

Statewide Commercial Baseline Study Presentation

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NYISO



Project Overview and Background

Study Components

■ Commercial Baseline

- Comprehensive study of the commercial building stock in NYS
- Objective to understand the existing building stock, energy usage, saturation of equipment, building characteristics, and energy management practices

■ Market Assessments

- Four assessments of different technology or service markets
 - HVAC
 - Energy Management Systems
 - Customer Decision Making
 - ESCOs

■ Potential Study

- Conduct study of technical, economic, and achievable potential
- Near-term, 3-, 5-, and 10-year study

Baseline Study Tasks

Planning

*Existing Data Review
Sample Design
Work Plan*

Primary Data Collection

*Telephone/Online Survey
Onsite Visits*


Data Analysis

Reporting

- A spreadsheet documenting all of our secondary sources is on the NYSERDA website: [Baseline Secondary Data Review](#)
- The reports are currently on the NYSERDA website:
- [Volume 1: Baseline Study Results](#)
- [Volume 2: Potential Study](#)
- [Volume 3: HVAC Market Assessment](#)
- [Volume 4: EMS Market Assessment](#)
- [Volume 5: CDM Market Assessment](#)
- [Volume 6: ESCO Market Assessment](#)

Population/Sample Frame Development

- Electric utilities provided:
 - Anonymized account-level usage data, including segment
 - Business names and addresses (no usage data)
- Rolled up accounts to business level



Region

Upstate
(NYSEG, RG&E, NGrid)

Long Island/Hudson Valley
(PSEG Long Island, O&R,
Central Hudson)


Downstate
(ConEd)



Usage Category

Medium/Large
(≥ 75 MWh/Year)

Small
(< 75 MWh/Year)



Segment

Food Service

Grocery

Lodging/
Hospitality

Education

Retail

Warehouse

Health Services/
Hospitals









Office

Unit of Analysis









- The sampling unit for the primary data collection and key unit of analysis is the “business.”
 - Unique company/organization at a unique location
 - A business may consist of a single stand-alone building or there may be many businesses within a building



Survey Completes

Segment	Usage Category	Survey Completes			
		Upstate	LI/Hudson Valley	Downstate	Total
 Office/Government	Less Than 75 MWh	187	152	173	512
	75 MWh and Greater	113	101	78	292
 Retail	Less Than 75 MWh	262	176	186	624
	75 MWh and Greater	88	69	59	216
 Food Service	Less Than 75 MWh	180	104	80	364
	75 MWh and Greater	119	94	104	317
 Warehouse	Less Than 75 MWh				240
	75 MWh and Greater	240			
 Grocery/Convenience	Less Than 75 MWh	75		74	149
	75 MWh and Greater	103		71	174
 Health Services/ Hospitals	Less Than 75 MWh				418
	75 MWh and Greater	220		198	
 Education	Less Than 75 MWh	168		74	242
	75 MWh and Greater	112		40	152
 Lodging/Hospitality	Less Than 75 MWh				182
	75 MWh and Greater	159		23	
Total		2,026	696	1,160	3,882

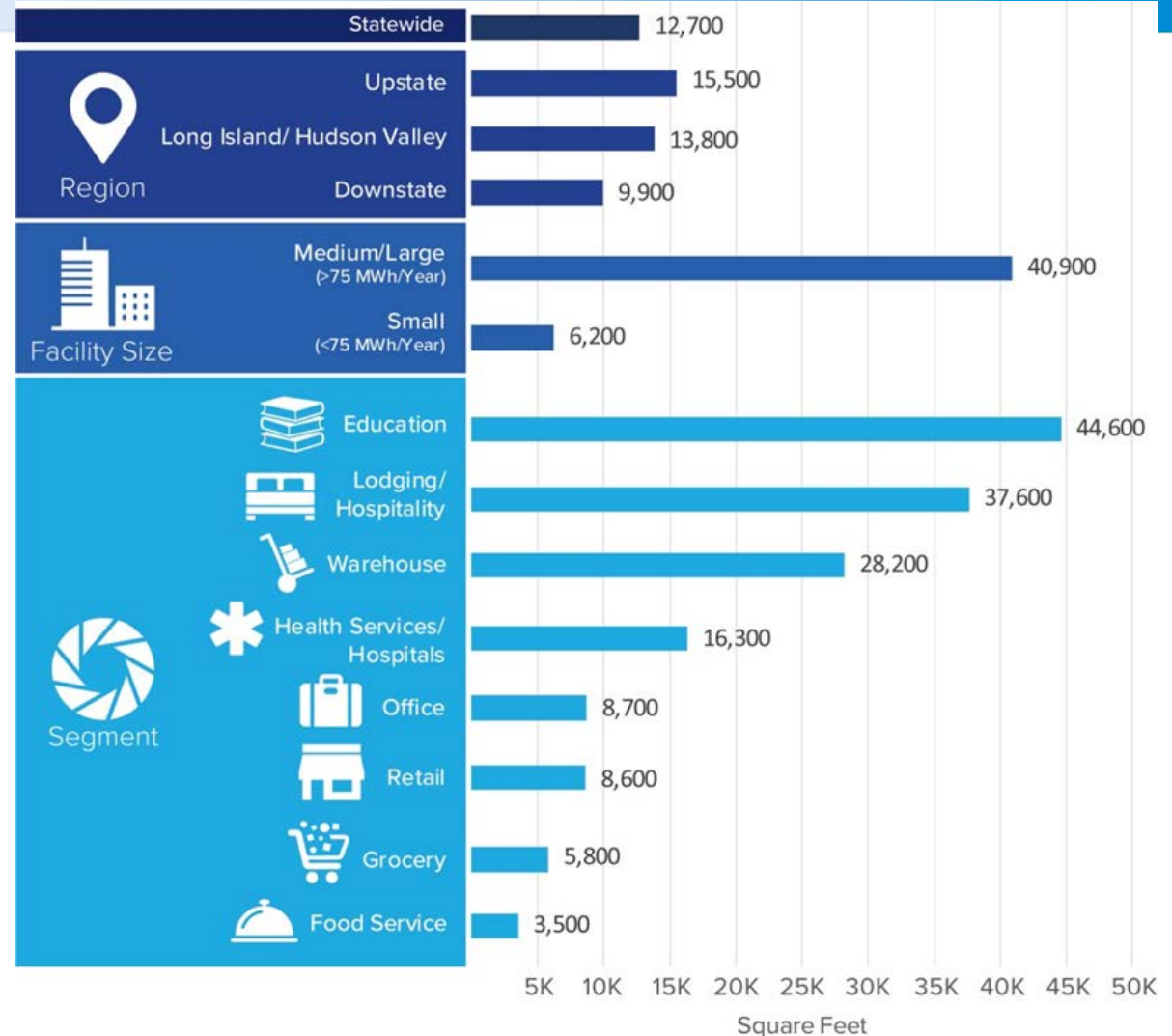
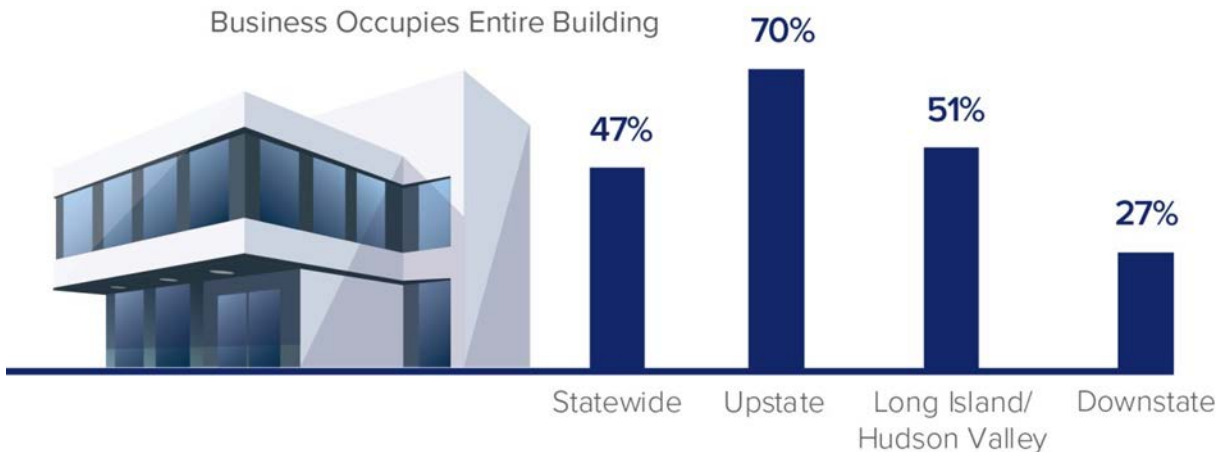
Site Visit Completes

