 5%	18 32% ± 7%	3 4% ± 3%	26 7% ± 3%	3 6% ± 4%	73 23% ± 5%	19 18% ± 5%	20 6% ± 4%	14 7% ± 4%
Wood	355 20% ± 2%	48 24% ± 6%	14 33% ± 6%	3 5% ± 3%	22 28% ± 7%	108 28% ± 6%	19 39% ± 8%	31 10% ± 4%	39 38% ± 7%	20 6% ± 3%	51 25% ± 7%
Metal	353 20% ± 2%	21 11% ± 4%	2 4% ± 2%	4 8% ± 4%	1 2% ± 1%	49 13% ± 4%	0 1% ± 1%	86 27% ± 6%	5 5% ± 2%	131 40% ± 8%	53 26% ± 7%
Stucco	145 8% ± 1%	34 17% ± 5%	7 15% ± 5%	7 13% ± 5%	29 36% ± 8%	22 6% ± 3%	2 5% ± 4%	23 7% ± 3%	2 2% ± 2%	1 0% ± 1%	20 9% ± 5%
Glass/Curtain Wall	45 3% ± 1%	0 0% ± 0%	1 3% ± 2%	0 0% ± 1%	0 0% ± 0%	29 8% ± 3%	2 5% ± 3%	9 3% ± 2%	1 1% ± 1%	0 0% ± 0%	2 1% ± 1%
Vinyl	18 1% ± 0%	0 0% ± 0%	0 0% ± 1%	0 0% ± 0%	1 1% ± 2%	9 2% ± 2%	2 4% ± 3%	4 1% ± 2%	1 1% ± 1%	0 0% ± 0%	0 0% ± 0%

Units: Regional Wall Area (Sq Ft), % of column total, error band shown at the 90% confidence level



Layers of Glazing	All (n=1258)	Assembly (n=136)	Food Service (n=158)	Grocery (n=129)	Lodging (n=100)	Office (n=171)	Residential Care (n=97)	Retail (n=147)	School (n=117)	Warehouse (n=95)	Other (n=108)
1	79 23% ± 2%	7 15% ± 5%	2 21% ± 5%	2 27% ± 7%	2 7% ± 4%	30 26% ± 5%	2 15% ± 6%	19 40% ± 7%	5 25% ± 6%	5 17% ± 6%	5 15% ± 5%
2	258 75% ± 2%	31 69% ± 6%	9 78% ± 6%	5 73% ± 7%	19 89% ± 5%	85 74% ± 5%	12 85% ± 6%	28 60% ± 7%	16 75% ± 6%	24 83% ± 6%	30 85% ± 5%
3	8 2% ± 1%	7 16% ± 5%	0 1% ± 1%	0 0% ± 0%	1 4% ± 3%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%

Units: Regional Window Area (Sq Ft), % of column total, error band shown at the 90% confidence level

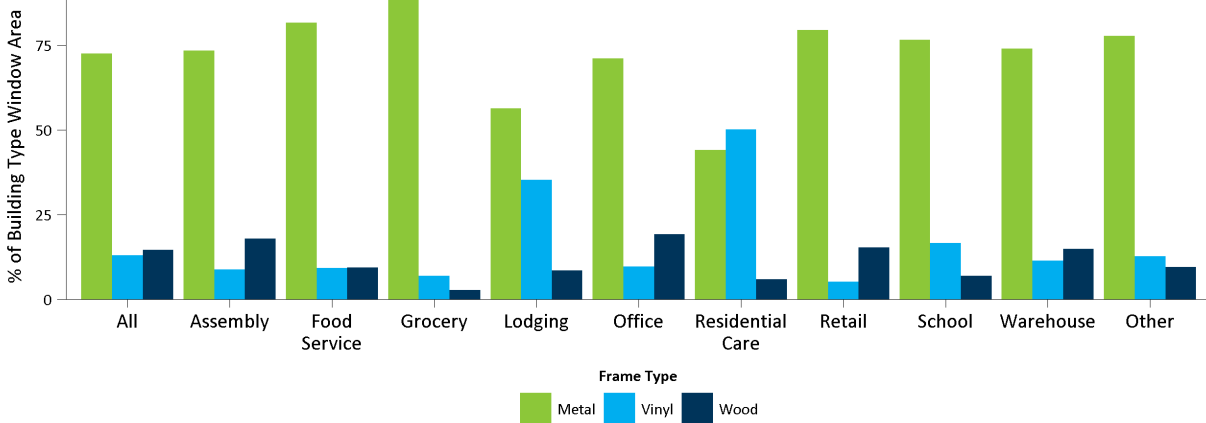


Glazing Type	All (n=1260)	Assembly (n=137)	Food Service (n=158)	Grocery (n=129)	Lodging (n=100)	Office (n=171)	Residential Care (n=97)	Retail (n=148)	School (n=117)	Warehouse (n=95)	Other (n=108)
Clear	257 74% ± 2%	35 76% ± 6%	8 70% ± 6%	6 89% ± 5%	18 83% ± 6%	71 61% ± 6%	13 97% ± 3%	41 86% ± 5%	20 91% ± 4%	20 69% ± 8%	25 73% ± 7%
Opaque	9 3% ± 1%	0 1% ± 1%	0 2% ± 1%	0 0% ± 0%	0 0% ± 0%	2 1% ± 1%	0 0% ± 0%	0 0% ± 1%	0 0% ± 1%	4 13% ± 6%	3 9% ± 5%
Reflective	26 7% ± 1%	2 4% ± 3%	0 4% ± 2%	0 6% ± 4%	0 0% ± 1%	20 17% ± 5%	0 0% ± 0%	2 4% ± 3%	0 1% ± 2%	1 3% ± 3%	0 0% ± 0%
Tinted	55 16% ± 2%	9 19% ± 5%	3 24% ± 6%	0 5% ± 3%	4 16% ± 6%	23 20% ± 5%	0 3% ± 3%	4 9% ± 4%	2 7% ± 4%	4 15% ± 6%	6 18% ± 6%

Units: Regional Window Area (Sq Ft), % of column total, error band shown at the 90% confidence level

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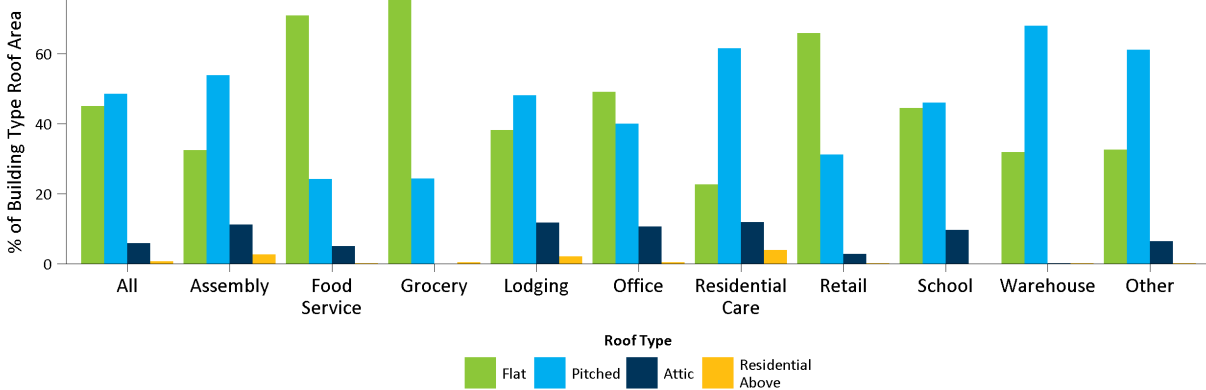
Figure AAA.7.5: Window Frame Type by Building Type



Frame Type	All (n=1259)	Assembly (n=136)	Food Service (n=158)	Grocery (n=129)	Lodging (n=100)	Office (n=170)	Residential Care (n=97)	Retail (n=148)	School (n=117)	Warehouse (n=96)	Other (n=108)
Metal	251 73% ± 2%	33 73% ± 6%	9 82% ± 5%	6 90% ± 5%	12 56% ± 8%	82 71% ± 6%	6 44% ± 8%	38 80% ± 5%	16 77% ± 6%	22 74% ± 8%	27 78% ± 6%
Vinyl	45 13% ± 2%	4 9% ± 4%	1 9% ± 4%	0 7% ± 4%	8 35% ± 8%	11 10% ± 4%	7 50% ± 9%	2 5% ± 3%	4 16% ± 5%	3 11% ± 5%	4 13% ± 5%
Wood	51 15% ± 2%	8 18% ± 5%	1 9% ± 4%	0 3% ± 3%	2 9% ± 4%	22 19% ± 5%	1 6% ± 4%	7 15% ± 4%	1 7% ± 4%	4 15% ± 6%	3 10% ± 5%

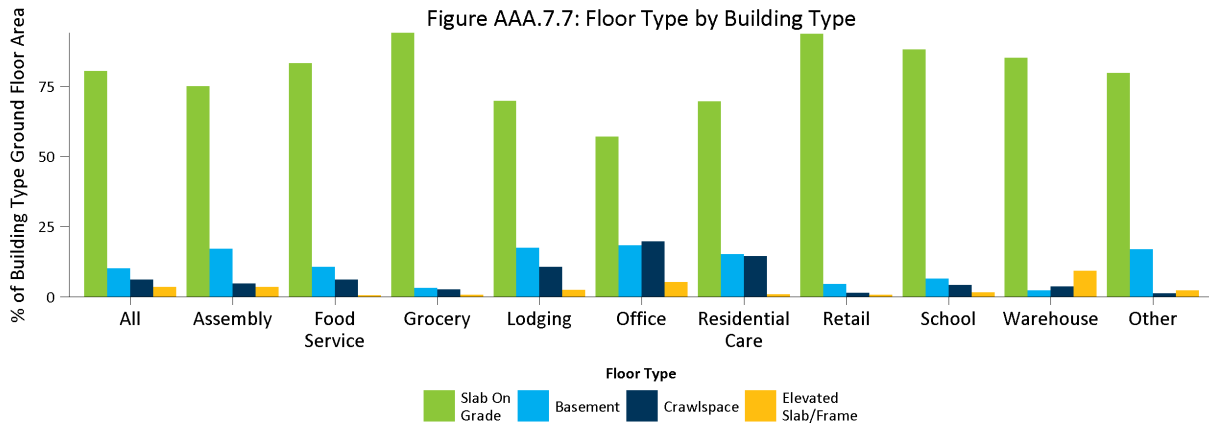
Units: Regional Window Area (Sq Ft), % of column total, error band shown at the 90% confidence level

Figure AAA.7.6: Roof Type by Building Type



Roof Type	All (n=1275)	Assembly (n=137)	Food Service (n=156)	Grocery (n=129)	Lodging (n=100)	Office (n=171)	Residential Care (n=97)	Retail (n=152)	School (n=117)	Warehouse (n=105)	Other (n=111)
Flat	1,034 45% ± 2%	86 32% ± 6%	33 71% ± 6%	56 75% ± 6%	22 38% ± 8%	161 49% ± 6%	18 23% ± 7%	333 66% ± 6%	81 44% ± 7%	143 32% ± 7%	100 33% ± 7%
Pitched	1,114 49% ± 2%	143 54% ± 6%	11 24% ± 5%	18 24% ± 6%	28 48% ± 8%	131 40% ± 6%	49 62% ± 8%	158 31% ± 6%	83 46% ± 7%	306 68% ± 7%	188 61% ± 8%
Attic	134 6% ± 1%	30 11% ± 4%	2 5% ± 3%	0 0% ± 0%	7 12% ± 5%	35 11% ± 4%	9 12% ± 5%	14 3% ± 2%	17 10% ± 4%	0 0% ± 0%	20 6% ± 4%
Residential Above	13 1% ± 0%	7 3% ± 2%	0 0% ± 0%	0 0% ± 1%	1 2% ± 2%	1 0% ± 1%	3 4% ± 3%	1 0% ± 0%	0 0% ± 0%	0 0% ± 0%	0 0% ± 0%

Units: Regional Roof Area (Sq Ft), % of column total, error band shown at the 90% confidence level



Floor Type	All (n=1276)	Assembly (n=137)	Food Service (n=159)	Grocery (n=129)	Lodging (n=100)	Office (n=170)	Residential Care (n=97)	Retail (n=152)	School (n=117)	Warehouse (n=104)	Other (n=111)
Slab On Grade	1,665 80% ± 2%	171 75% ± 6%	39 83% ± 5%	61 94% ± 3%	30 70% ± 8%	193 57% ± 6%	51 70% ± 8%	465 94% ± 3%	155 88% ± 5%	319 85% ± 6%	181 80% ± 6%
Basement	206 10% ± 1%	39 17% ± 5%	5 11% ± 4%	2 3% ± 2%	8 17% ± 6%	62 18% ± 5%	11 15% ± 6%	22 4% ± 3%	11 6% ± 4%	8 2% ± 2%	38 17% ± 6%
Crawlspace	127 6% ± 1%	10 5% ± 3%	3 6% ± 3%	2 3% ± 2%	5 11% ± 5%	67 20% ± 5%	11 14% ± 6%	7 1% ± 2%	7 4% ± 3%	13 4% ± 3%	3 1% ± 2%
Elevated Slab/Frame	72 3% ± 1%	8 3% ± 2%	0 0% ± 1%	0 1% ± 1%	1 2% ± 2%	17 5% ± 3%	1 1% ± 2%	3 1% ± 1%	3 1% ± 1%	34 9% ± 5%	5 2% ± 2%

Units: Regional Ground Floor Area (Sq Ft), % of column total, error band shown at the 90% confidence level

AAA.9 Refrigeration

Compressor and condenser square footage limited to sites meeting the following criteria: categorized as Grocery, Retail, or Warehouse with either 400+ square feet of combined storage box and walk-in refrigeration, or more than 60 lineal feet of refrigerated display case.