Segment	Usage Category	Site Visits			
		Upstate	LI/Hudson Valley	Downstate	Total
 Office/Government	Less Than 75 MWh	42	26	26	94
	75 MWh and Greater	33	21	15	69
 Retail	Less Than 75 MWh	51	40	28	119
	75 MWh and Greater	24	12	12	48
 Food Service	Less Than 75 MWh	42	22	14	78
	75 MWh and Greater	32	15	23	70
 Warehouse	Less Than 75 MWh	42			42
	75 MWh and Greater				
 Grocery/Convenience	Less Than 75 MWh	18		18	36
	75 MWh and Greater	32		11	43
 Health Services/ Hospitals	Less Than 75 MWh	47		25	72
	75 MWh and Greater				
 Education	Less Than 75 MWh	52		17	69
	75 MWh and Greater	30		6	36
 Lodging/Hospitality	Less Than 75 MWh	44		6	50
	75 MWh and Greater				
Total		489	136	201	826

Penetration and Saturation Results by Business Characteristics, Lighting, Heating and Cooling, EMS, and Appliances

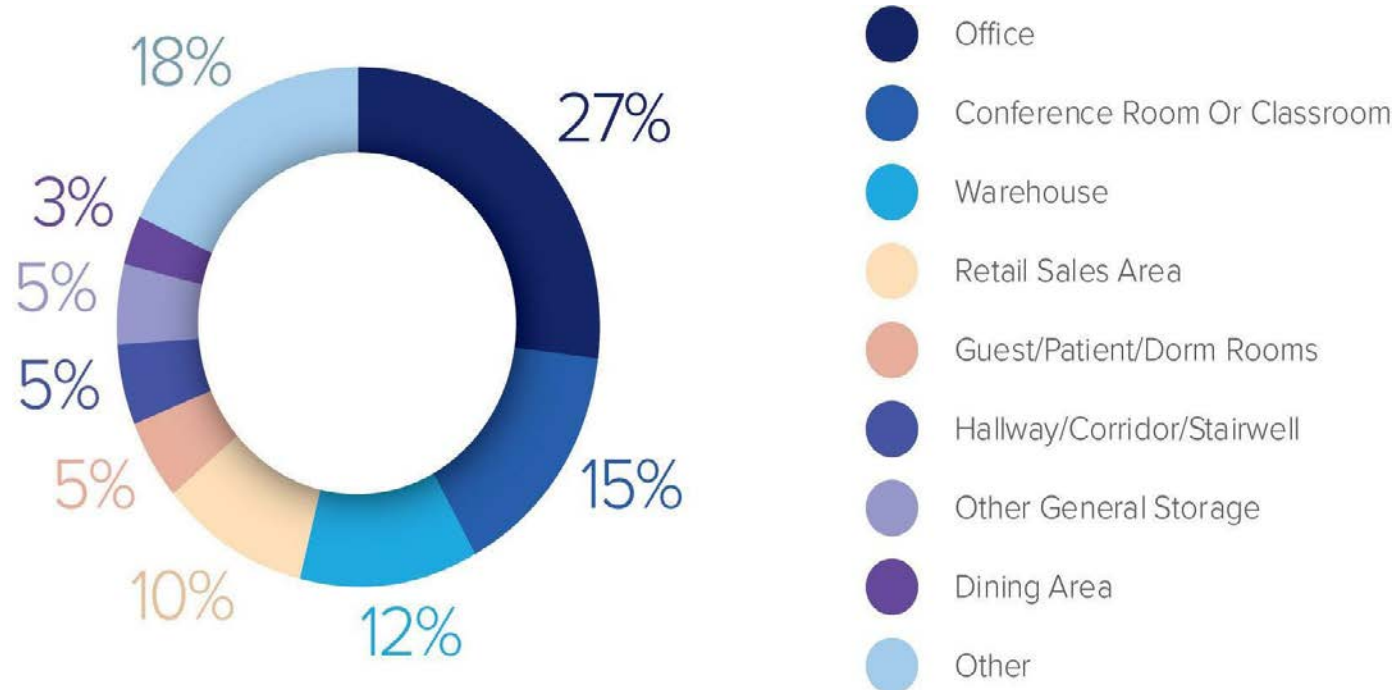
Business Characteristics

- Businesses have an average area of 12,700 SF
- Businesses in the Upstate region tend to be larger and are more likely to occupy stand-alone buildings



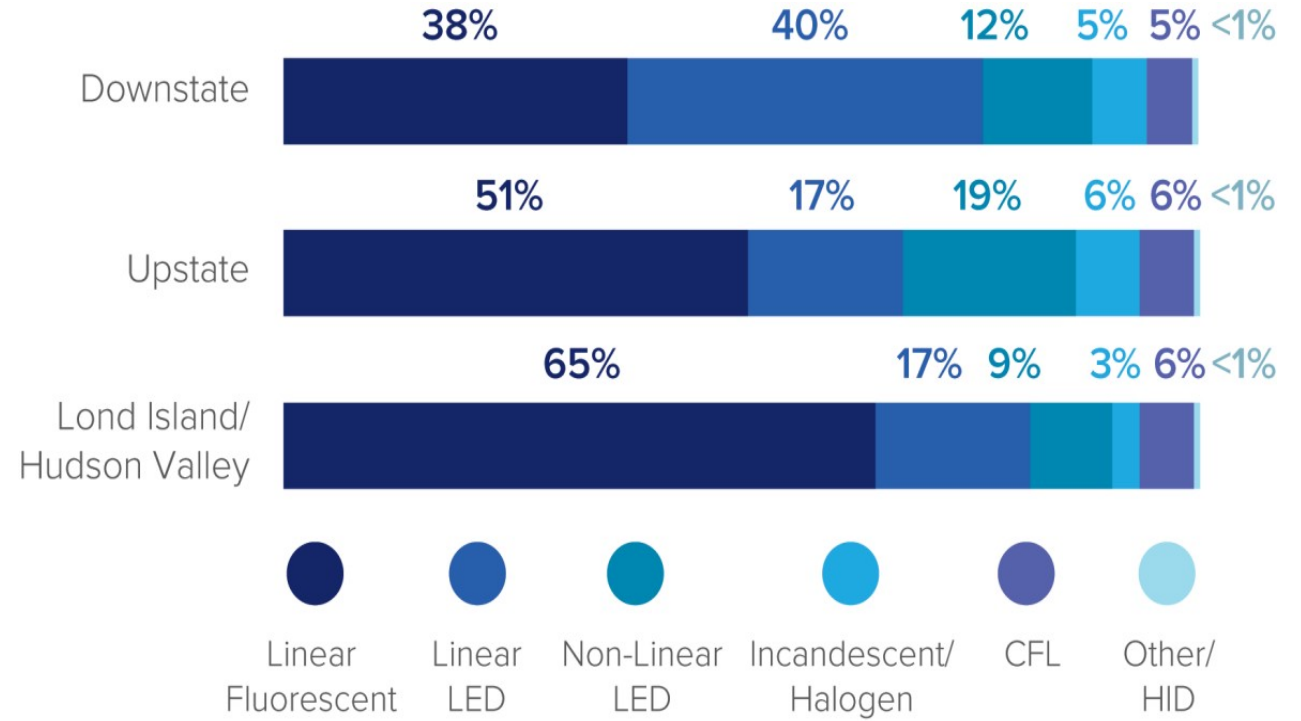
Commercial Space Types

- Office space makes up the largest share of commercial space (27% of total SF)



Socket Saturation of Interior Lighting

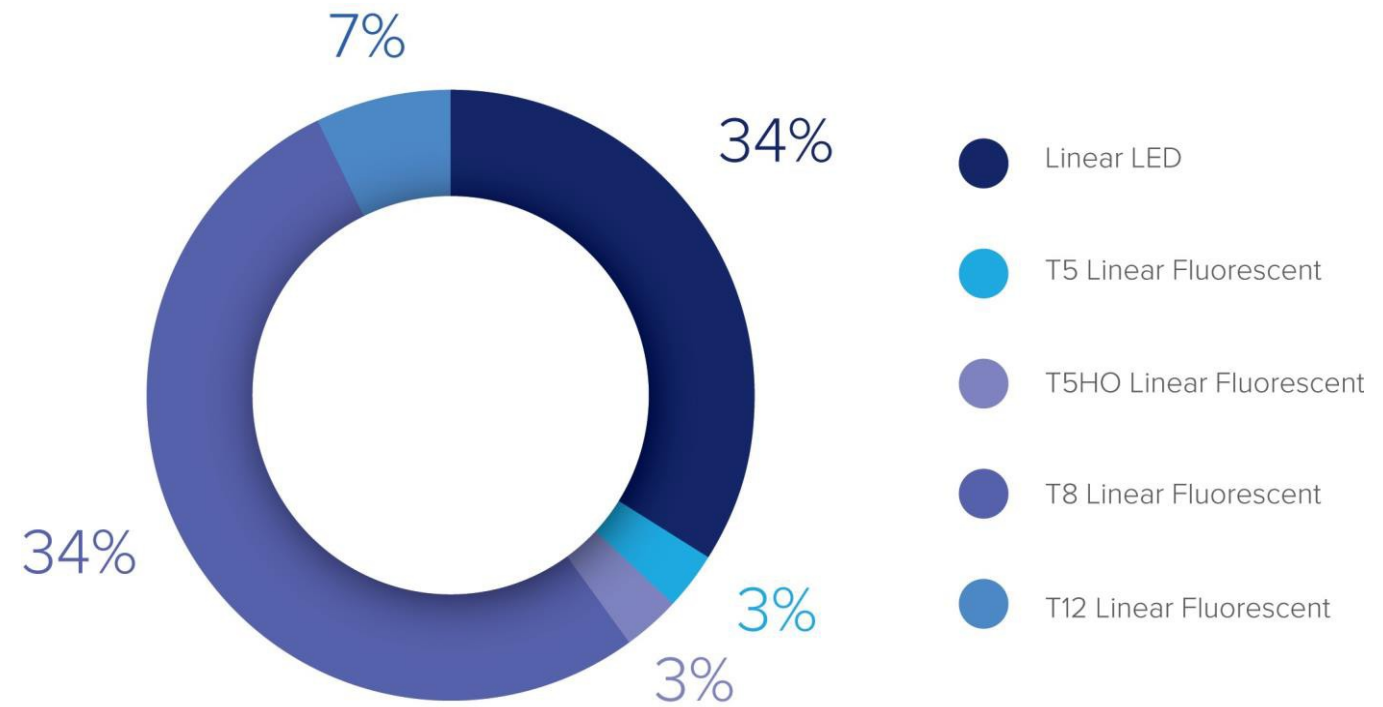
- Statewide, linear fluorescent lamps account for 50% of all lamps and linear LEDs account for 25%
- Linear LEDs account for a much higher share of lamps in the Downstate region than in others
 - Partially due to code requirements