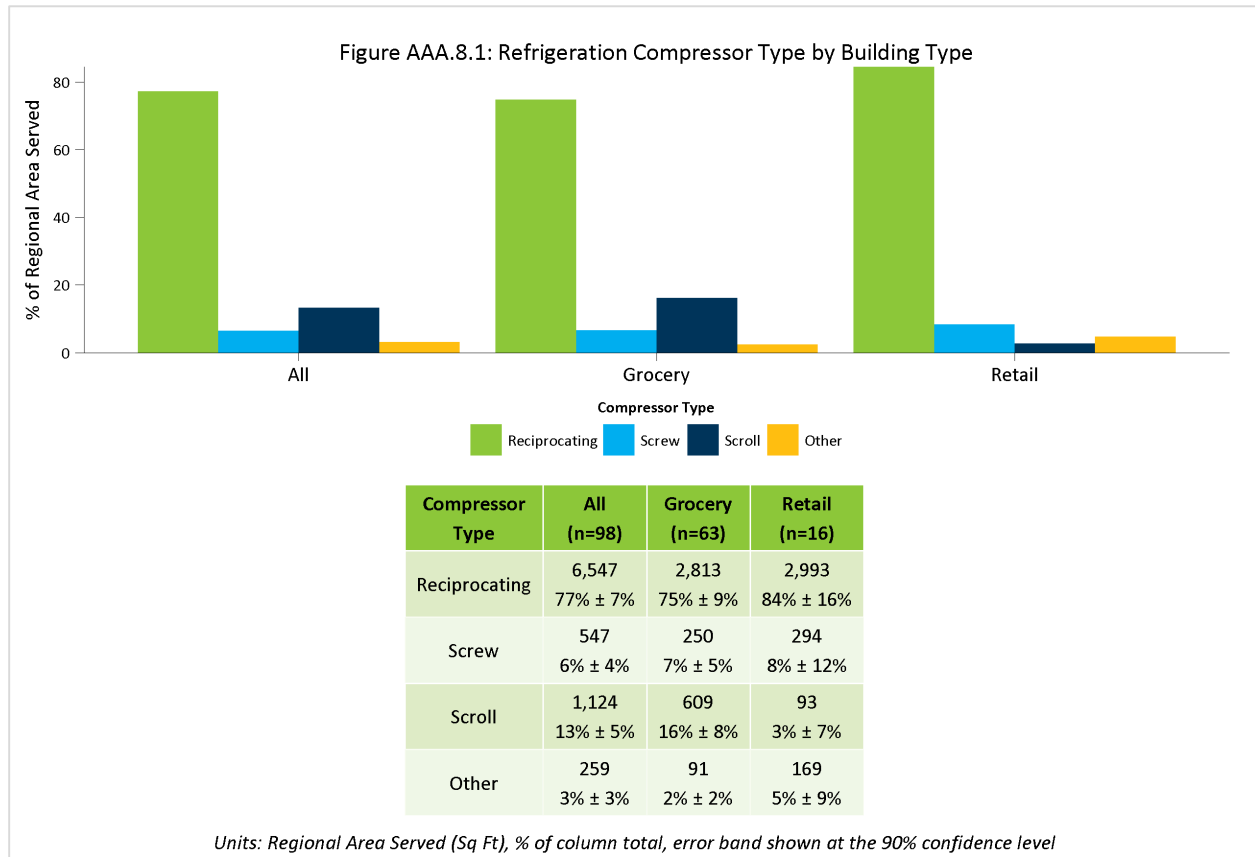
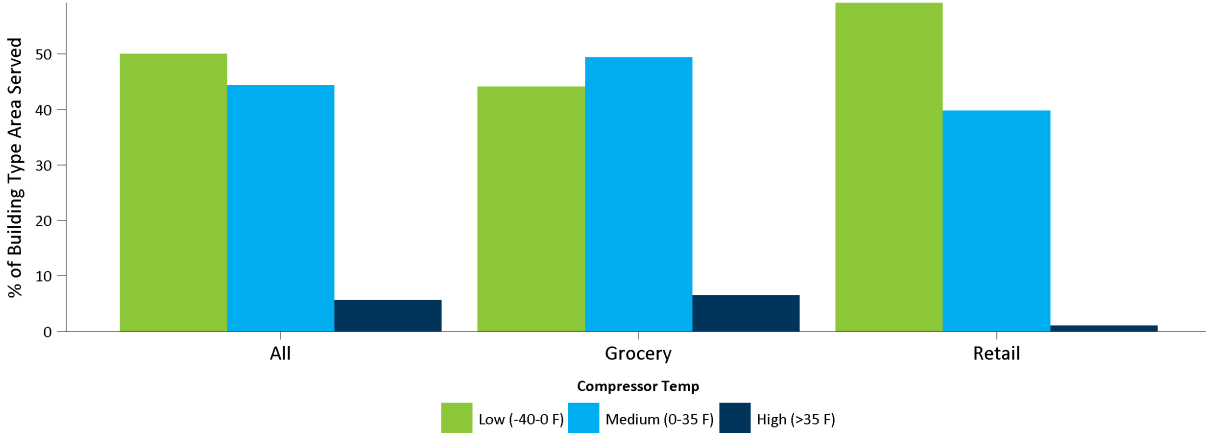
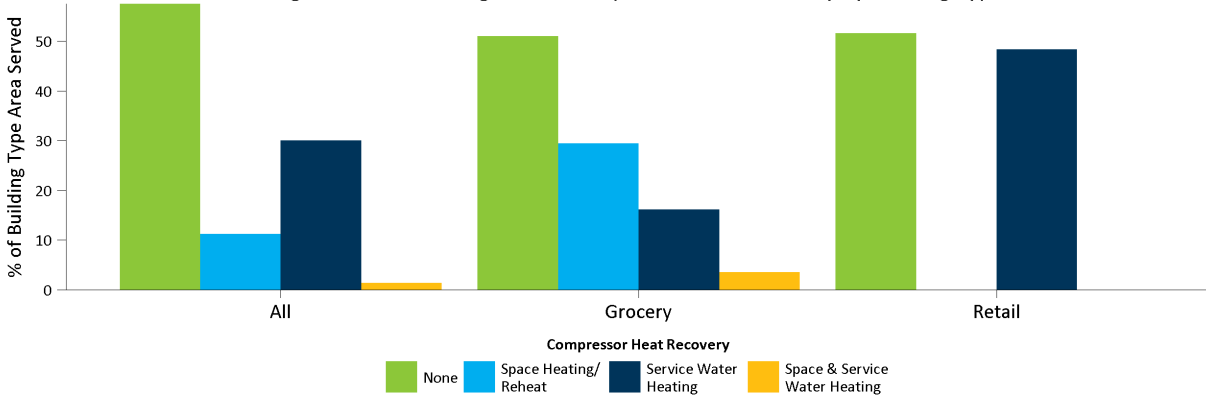


Figure AAA.8.2: Refrigeration Compressor Design Suction Temp by Building Type

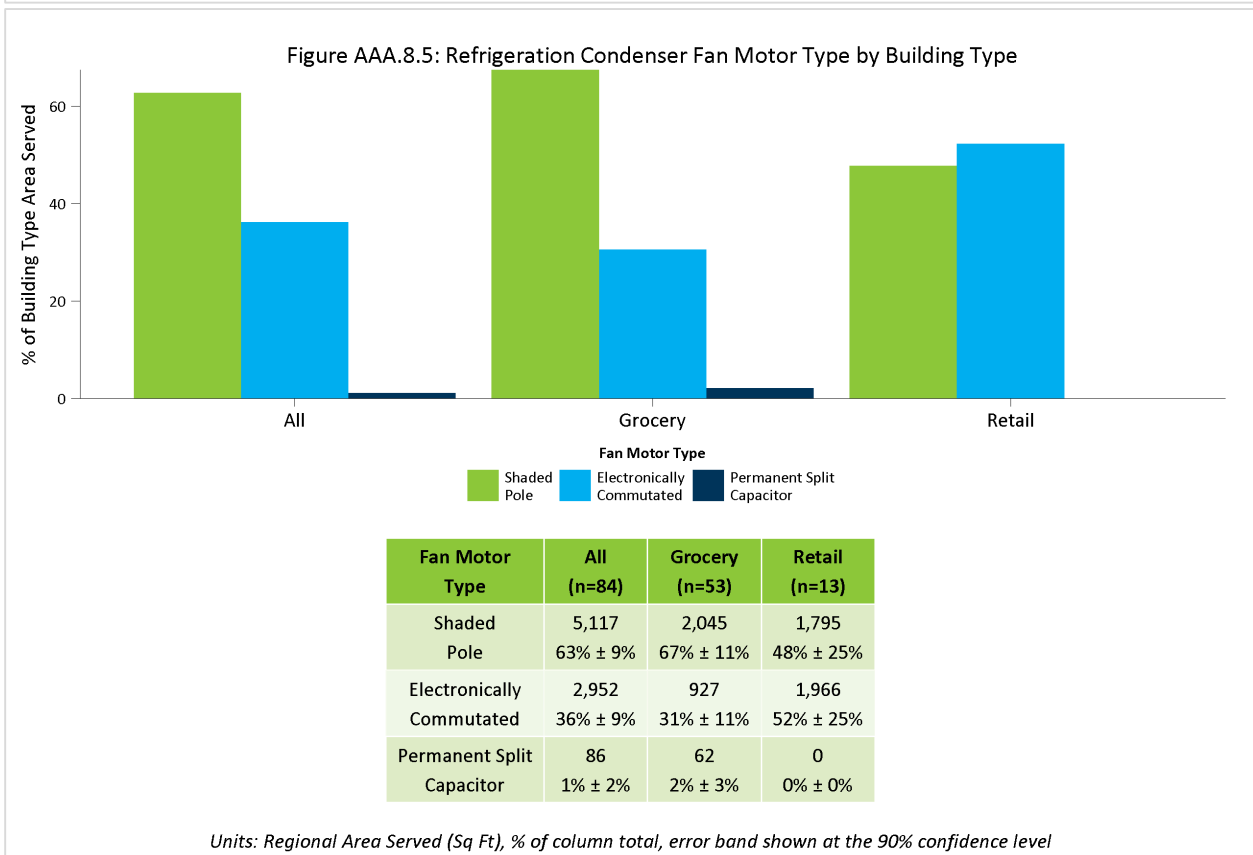
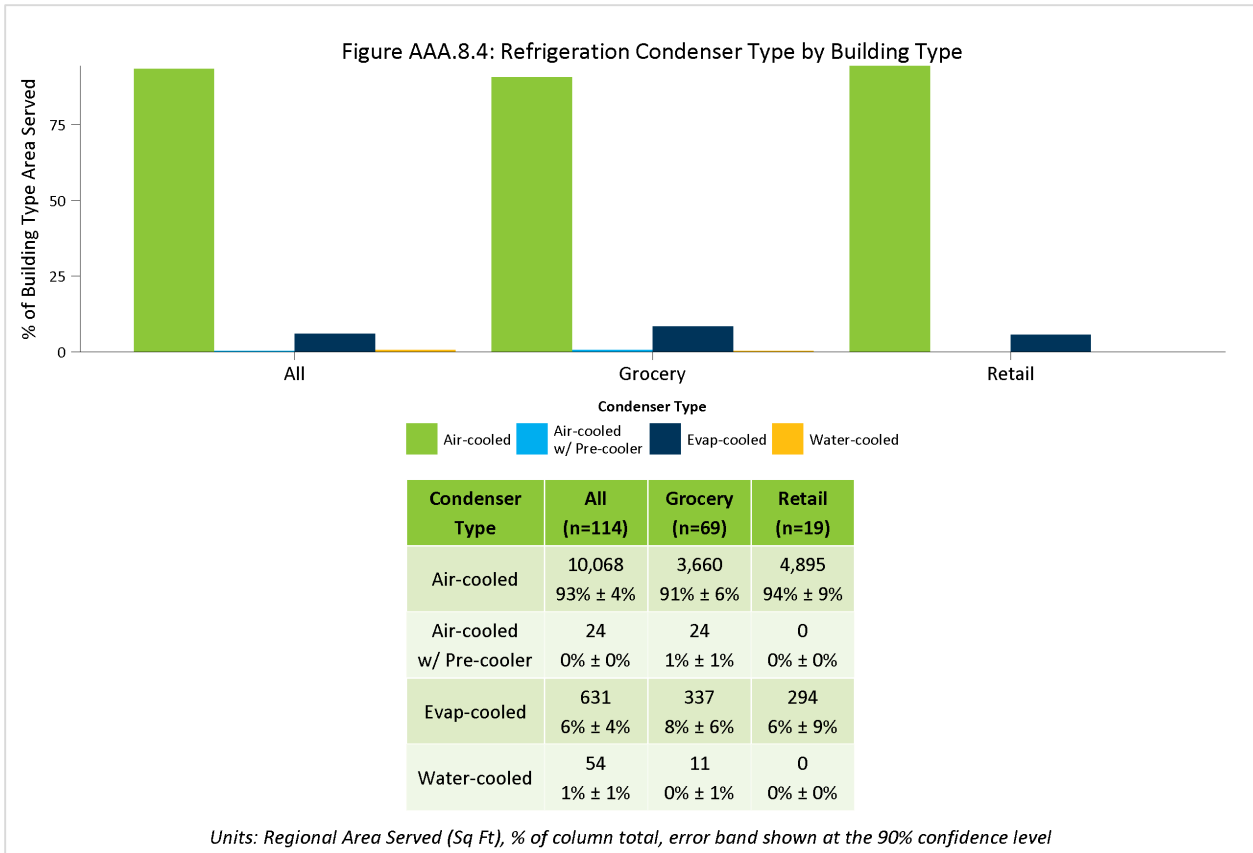


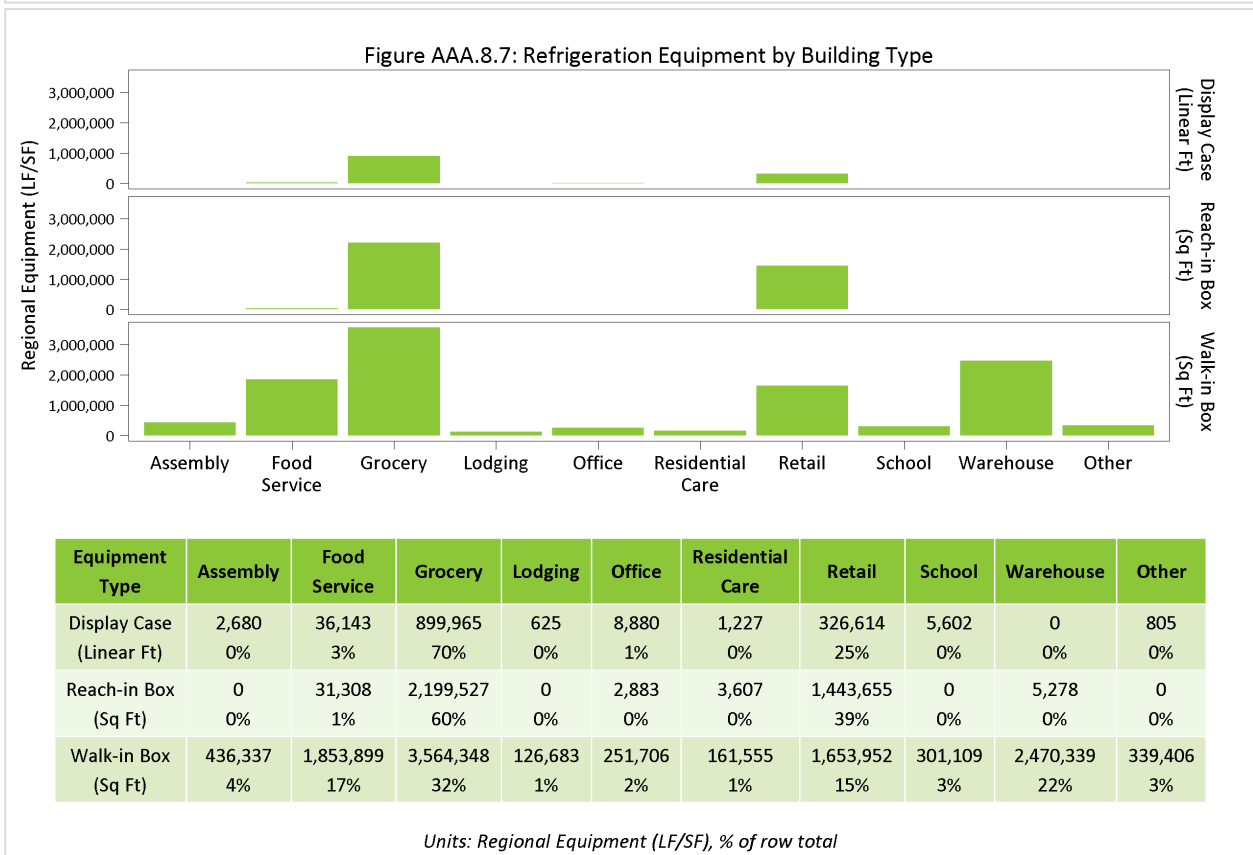
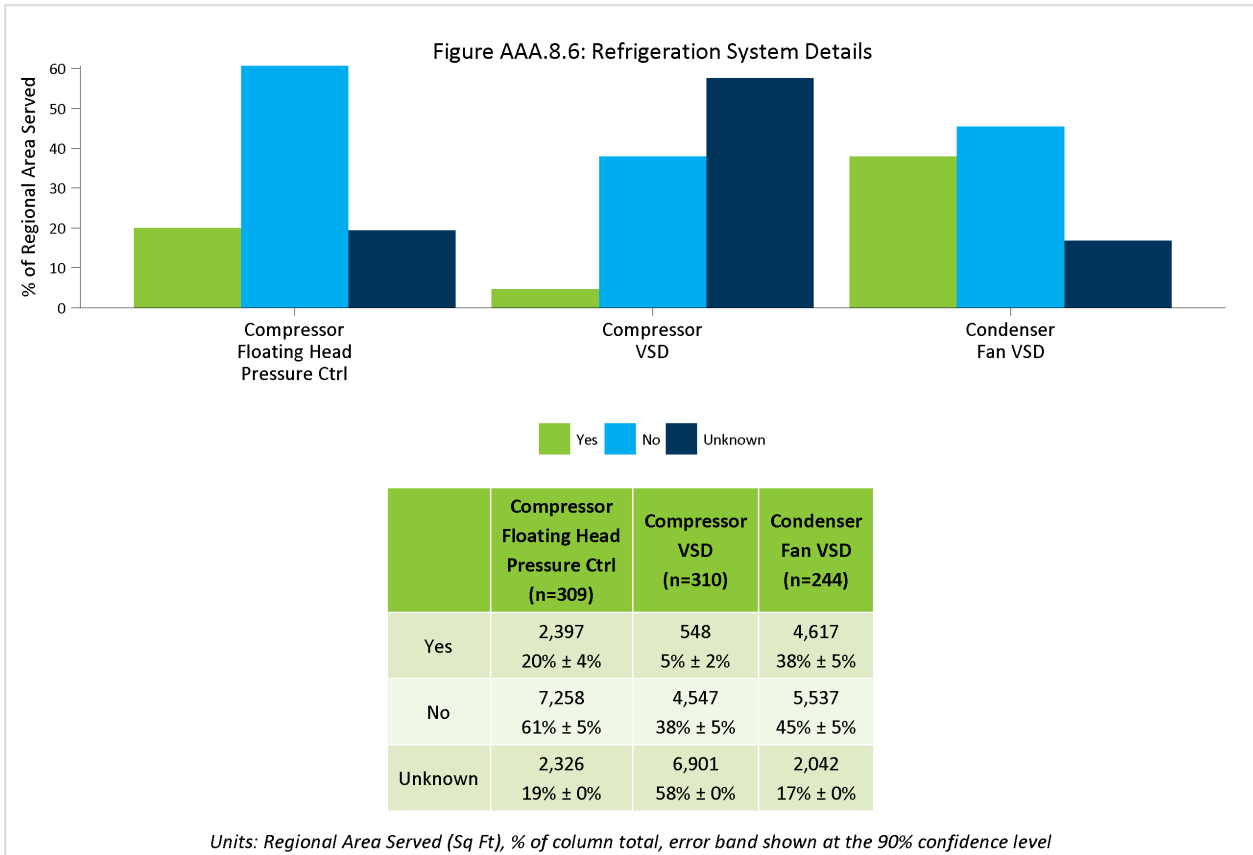
Units: Regional Area Served (Sq Ft), % of column total, error band shown at the 90% confidence level

Figure AAA.8.3: Refrigeration Compressor Heat Recovery by Building Type

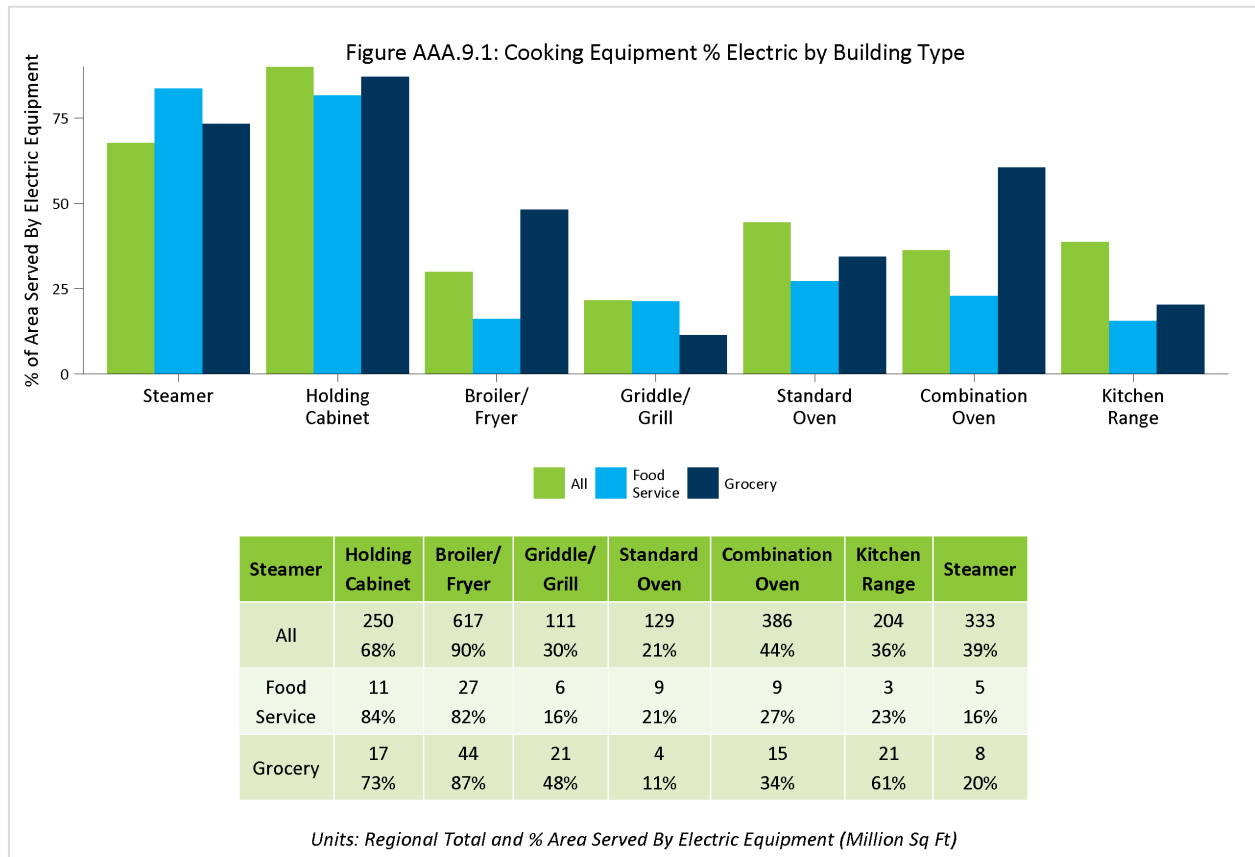


Units: Regional Area Served (Sq Ft), % of column total, error band shown at the 90% confidence level





AAA.10 Miscellaneous



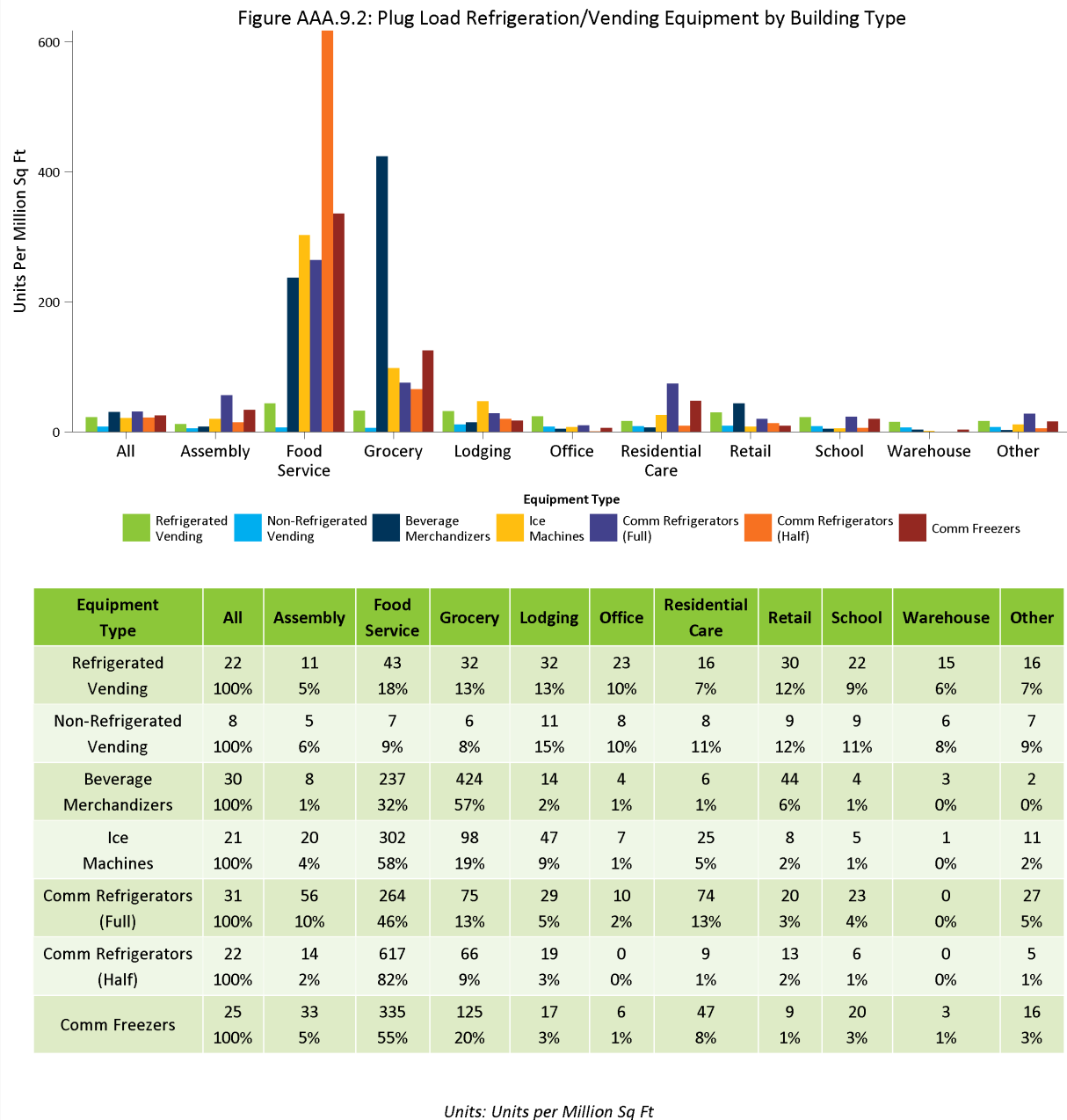
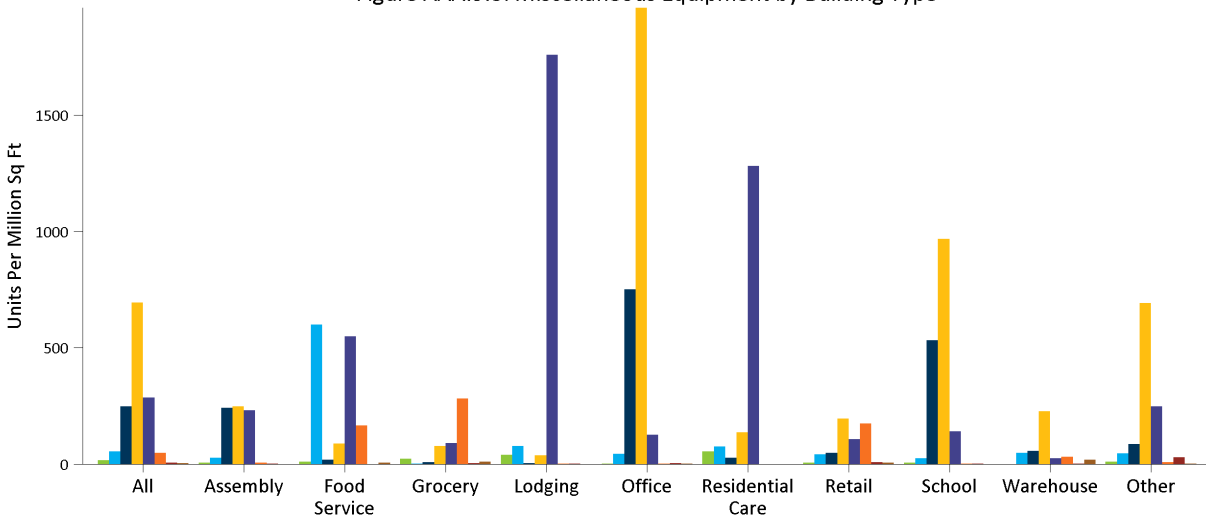


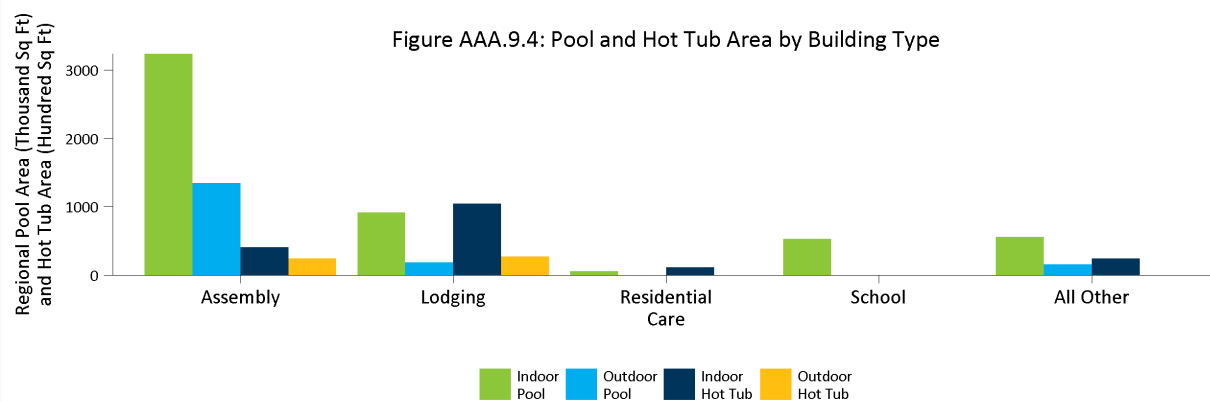
Figure AAA.9.3: Miscellaneous Equipment by Building Type



Equipment Type	All	Assembly	Food Service	Grocery	Lodging	Office	Residential Care	Retail	School	Warehouse	Other
Clothes Dryer (Gas)	16 100%	6 4%	9 6%	22 15%	40 26%	0 0%	54 35%	6 4%	6 4%	0 0%	11 7%
Clothes Dryer (Elec)	55 100%	27 3%	599 61%	1 0%	77 8%	44 4%	75 8%	42 4%	24 2%	48 5%	46 5%
Laptop Computer	248 100%	242 14%	19 1%	6 0%	4 0%	750 42%	26 1%	48 3%	532 30%	57 3%	84 5%
Desktop Computer	694 100%	247 5%	89 2%	77 2%	37 1%	1,960 42%	135 3%	194 4%	968 21%	227 5%	692 15%
TV	285 100%	230 5%	549 12%	89 2%	1,760 39%	125 3%	1,280 28%	106 2%	141 3%	25 1%	247 5%
Cash Register	47 100%	4 1%	165 25%	282 42%	1 0%	1 0%	0 0%	173 26%	1 0%	31 5%	9 1%
Vehicle Charger	6 100%	1 3%	0 0%	3 7%	1 1%	3 6%	0 0%	8 18%	0 0%	0 0%	29 65%
Forklift Charger	4 100%	0 0%	4 11%	9 23%	0 0%	0 1%	0 0%	6 15%	0 0%	18 45%	2 4%

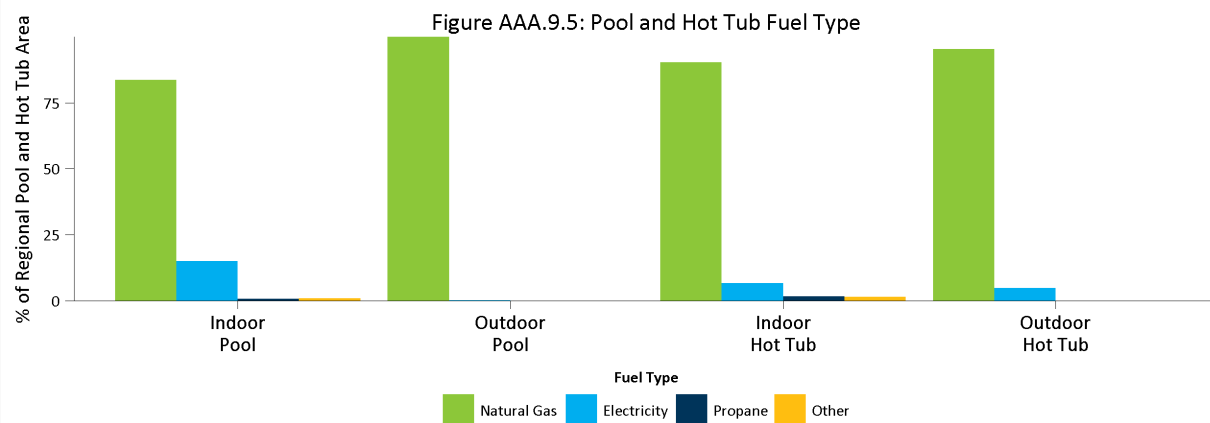
Units: Units per Million Sq Ft

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	Assembly	Lodging	Residential Care	School	All Other
Indoor Pool	3,236 61%	915 17%	53 1%	531 10%	560 11%
Outdoor Pool	1,347 80%	186 11%	0 0%	0 0%	153 9%
Indoor Hot Tub	409 23%	1,046 58%	113 6%	0 0%	241 13%
Outdoor Hot Tub	244 47%	271 53%	0 0%	0 0%	0 0%

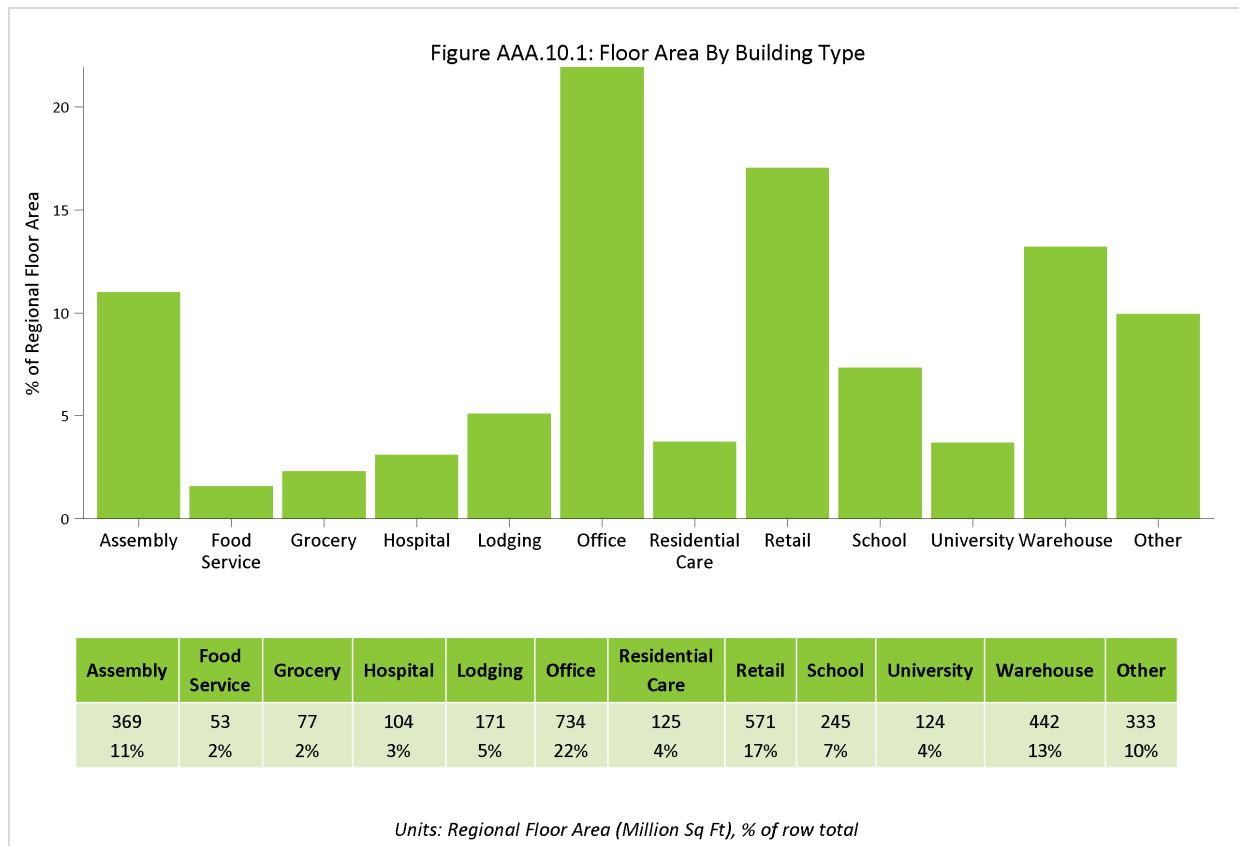
Units: Regional Pool Area (Thousand Sq Ft) and Hot Tub Area (Hundred Sq Ft), % of row total