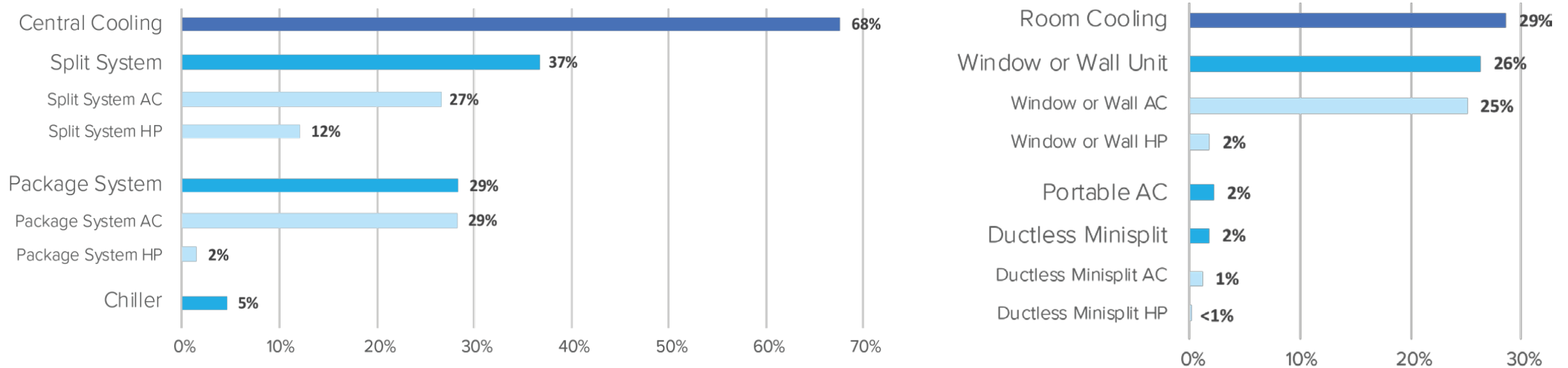
Linear Lighting Types

- Nearly half of linear lights are T8s
- Approximately one third are linear LED
- 7% are T12

Breakout of Linear Lighting by Type (Share of Lamps)



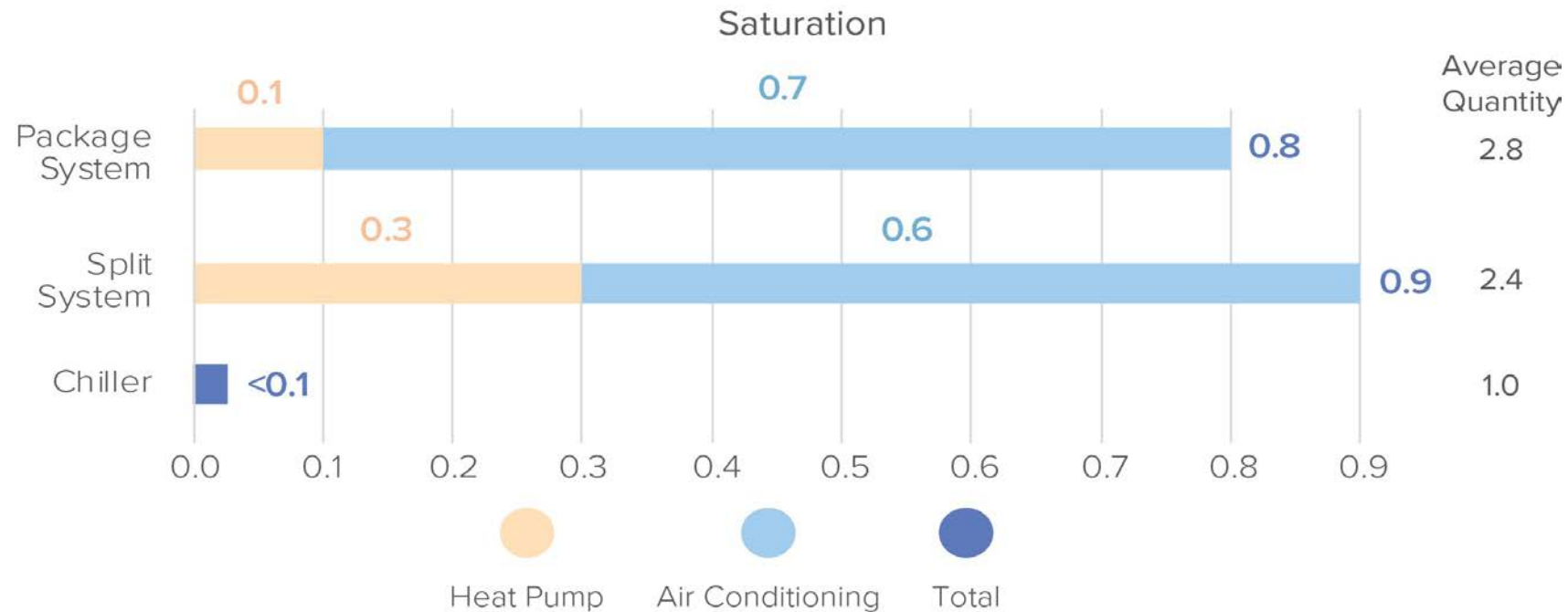
Cooling Penetration



- Two-thirds of NY businesses have central cooling systems
- 29% have room cooling equipment









Cooling System Quantities/Saturation

- On average, businesses have 2.8 package systems and 2.4 split systems (saturation of 0.8 and 0.9, respectively)
- One third of split systems are heat pumps
- Businesses have an average of 4.5 window or wall units
 - The saturation of these units is 1.2



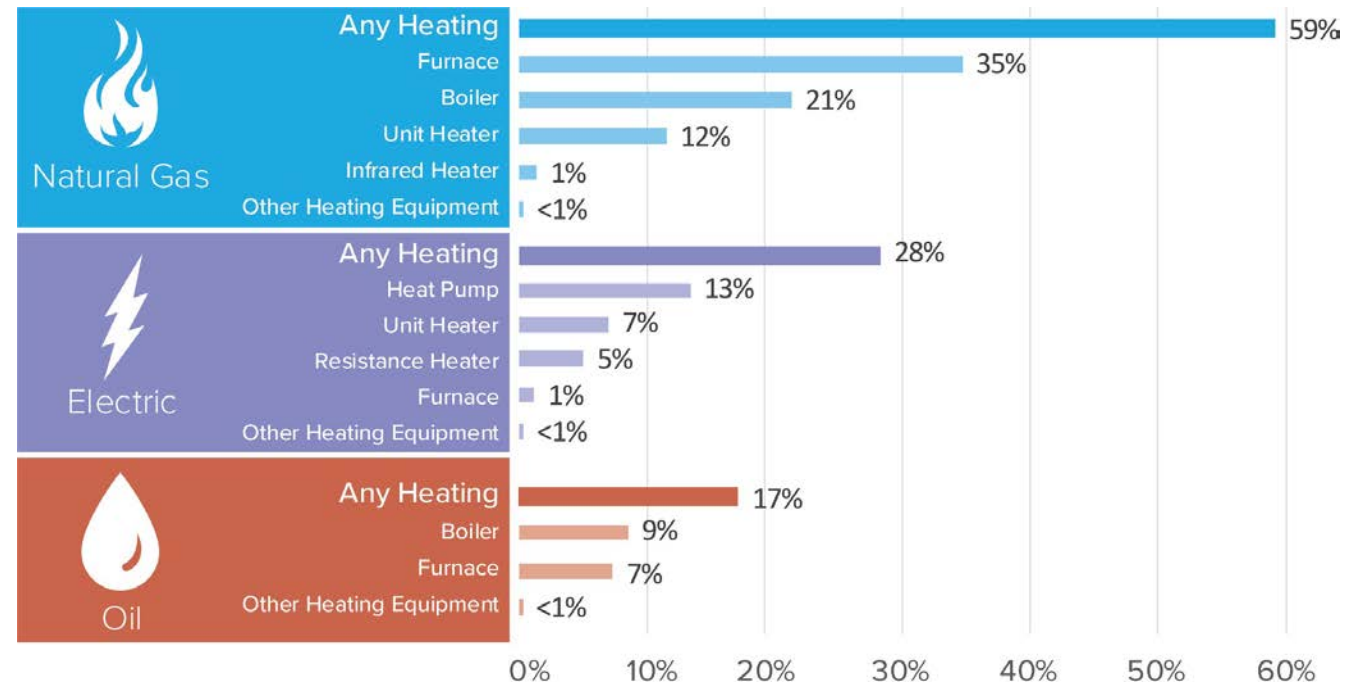
Heating Fuel Penetration

- Overall, 97% of businesses have space heating
- Natural gas is the most prevalent heating fuel (59% of businesses)
- While 28% of businesses have electric heat, only 15% use it as their primary heating fuel

								
	Natural Gas Heating	Electric Heating	Oil Heating	Propane Heating	District Steam Heating	Wood Heating	Other Heating Fuel	No Heating
Any Heating Fuel	59%	28%	17%	5%	3%	1%	1%	3%
Primary Heating Fuel	58%	15%	16%	5%	3%	<1%	1%	3%

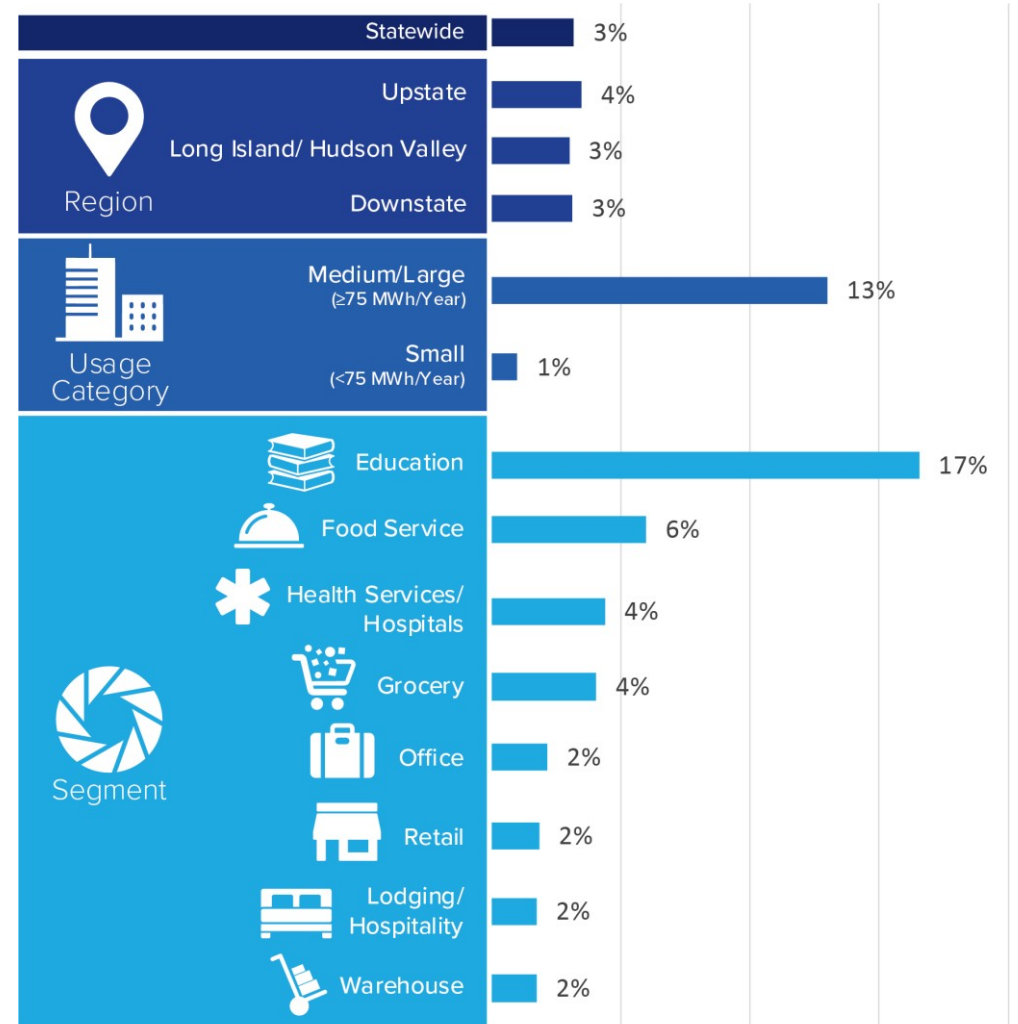
Heating Equipment Penetration by Key Fuels

- Natural gas furnaces are the most common natural gas space heating equipment (35% of businesses)
- Heat pumps are the most common electric space heating equipment (13% of businesses)
- Oil boilers and furnaces have similar statewide penetrations