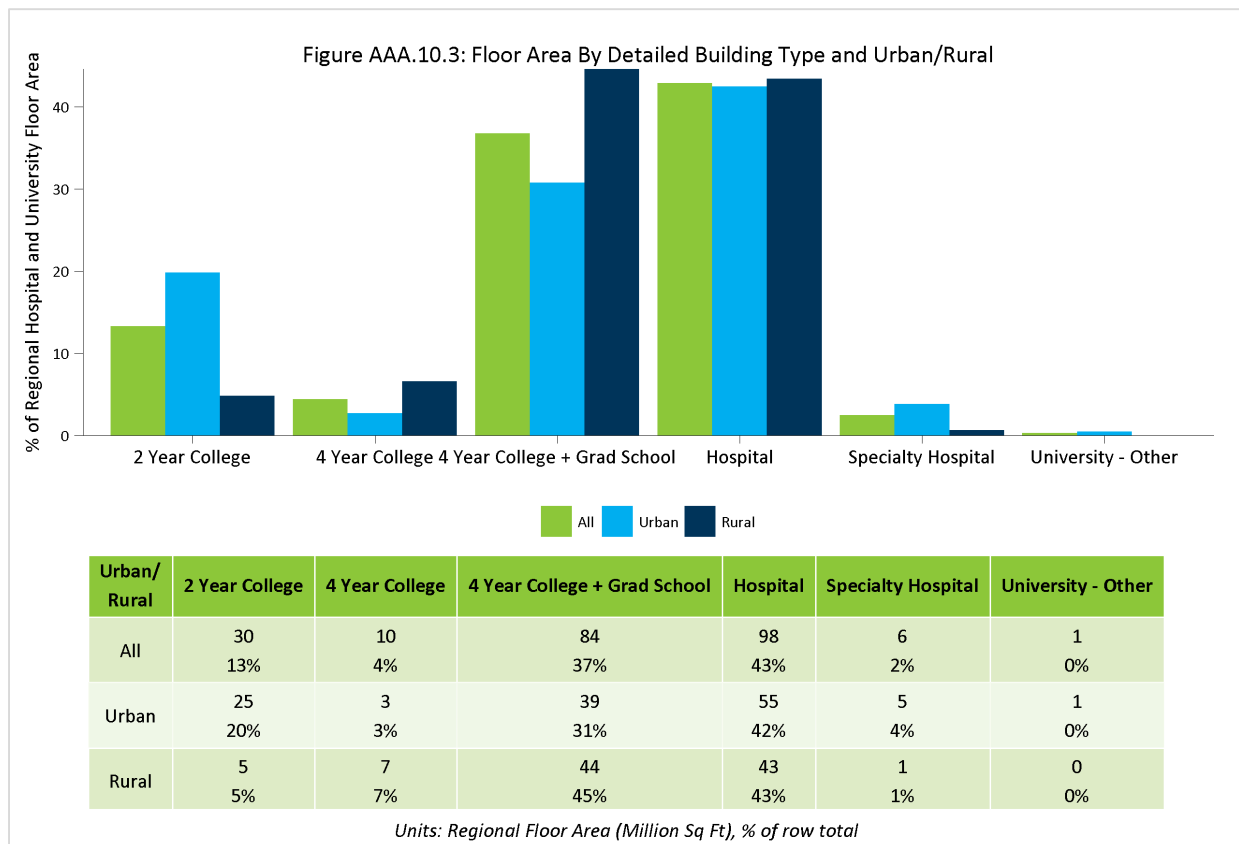
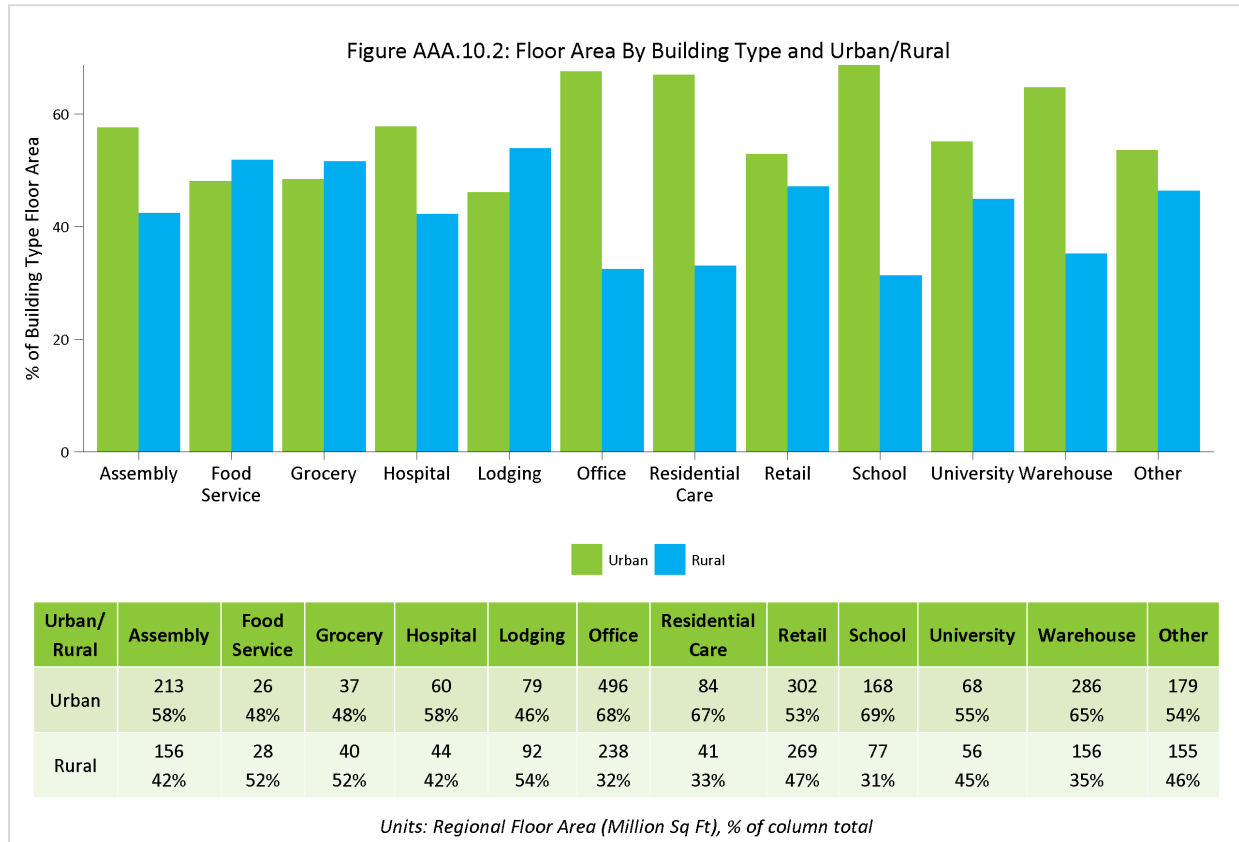
Fuel Type	Indoor Pool	Outdoor Pool	Indoor Hot Tub	Outdoor Hot Tub
Natural Gas	4,396 84%	1,685 100%	1,610 90%	490 95%
Electricity	783 15%	1 0%	118 7%	24 5%
Propane	33 1%	0 0%	27 2%	0 0%
Other	43 1%	0 0%	26 1%	0 0%

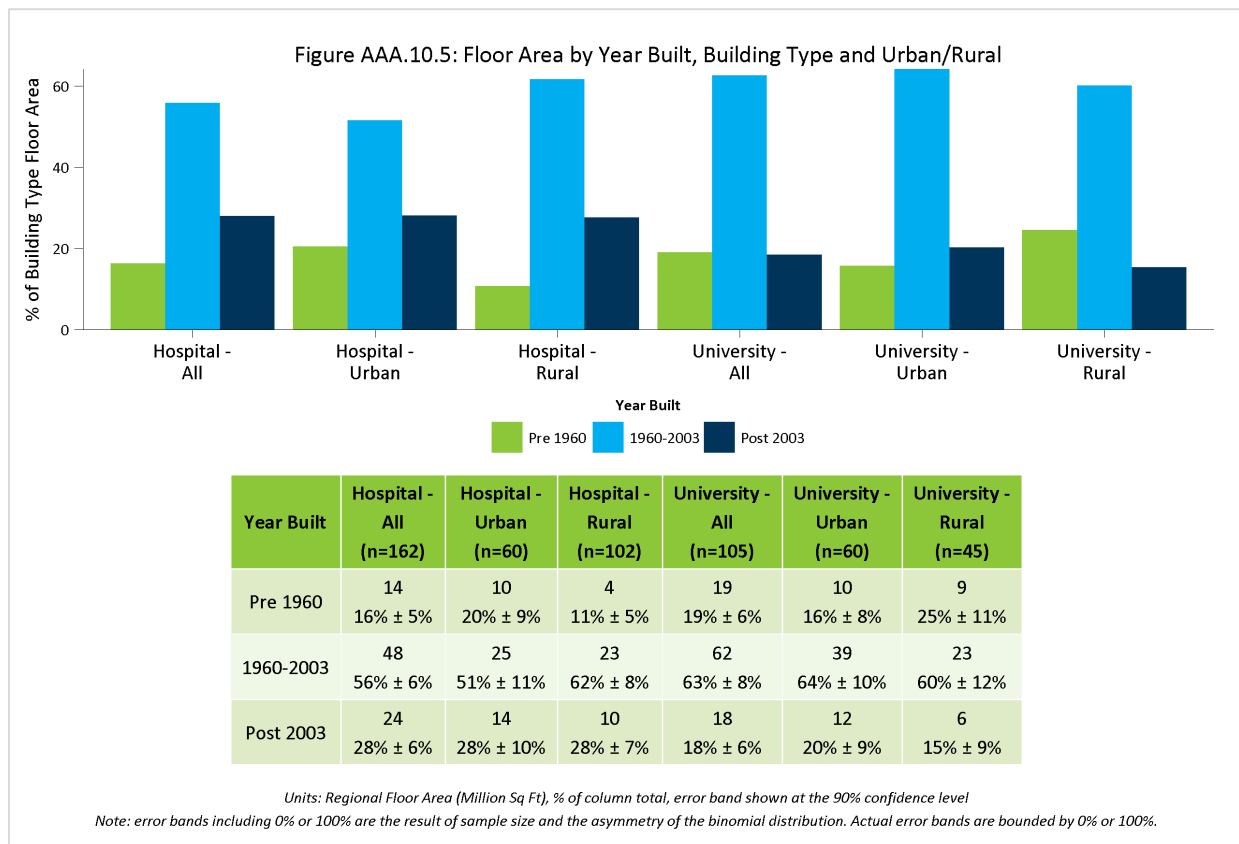
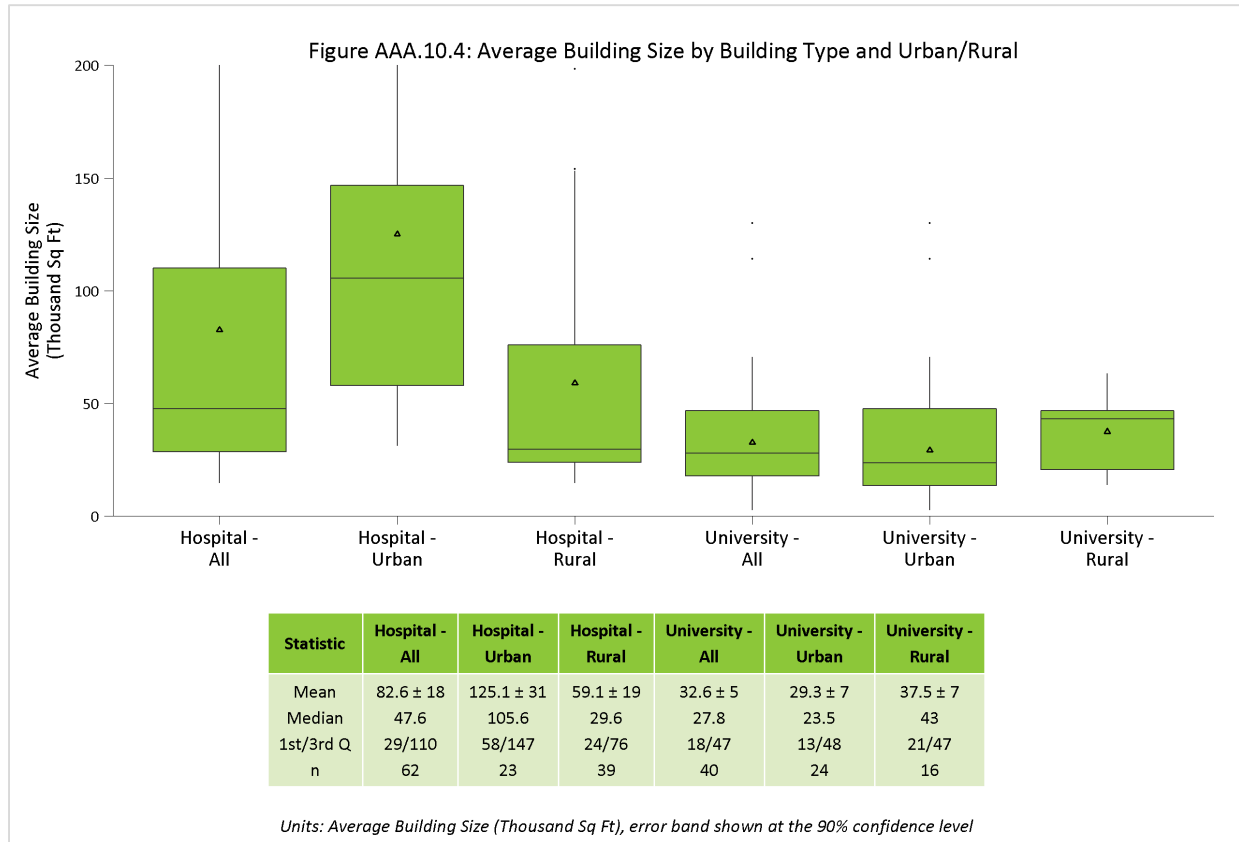
Units: Regional Pool Area (Thousand Sq Ft) and Hot Tub Area (Hundred Sq Ft), % of column total