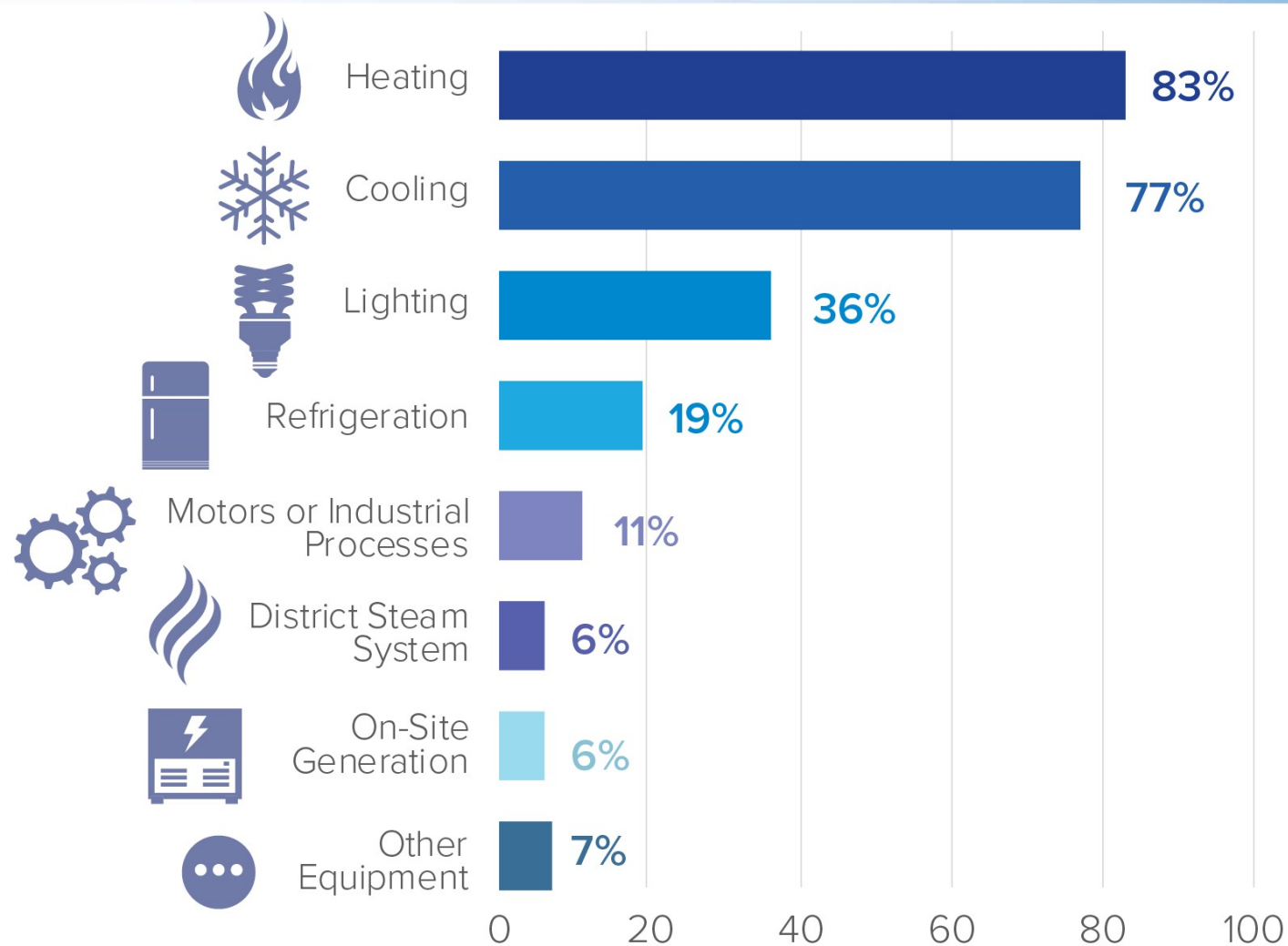


EMS Penetration

- Statewide, 3% of commercial businesses have an EMS
- Most common in medium/large businesses (13%) and the education segment (17%)



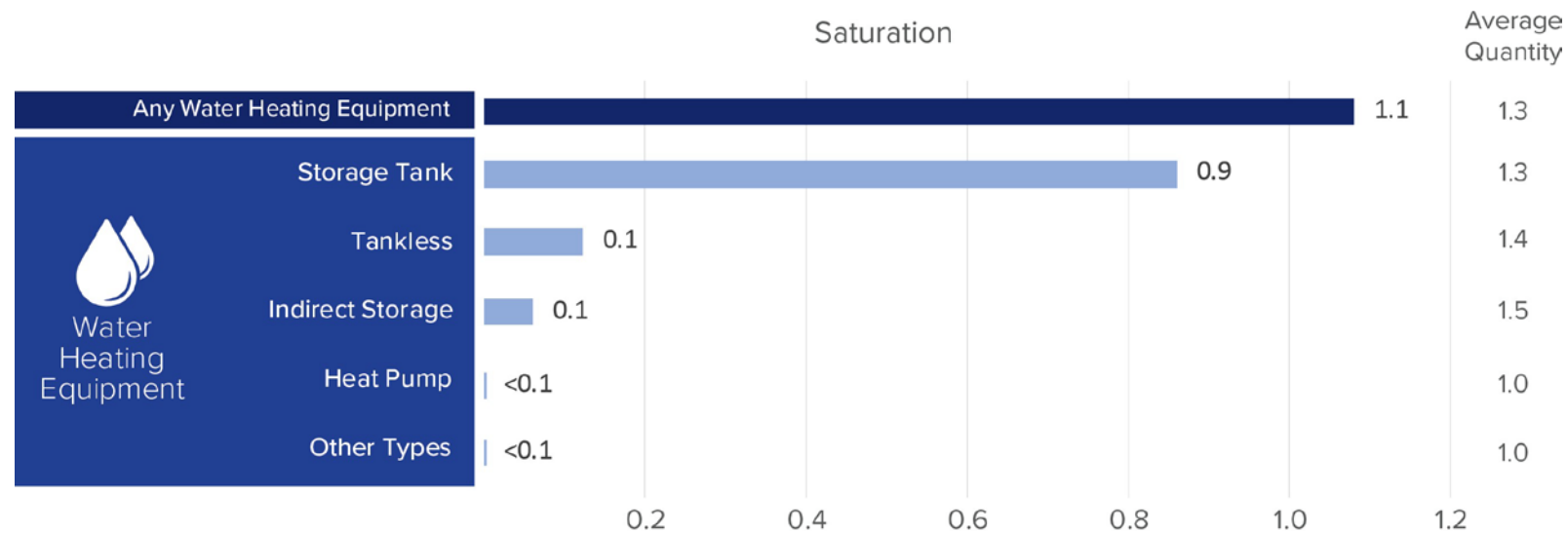
Systems Controlled by EMS



Water Heating – Penetration/Saturation

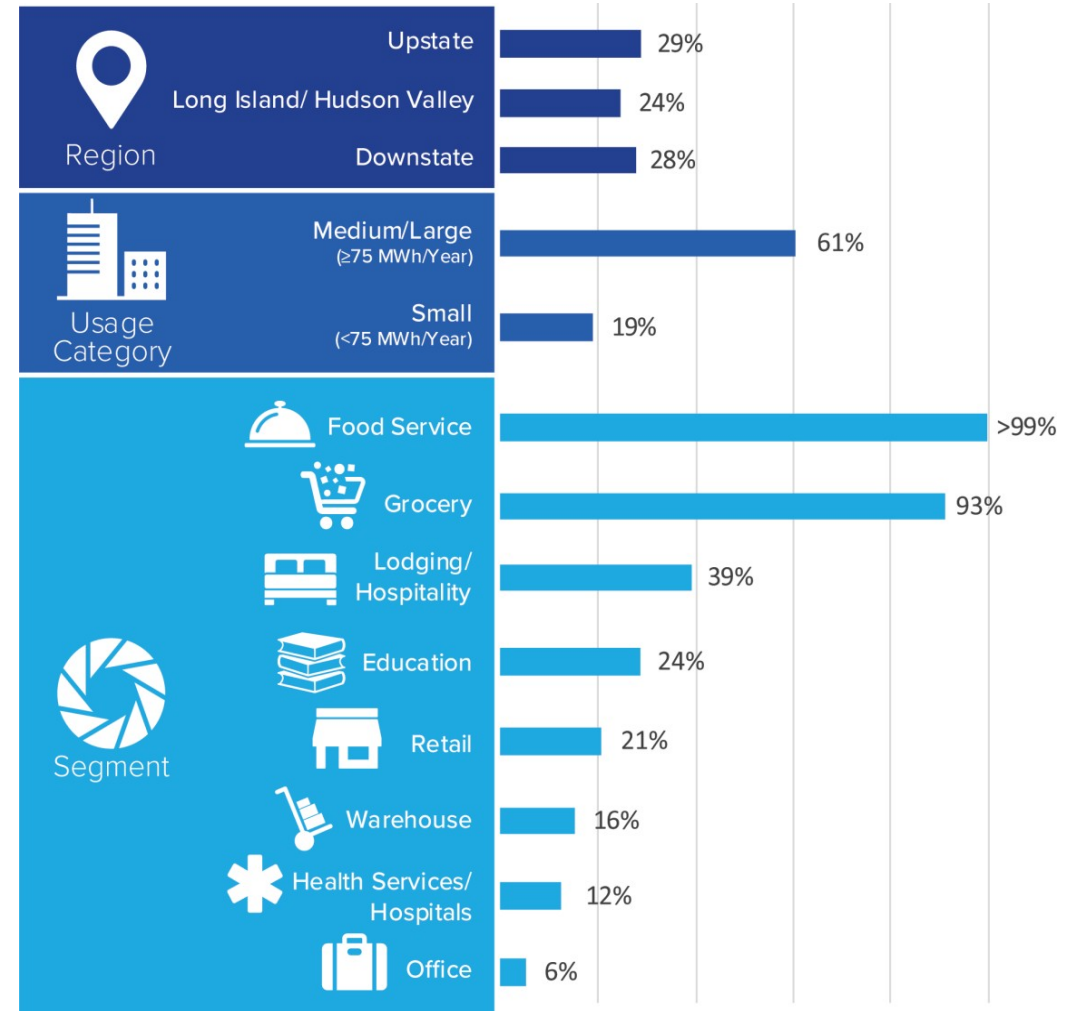
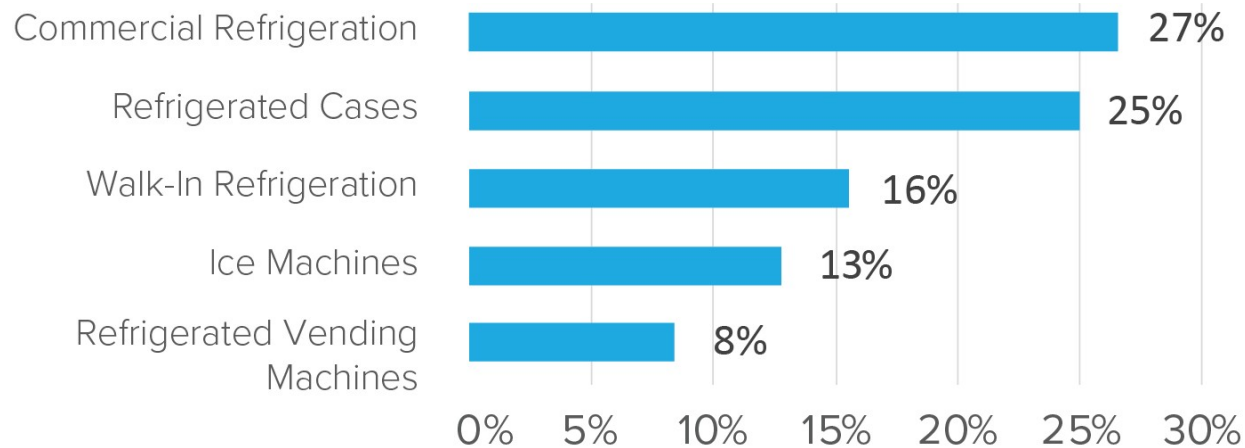
- 81% of businesses have water heating equipment
- Storage tank water heaters are in 67% of businesses
- Natural gas and electricity are the most common fuels
 - 45% and 41% of businesses, respectively

- Businesses have an average of 1.3 water heaters (saturation of 1.1)
- Storage tank water heaters account for 80%



Commercial Refrigeration Penetration

- Overall, 27% of NY commercial businesses have commercial refrigeration
- Most of these businesses have refrigerated cases

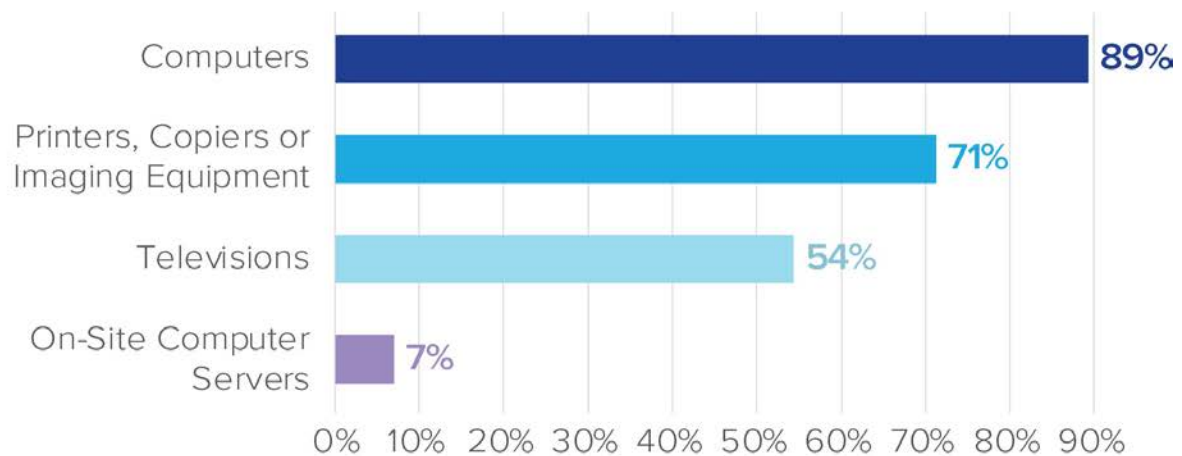


Other Refrigeration Information

- 59% businesses have residential refrigeration, often in their kitchen or employee break room
 - On average, businesses have 2.7 residential-style refrigerators (saturation of 1.6)
- Refrigerated vending machines are found in 8% of business
 - 17% are ENERGY STAR-certified
 - 17% have vending misers
- 13% of NY businesses have ice machines