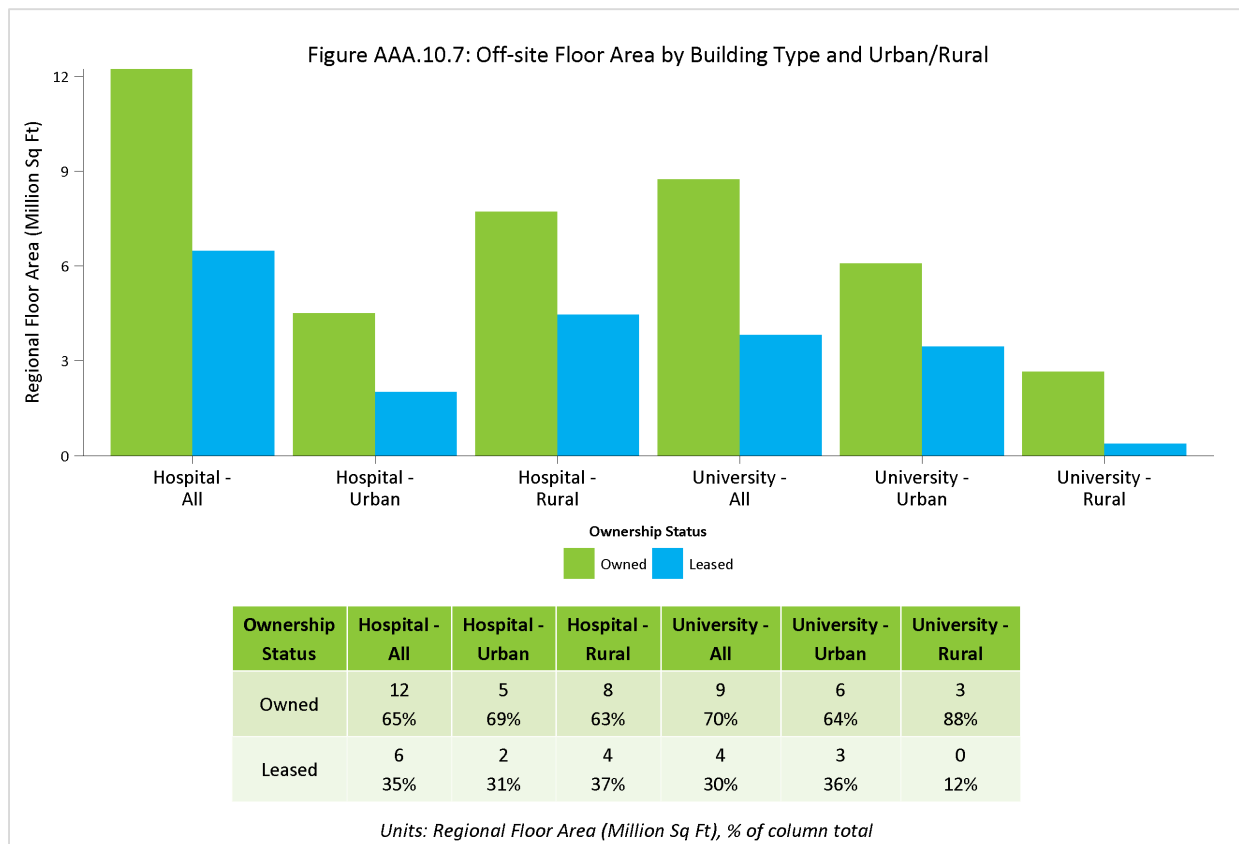
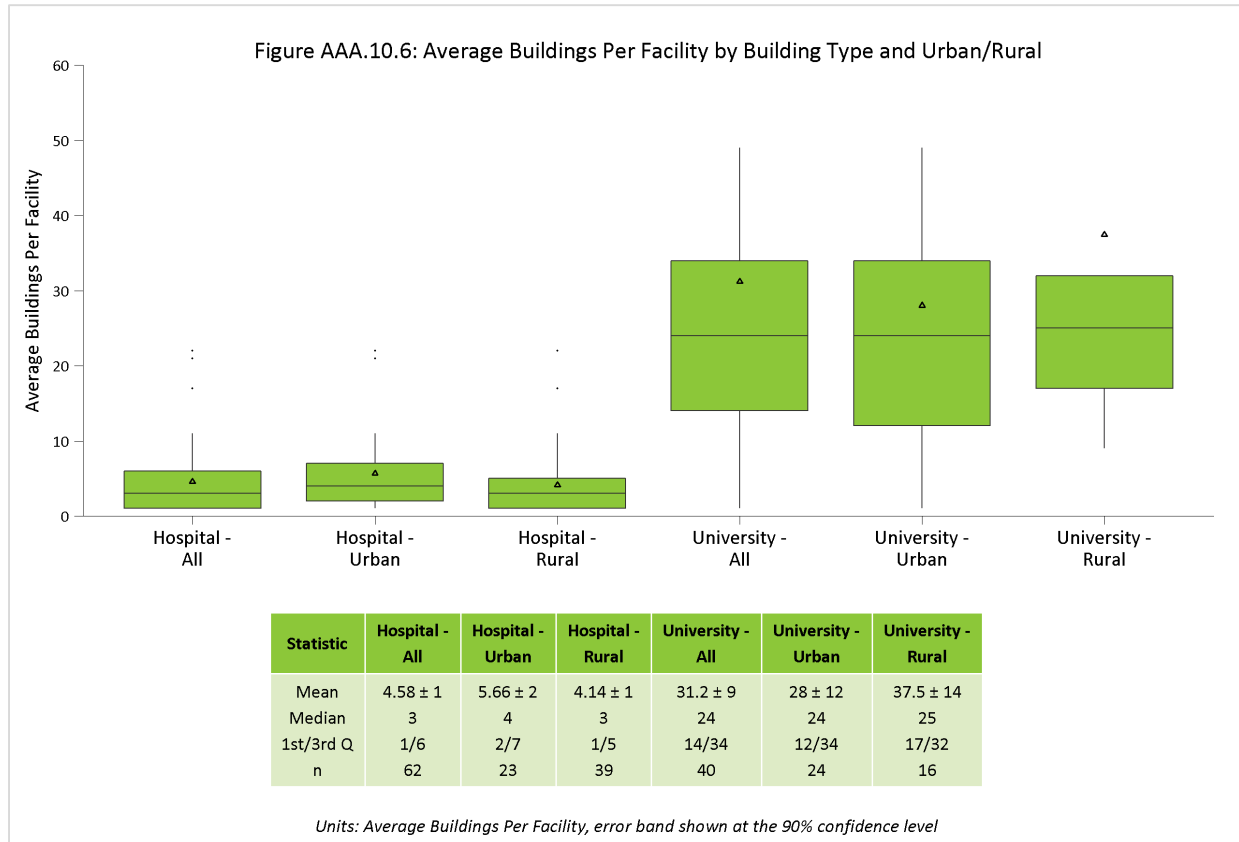
AAA.11 CBSA Hospital and University Building Characteristic Summary Tables

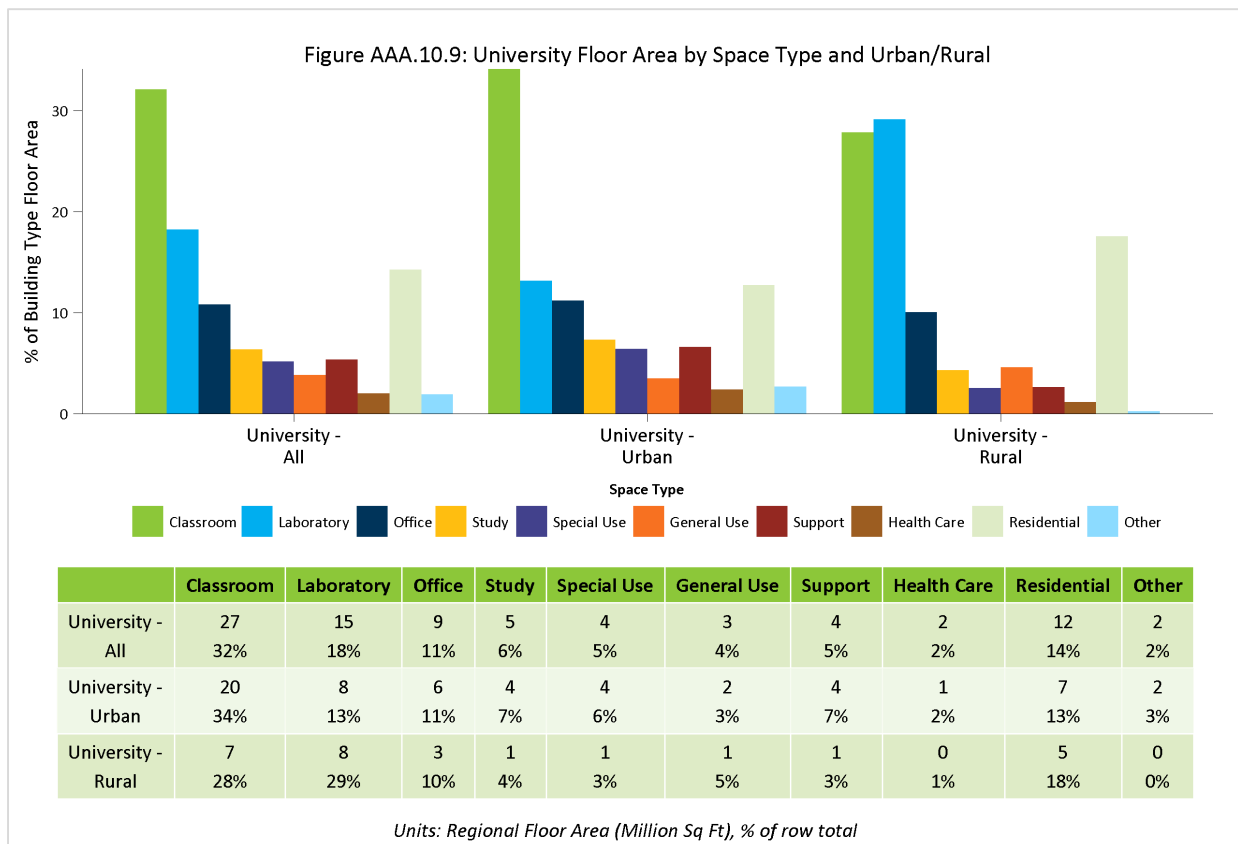
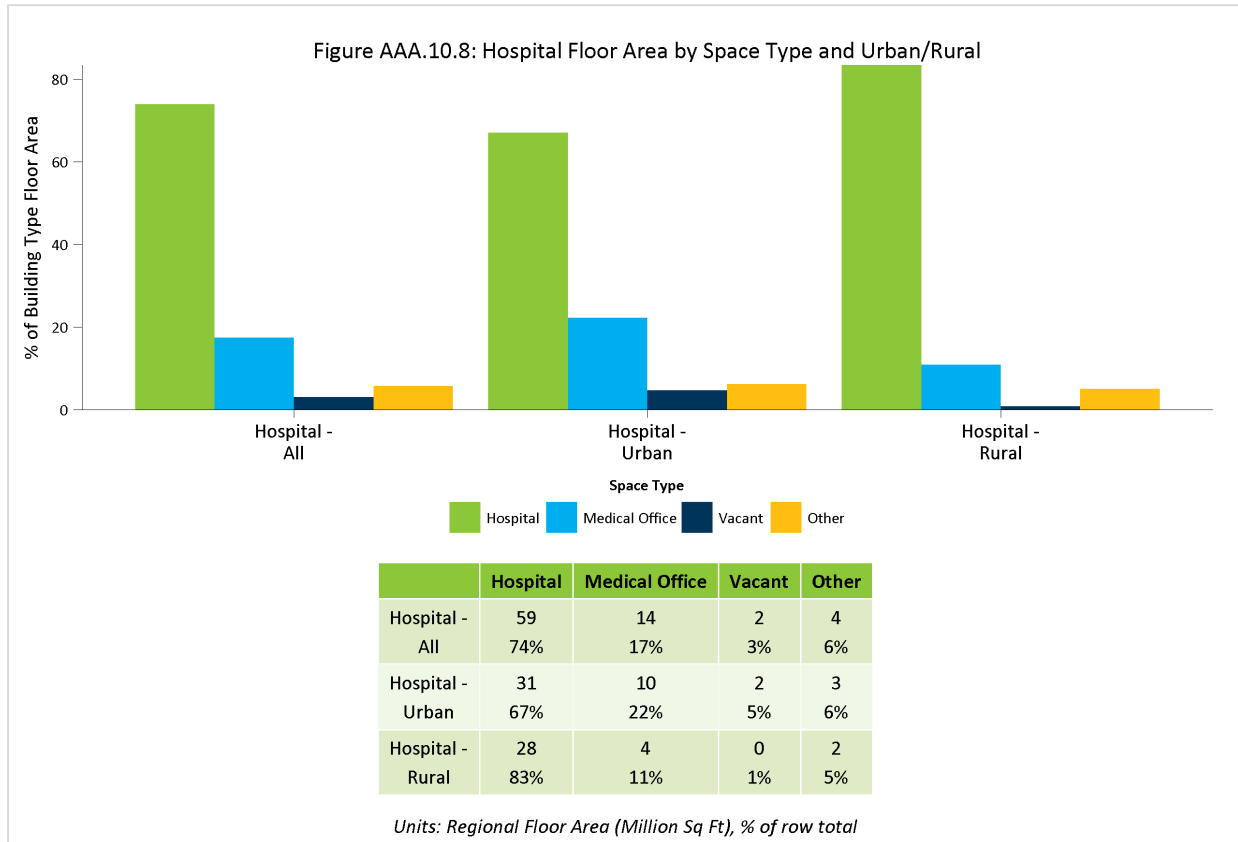


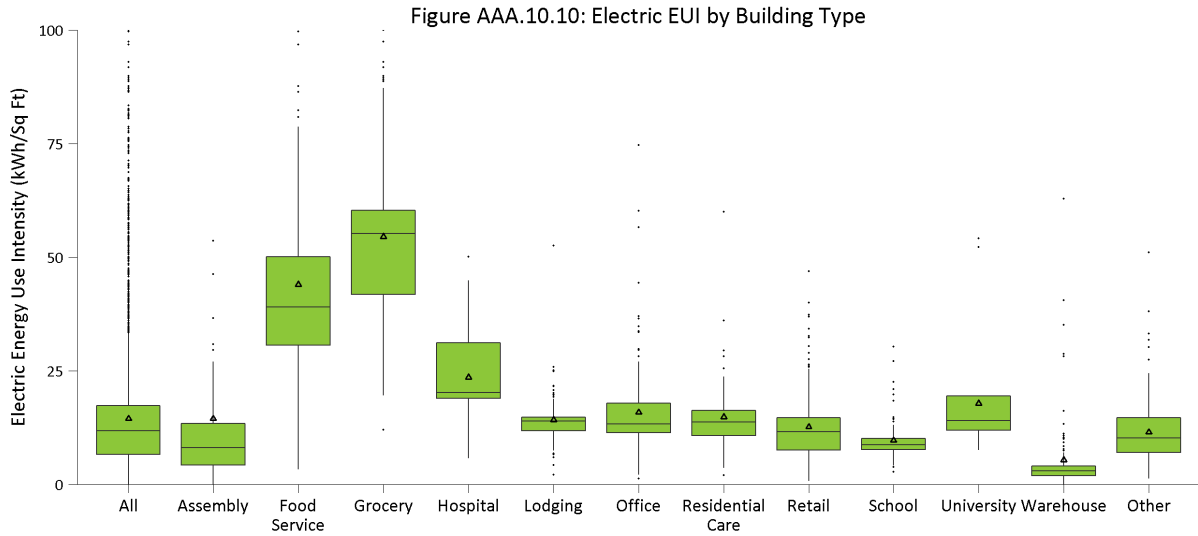
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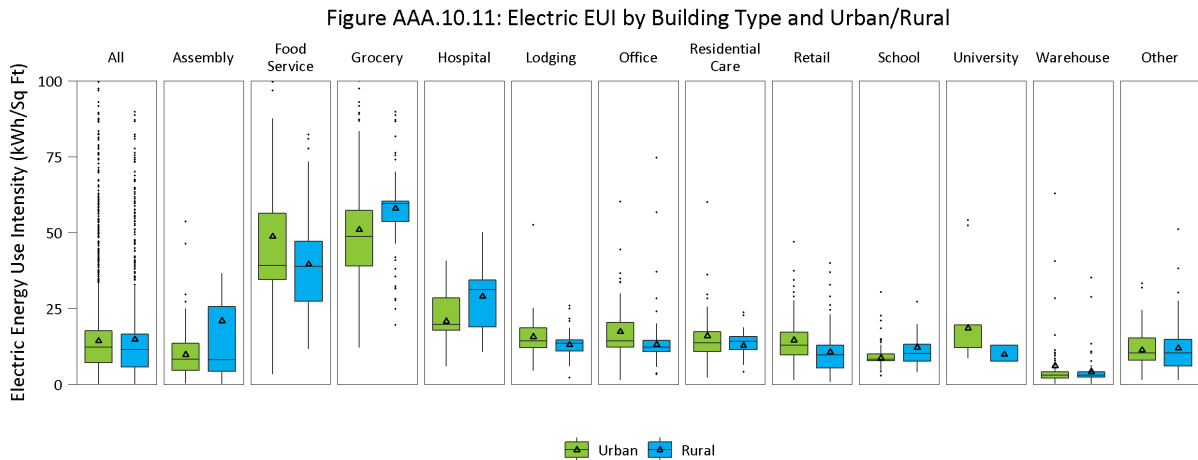








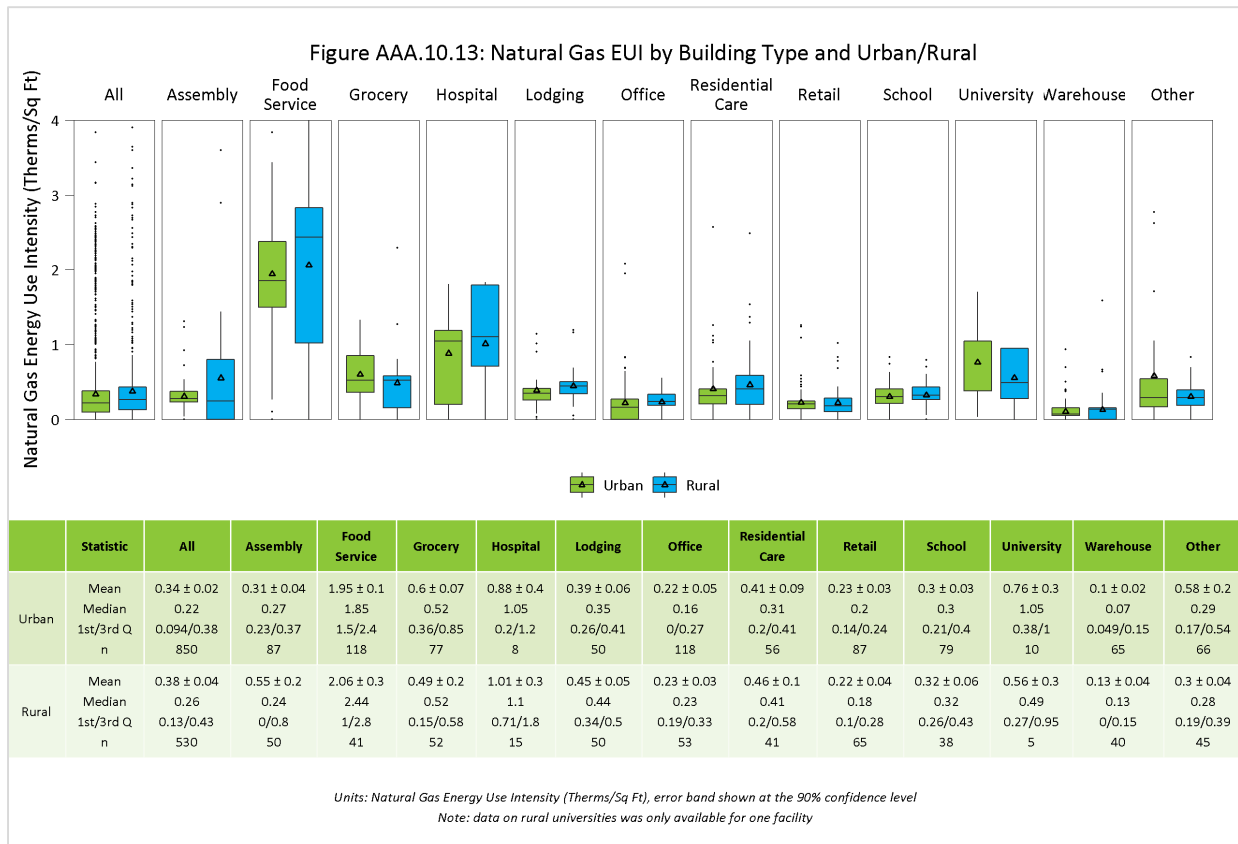
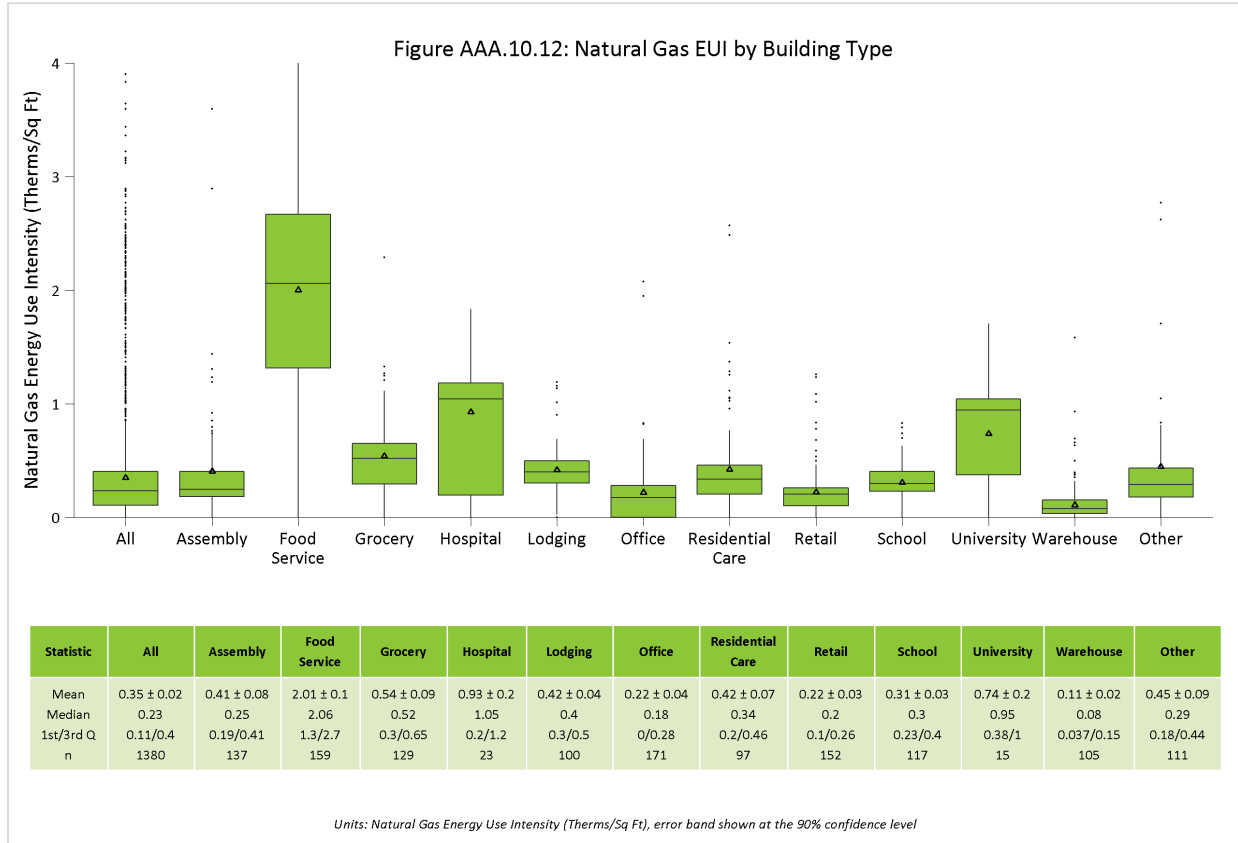
Units: Electric Energy Use Intensity (kWh/Sq Ft), error band shown at the 90% confidence level



	Statistic	All	Assembly	Food Service	Grocery	Hospital	Lodging	Office	Residential Care	Retail	School	University	Warehouse	Other
Urban	Mean	14.4 ± 0.7	9.77 ± 1	48.8 ± 4	51 ± 4	20.8 ± 7	15.7 ± 2	17.3 ± 1	16 ± 2	14.6 ± 1	8.66 ± 0.5	18.6 ± 6	6.13 ± 2	11.2 ± 1
	Median	12.2	8.17	39.1	48.7	19.7	14.3	14.2	13.7	12.8	8.14	19.5	3.02	10.3
	1st/3rd Q	7/18	4.6/13	34/56	39/57	18/29	12/19	12/20	11/17	9.7/17	7.8/10	12/19	2/4.1	8/15
	n	850	87	118	77	9	50	118	56	87	79	11	65	66
Rural	Mean	14.8 ± 1	21 ± 8	39.7 ± 5	58 ± 4	29 ± 5	13.1 ± 0.9	13.1 ± 2	12.7 ± 1	10.6 ± 1	12.2 ± 2	9.85 ± 12	4.22 ± 1	11.9 ± 2
	Median	11.4	8.1	38.8	59.6	31.2	13.4	12.3	14	9.73	10.2	7.57	3.03	10.3
	1st/3rd Q	5.7/16	4.3/26	27/47	54/60	19/34	11/15	11/14	11/16	5.3/13	7.6/13	7.6/13	2.3/4.1	6/15
	n	530	50	41	52	16	50	53	41	65	38	2	40	45

Units: Electric Energy Use Intensity (kWh/Sq Ft), error band shown at the 90% confidence level

Note: data on rural universities was only available for one facility



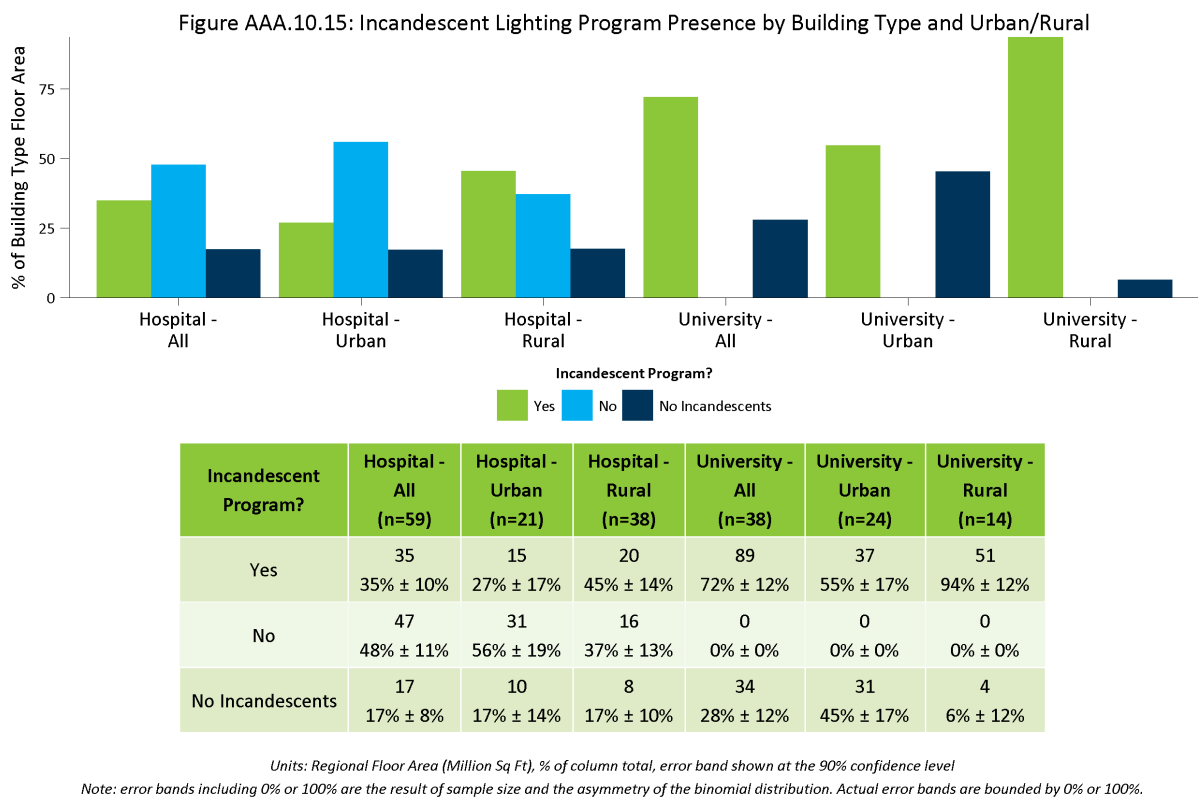
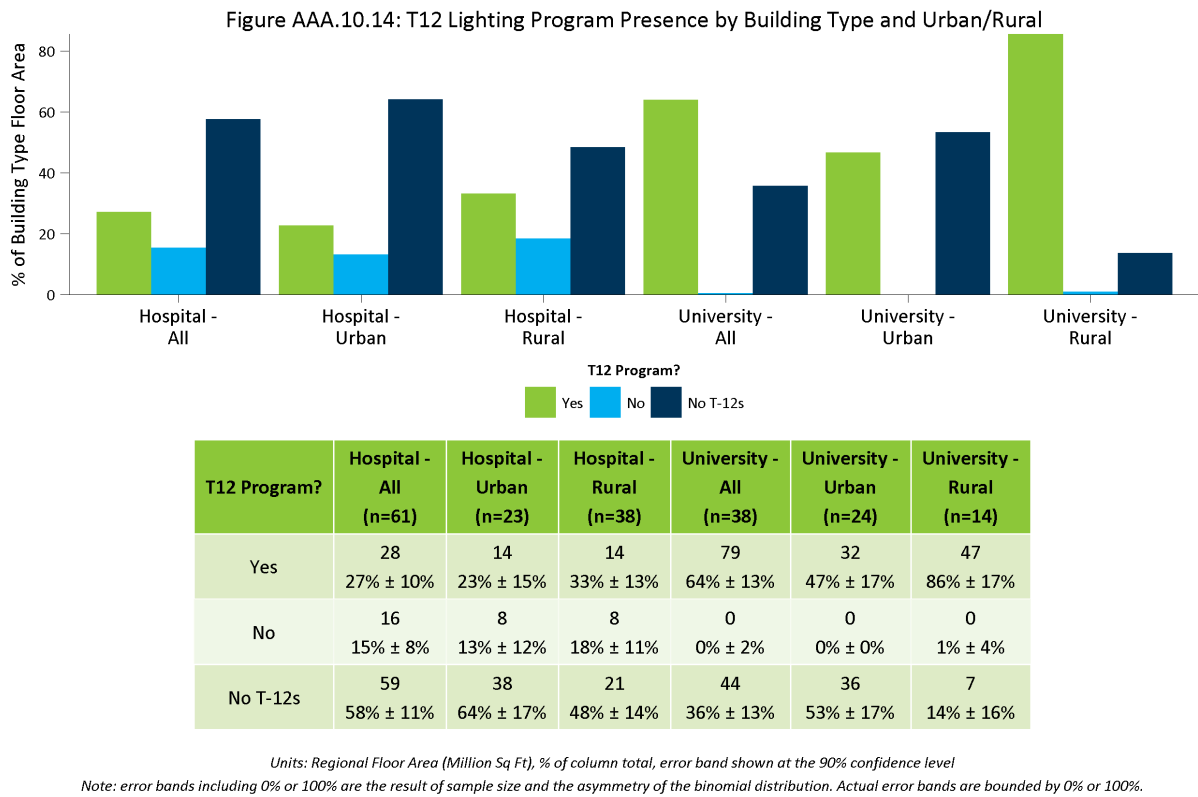
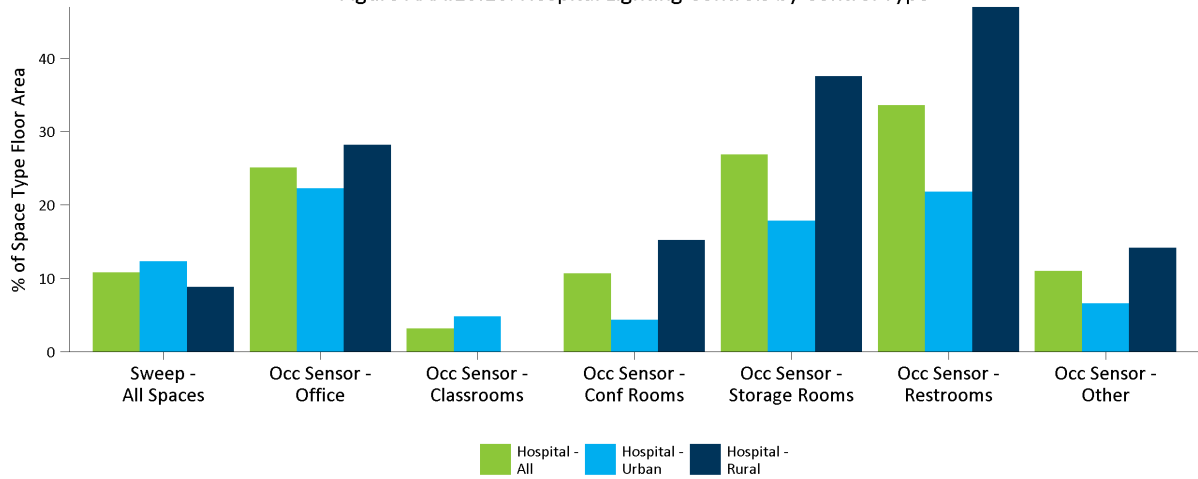