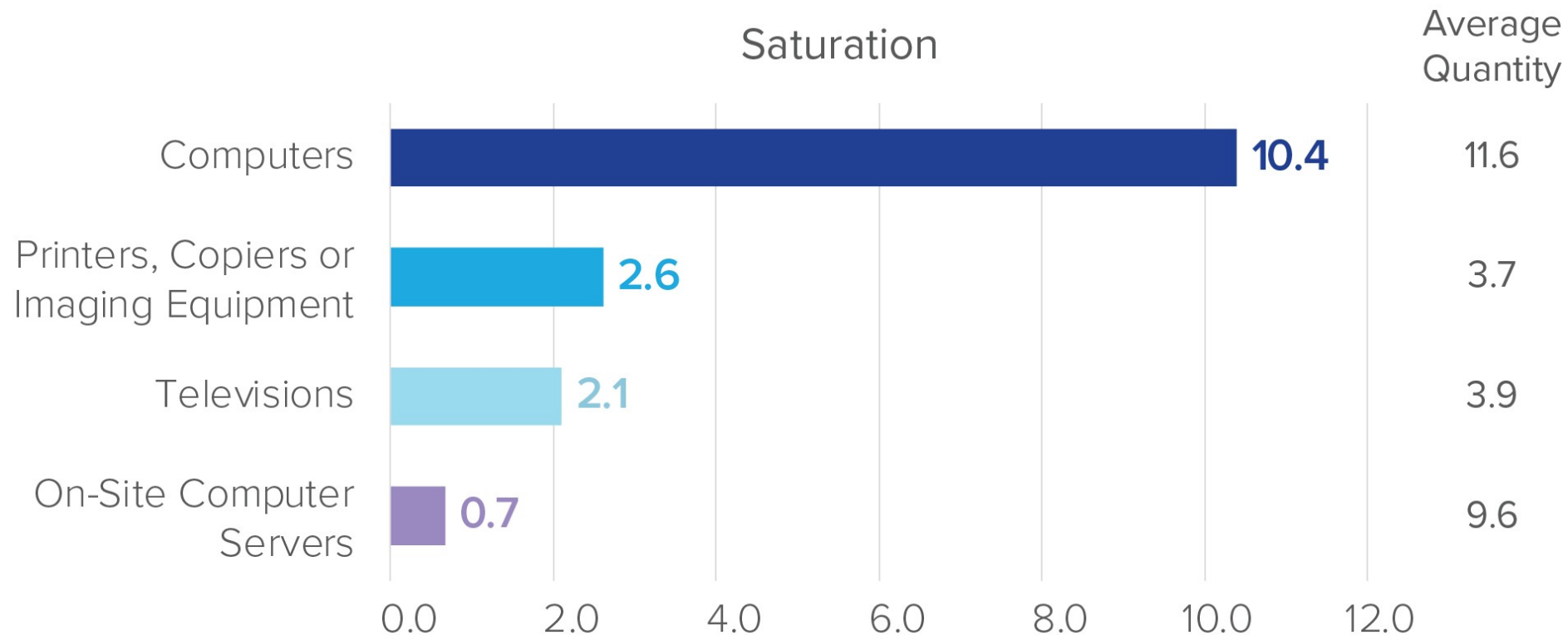
Office Equipment Penetration

- The vast majority (89%) of businesses in New York has computers.
- Most businesses with computers also have printers, copiers, or imaging equipment (71%).
- On-site servers (7% penetration) are less common as they are often not needed in many business segments.



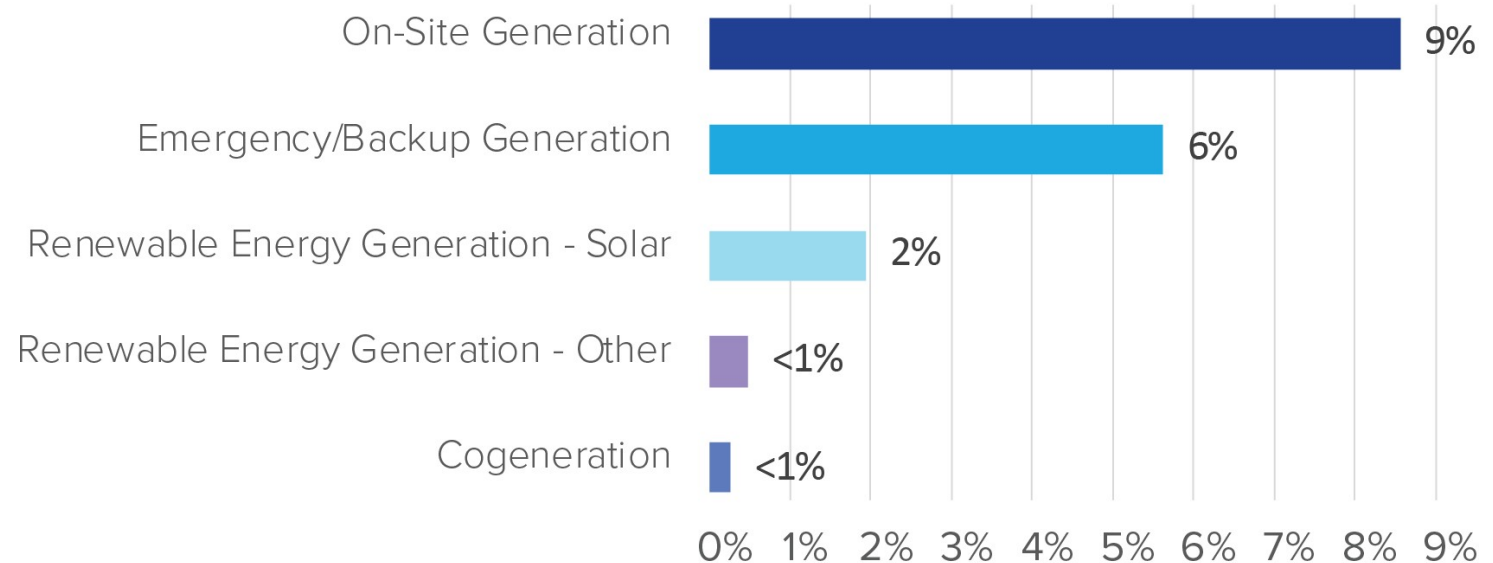
Office Equipment Quantities/Saturation

- Businesses have an average of 11.6 computers (saturation of 10.4)



Onsite Generation Penetration

- 9% of businesses have onsite generation equipment
- Businesses in the Education segment have the highest penetration of onsite generation
- Only 2% of businesses have onsite solar generation



Thank you!

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