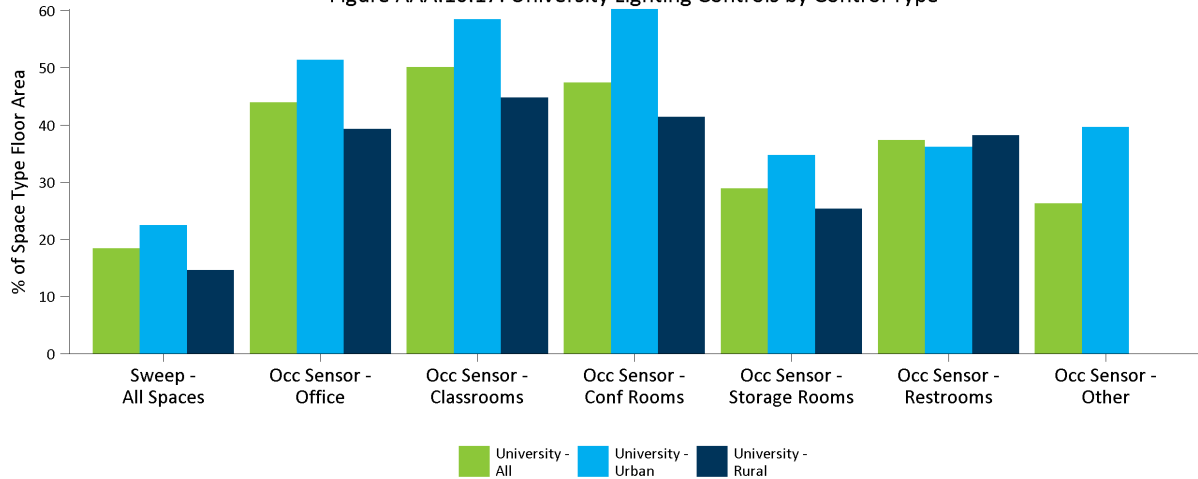
Figure AAA.10.16: Hospital Lighting Controls by Control Type



	Sweep - All Spaces	Occ Sensor - Office	Occ Sensor - Classrooms	Occ Sensor - Conf Rooms	Occ Sensor - Storage Rooms	Occ Sensor - Restrooms	Occ Sensor - Other
Hospital - All	8 11%	19 25%	1 3%	5 11%	20 27%	26 34%	3 11%
Hospital - Urban	5 12%	9 22%	1 5%	1 4%	7 18%	9 22%	1 7%
Hospital - Rural	3 9%	10 28%	0 0%	4 15%	13 38%	17 47%	3 14%

Units: Regional Floor Area (Million Sq Ft), % of Space Type Floor Area

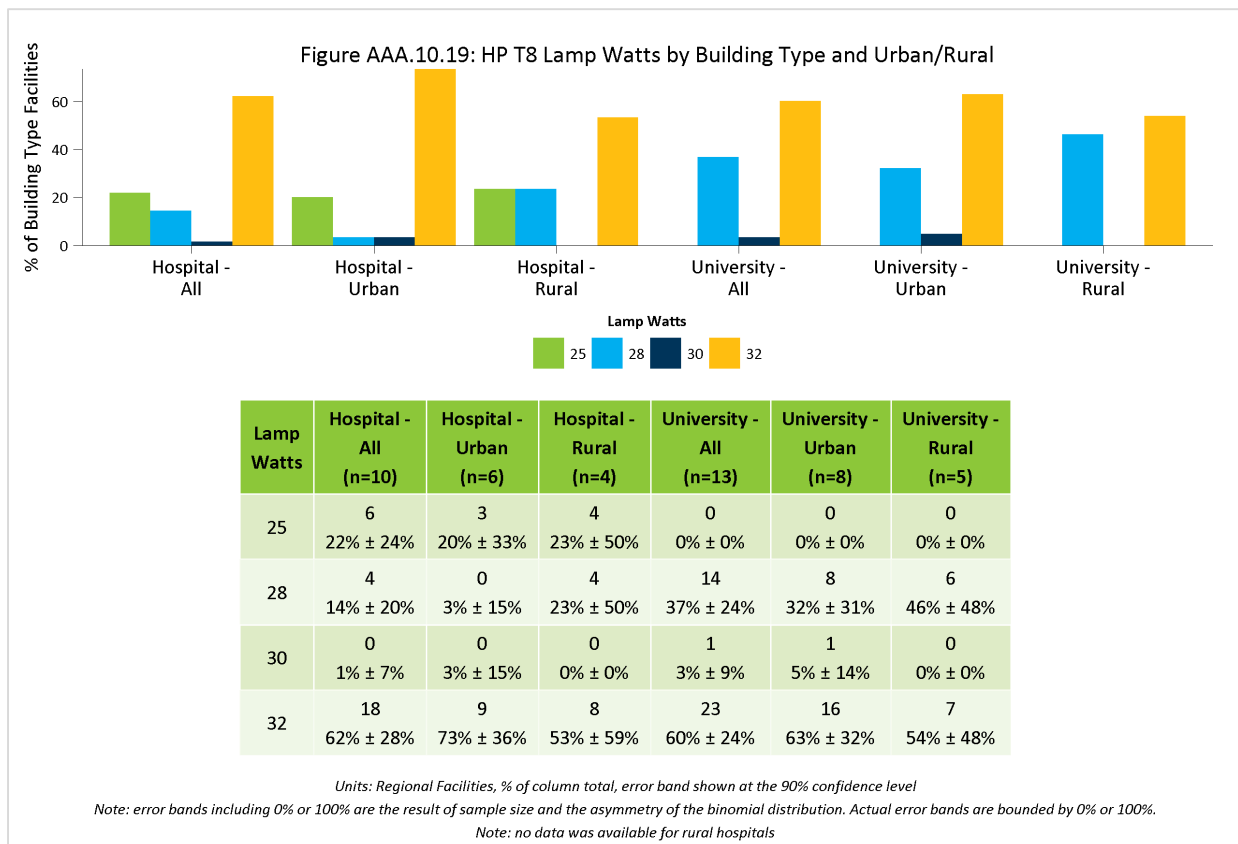
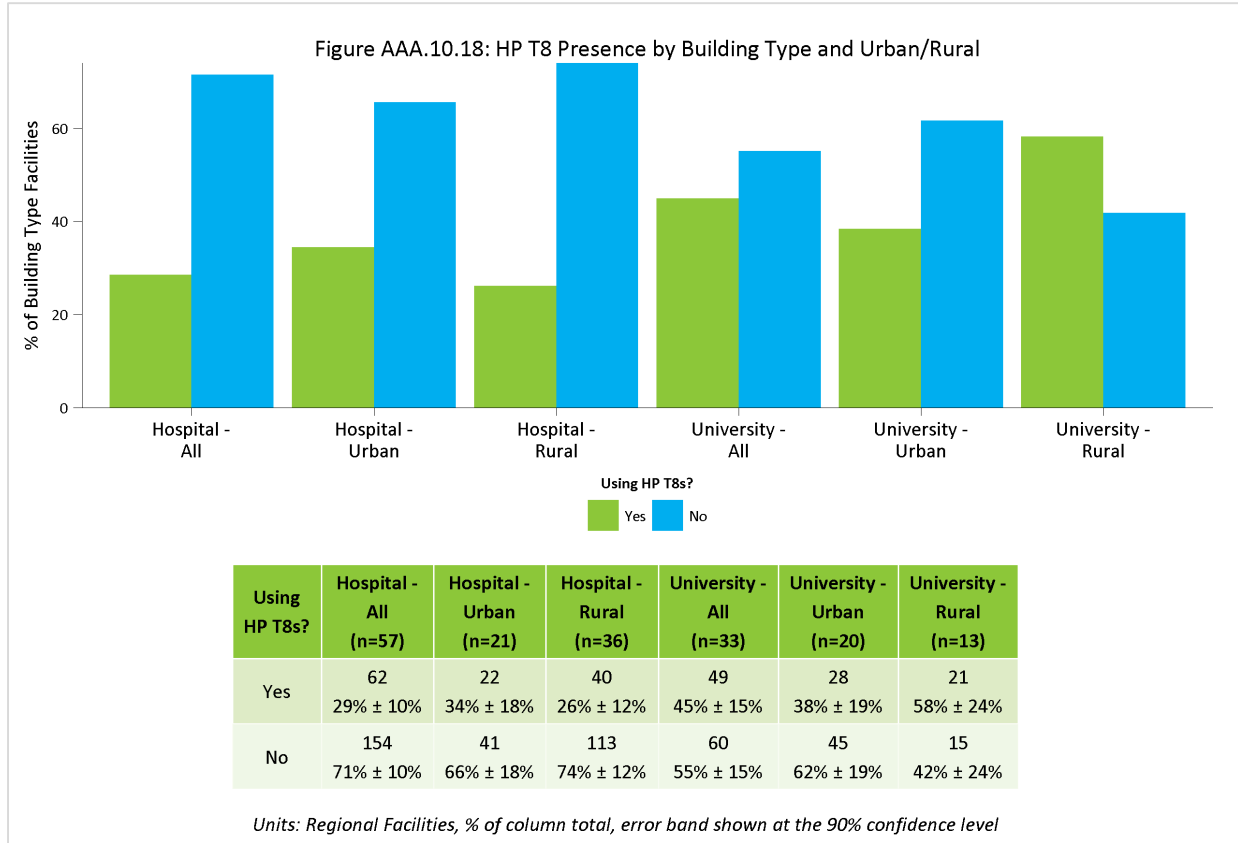
Figure AAA.10.17: University Lighting Controls by Control Type

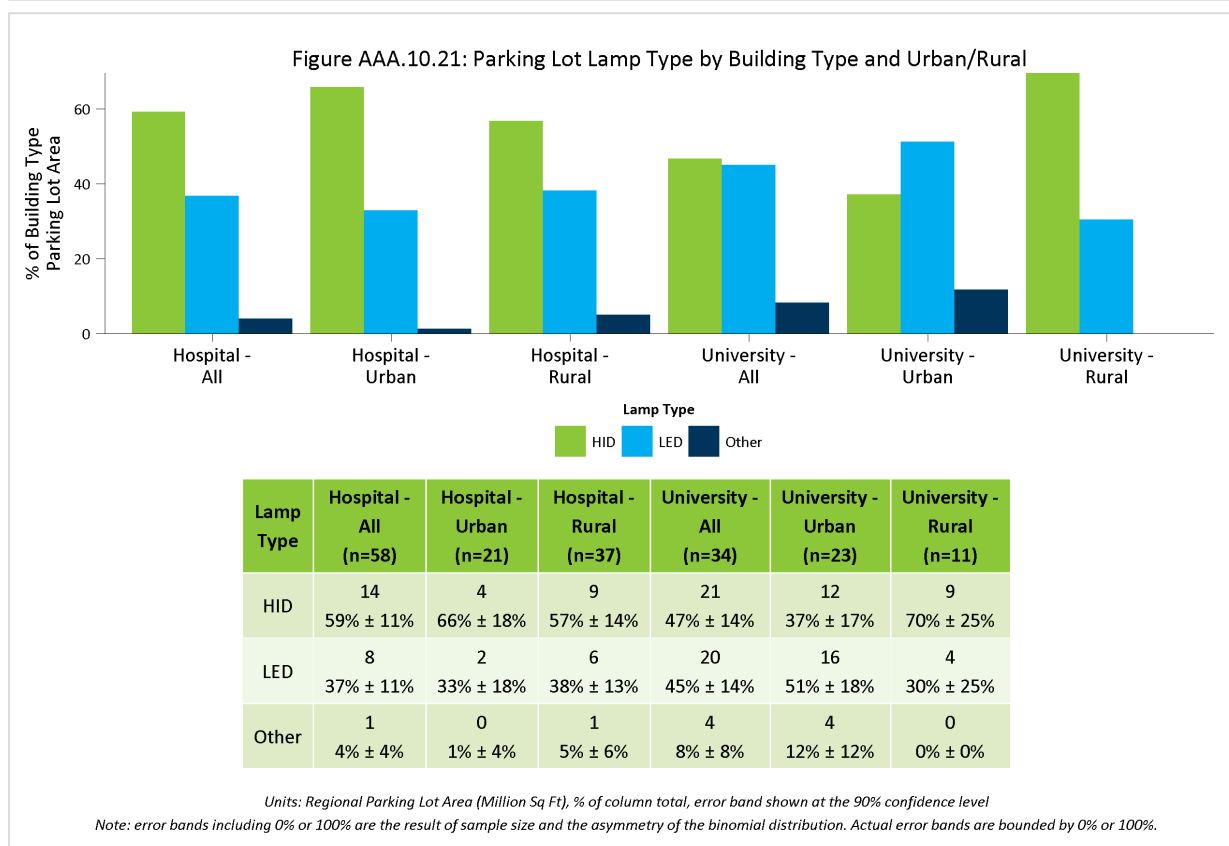
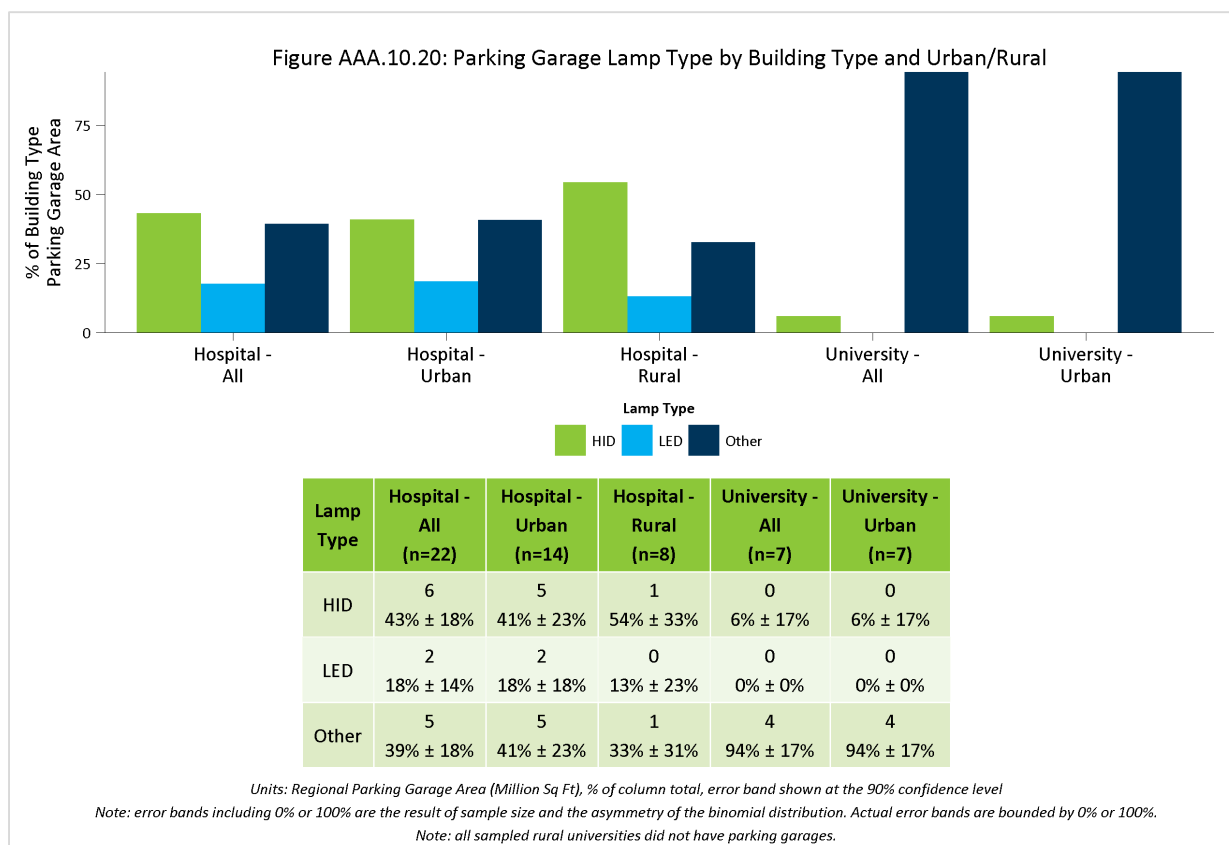


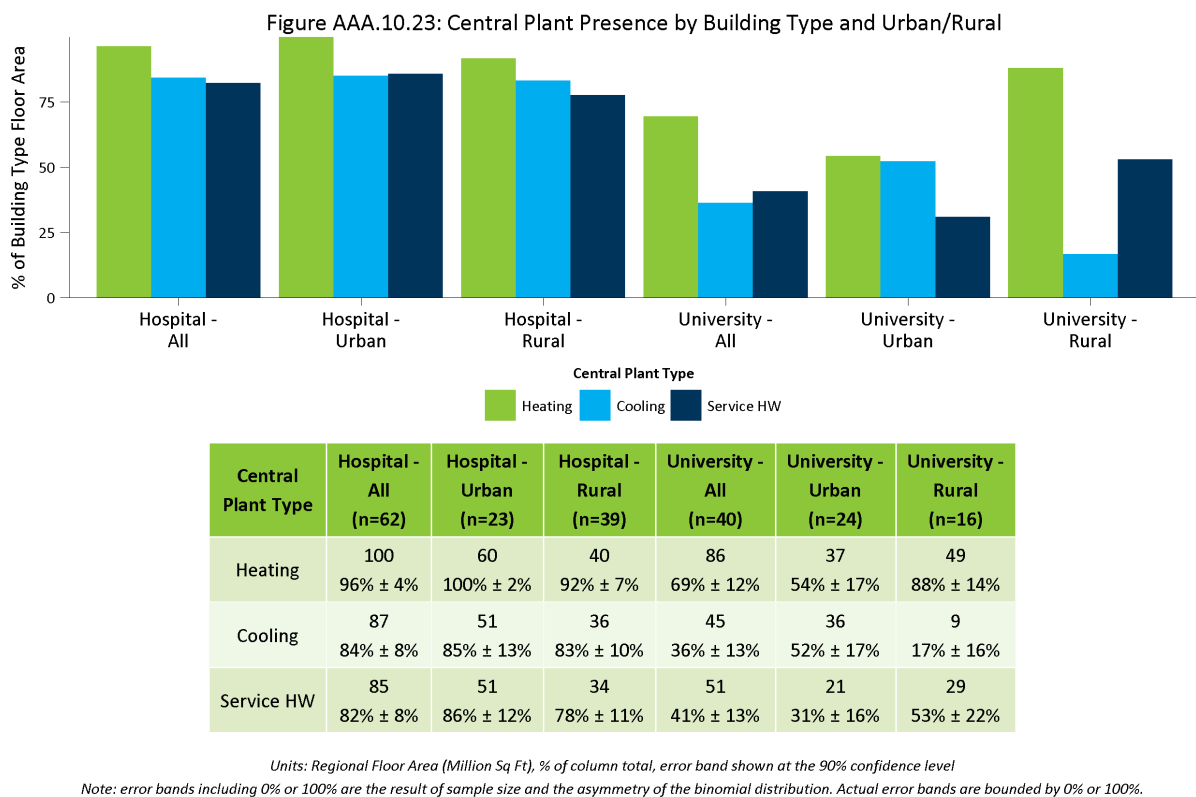
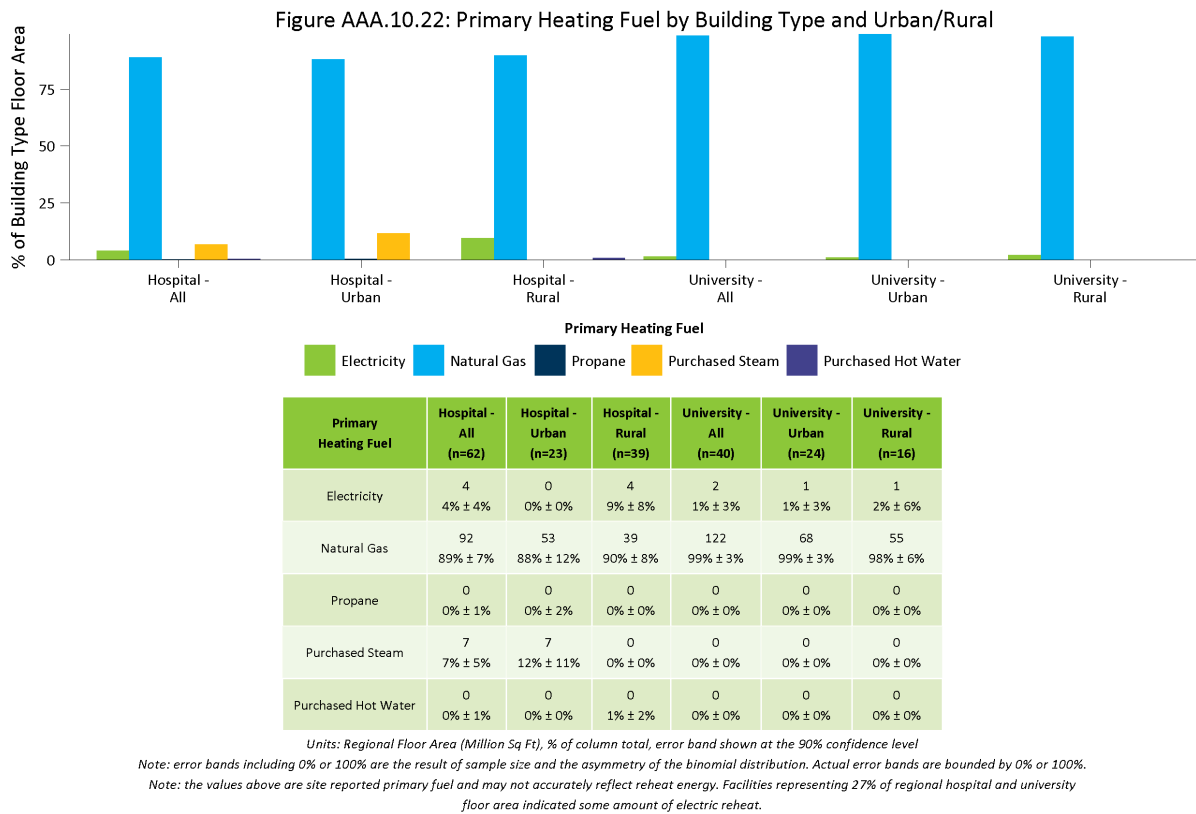
	Sweep - All Spaces	Occ Sensor - Office	Occ Sensor - Classrooms	Occ Sensor - Conf Rooms	Occ Sensor - Storage Rooms	Occ Sensor - Restrooms	Occ Sensor - Other
University - All	20 18%	39 44%	45 50%	32 47%	23 29%	32 37%	15 26%
University - Urban	12 22%	18 51%	21 58%	13 60%	11 35%	13 36%	15 40%
University - Rural	8 15%	22 39%	25 45%	19 41%	13 25%	19 38%	0 0%

Units: Regional Floor Area (Million Sq Ft), % of Space Type Floor Area

2014 Northwest Commercial Building Stock Assessment







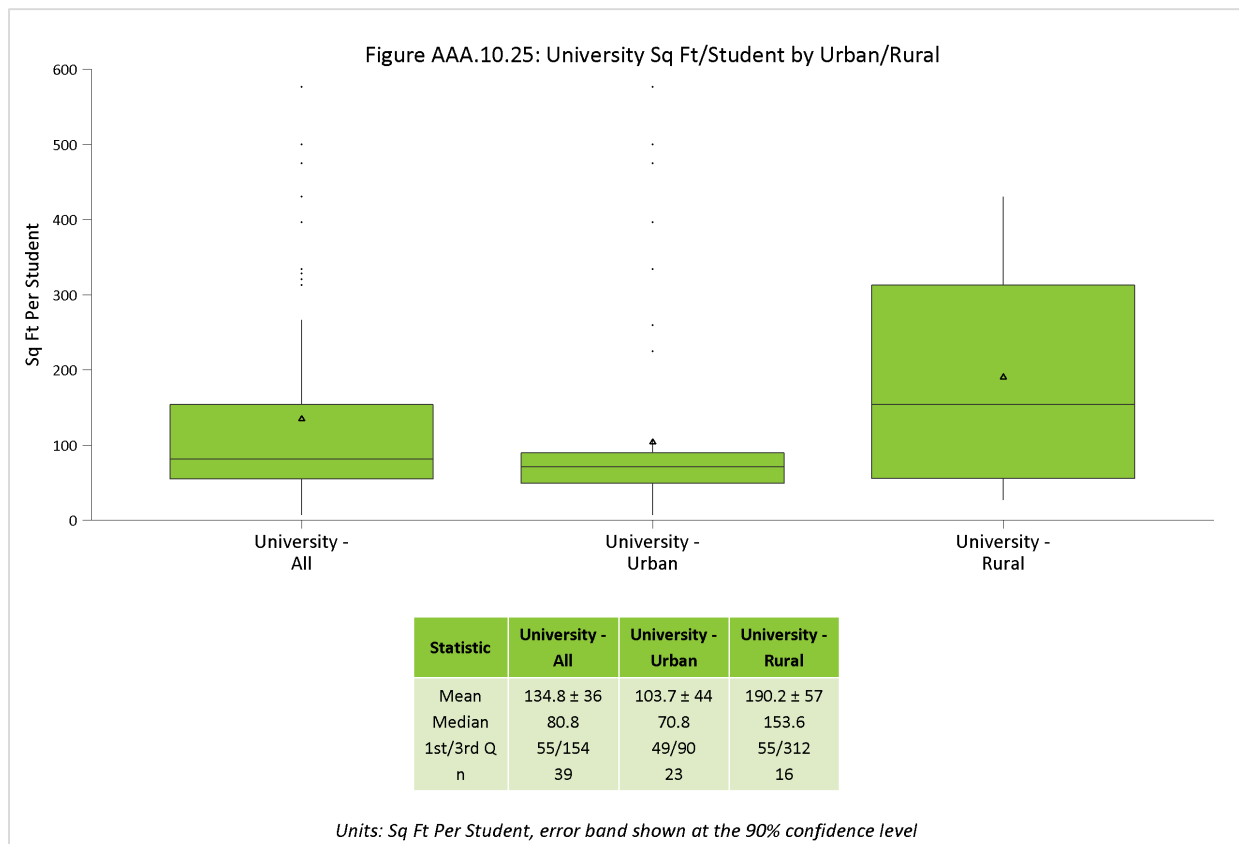
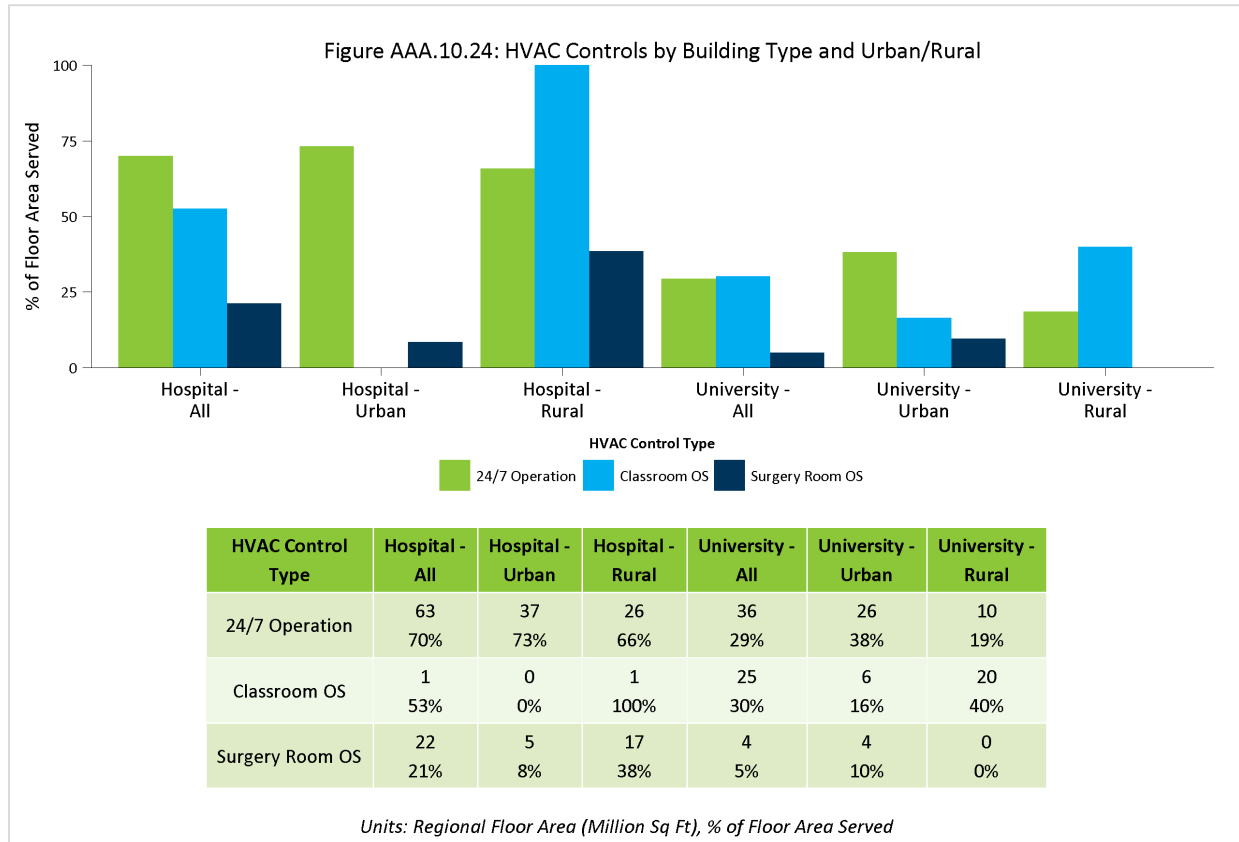
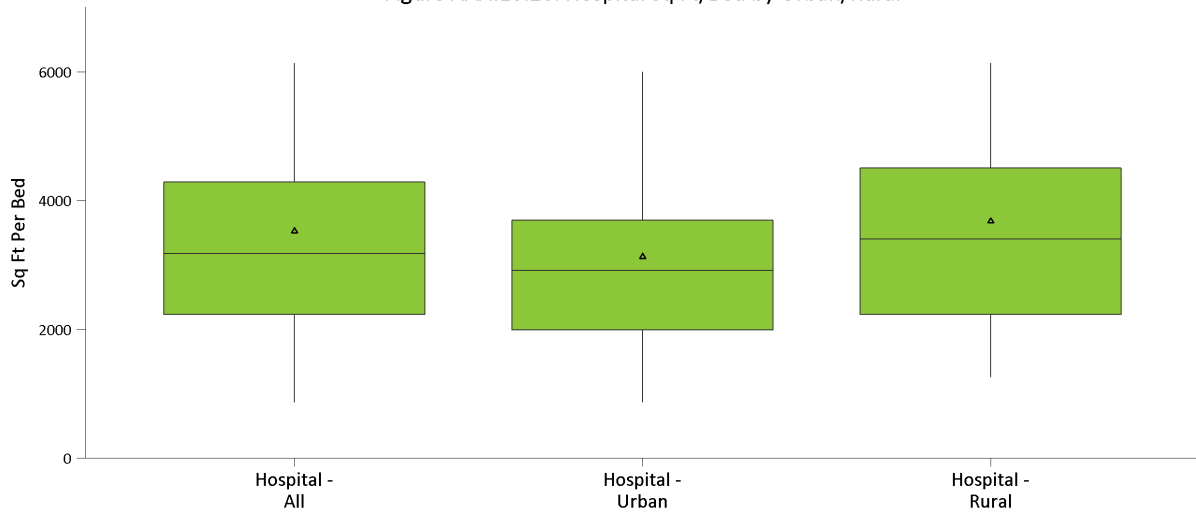


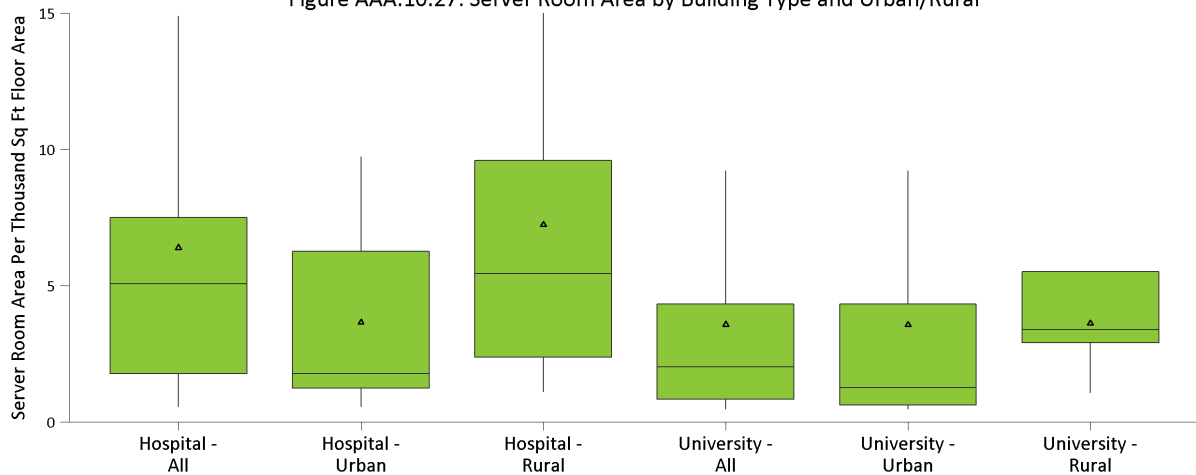
Figure AAA.10.26: Hospital Sq Ft/Bed by Urban/Rural



Statistic	Hospital - All	Hospital - Urban	Hospital - Rural
Mean	3526.8 ± 500	3129.2 ± 687	3682.6 ± 670
Median	3178.4	2911.8	3400
1st/3rd Q	2227/4286	1991/3694	2229/4503
n	61	22	39

Units: Sq Ft Per Bed, error band shown at the 90% confidence level

Figure AAA.10.27: Server Room Area by Building Type and Urban/Rural



Statistic	Hospital - All	Hospital - Urban	Hospital - Rural	University - All	University - Urban	University - Rural
Mean	6.4 ± 2	3.66 ± 1	7.24 ± 2	3.58 ± 2	3.57 ± 2	3.63 ± 1
Median	5.08	1.77	5.45	2.01	1.27	3.38
1st/3rd Q	1.8/7.5	1.2/6.3	2.4/9.6	0.84/4.3	0.63/4.3	2.9/5.5
n	45	14	31	21	15	6

Units: Server Room Area Per Thousand Sq Ft Total Floor Area, error band shown at the 90% confidence level

