

Comparisons across surveys from the 1992 *Commercial Buildings Energy Consumption Survey (CBECS)* through the 2018 CBECS

Table 8. Conservation and energy management characteristics and practices

	1992	1995	1999	2003	2012	2018
HVAC energy management features or practices	<p>Presence of, whether installed during construction or added, and, if added, year range:</p> <ul style="list-style-type: none"> • Variable air volume (VAV) system • Economizer cycle 	<p>Presence of, whether installed during construction or added, and sponsors of:</p> <ul style="list-style-type: none"> • VAV system • Economizer cycle • Regular scheduled maintenance and repair for heating and cooling equipment • Other energy-efficient HVAC equipment 	<p>Presence of:</p> <ul style="list-style-type: none"> • VAV system • Economizer cycle • Regular scheduled maintenance and repair for heating and cooling equipment 	Same as 1999	<p>Like 1999, with a few changes:</p> <ul style="list-style-type: none"> • VAV system is part of the ventilation question • Economizer cycle, plus type: <ul style="list-style-type: none"> – Air-side – Water-side • Regular scheduled maintenance and repair for heating and cooling equipment 	Same as 2012, except did not ask type of economizer cycle
Lighting features	<p>Presence and percentage of lighted floorspace served by each feature (number or range):</p> <ul style="list-style-type: none"> • Specular reflectors • Daylighting controls • Occupancy sensors • Timers • Manual dimmer switches • Other (specify) 	<p>Presence of:</p> <ul style="list-style-type: none"> • Specular reflectors • Energy-efficient ballasts • Daylighting controls • Occupancy sensors • Timers • Manual dimmer switches • Other 	<p>Presence of:</p> <ul style="list-style-type: none"> • Specular reflectors • Electronic ballasts 	<p>Same as 1999, plus:</p> <ul style="list-style-type: none"> • Automatic controls or sensors that increase or reduce lighting in response to level of natural light 	<p>Presence of:</p> <ul style="list-style-type: none"> • Scheduling • Occupancy sensors • Multilevel lighting or dimming • Daylight harvesting • High-end trimming or light-level tuning • Plug-load control • Demand responsive lighting 	Same as 2012
Sponsor of lighting features	Not collected	<p>Sponsors of retrofit or purchase of the lighting features in the row above:</p> <ul style="list-style-type: none"> • Utility • Federal government • In-house or self-sponsored • Third party • Other 	Not collected	Not collected	Not collected	Not collected

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Building envelope energy management features or practices	Presence, whether installed during construction or added, and, if added, year range: <ul style="list-style-type: none"> • Roof or ceiling insulation • Insulation in exterior walls • Storm windows, doors, or multipaned glass • Tinted or reflective glass or shading films • Exterior awnings or interior shades or blinds 	Presence, whether installed during construction or added, and sponsors of: <ul style="list-style-type: none"> • Roof or ceiling insulation • Insulation in exterior walls • Storm windows, doors, or multipaned glass • Tinted or reflective glass or shading films • Exterior awnings or interior shades or blinds 	Presence of: <ul style="list-style-type: none"> • Single paned, multipaned, or a combination of both window types • Tinted or reflective window glass • Skylights or atriums designed specifically to provide light 	Presence of: <ul style="list-style-type: none"> • Single paned, multipaned, or a combination of both window types • Tinted window glass • Reflective window glass • External overhangs or awnings • Skylights or atriums designed to provide light 	Same as 2003	Same as 2003
Windows open	Whether most of the windows in the building can be opened and closed	Not collected	Not collected	Not collected	Not collected	Not collected
Daylight	Not collected	Not collected	Not collected	Percentage of building that receives enough outside light so that interior lights do not need to be turned on	Same as 2003	Same as 2003
Demand-side management (DSM)	Whether the electricity or natural gas utility has sponsored DSM programs in the past three years, and if so, whether the building has participated or plans to participate in the future	Not collected	Not collected	Not collected	Not collected	Not collected

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DSM/energy conservation programs	<p>Whether the building has participated in the past three years, and if so, the sponsor and the type of assistance for the following programs:</p> <ul style="list-style-type: none"> • Lighting • Building envelope or shell • HVAC installation or retrofit • Energy efficient motors • Water heating • Direct electricity load control • Thermal energy storage • Standby electricity generation • Process heating or cooling, such as waste heat recovery • Other (specify) 	<p>Whether the building has or participates in, and if so, the sponsor of the following programs:</p> <ul style="list-style-type: none"> • Energy-efficient water heating equipment installation or retrofit • Electricity load control • Interruptible natural gas • Energy management and control system (EMCS) • Special rates or incentives • Energy efficient motors • Thermal energy storage • Waste heat recovery • Energy audit since December 31, 1992 	Not collected	Not collected	Not collected	Not collected
Energy audit	<p>Whether an audit was performed since December 31, 1986, and if so, the sponsor:</p> <ul style="list-style-type: none"> • Local utility • Federal, state, or local government program • In-house personnel or private contractor (initiated by building or business owner) • Other group (specify) 	Included in <i>energy conservation programs</i> above	Not collected	Not collected	Not collected	Not collected
Waste heat recovery	Not collected	Not collected	Not collected	Not collected	For hotels and food sales buildings, whether there is a waste heat recovery system as part of the refrigeration system, and if so, whether it is used for space heating, water heating, or some other use	Same as 2012

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Energy Management and Control System (EMCS) or Building Automation System (BAS)	Presence of EMCS and whether it controls: <ul style="list-style-type: none"> • Heating • Cooling • Domestic hot water heating • Lighting • Other (specify) 	Included in <i>energy conservation programs</i> above	Whether the building has an EMCS	Provided as an option for how heating or cooling is reduced when the building is not in full use (that is, not collected unless heating or cooling is reduced)	Presence of BAS (also referred to as EMCS), then provided as an option in how heating, cooling, or lighting are reduced when not in full use	Presence of BAS and whether it controls: <ul style="list-style-type: none"> • Heating • Cooling • Lighting
Operation and maintenance of energy systems	Who has responsibility for operating and maintaining HVAC, for how long (year range), and percentage range of typical week they devote to this: <ul style="list-style-type: none"> • Building owner or manager • Custodian or maintenance engineer • Dedicated energy manager • Cleaning or maintenance contractor • No one, repair service when needed • Someone else (specify) 	Whether the building has a full-time building energy manager	Not collected	Not collected	Whether the building owner is responsible for the operation and maintenance of the energy systems, and if not, who is	Whether the building owner is responsible for the operation of the energy systems, and if not, who is
Purchasing power	Not collected	Not collected	Not collected	Not collected	Whether the building owner has direct input on decisions regarding purchases of energy-related equipment, and if not, who does	Same as 2012
Energy management plan	Not collected	Not collected	Not collected	Not collected	Whether there is a formal plan in which energy targets are set and consistently monitored	Same as 2012

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Reduction in use during off hours	Reduced use of: <ul style="list-style-type: none"> • Heating • Cooling • Hot water heating • Lighting • Other (specify) 	Reduced use of: <ul style="list-style-type: none"> • Heating • Cooling • Lighting 	Reduced use of: <ul style="list-style-type: none"> • Heating • Cooling • Office equipment and computers (whether they are always, sometimes, or never turned off during off hours) • Lighting (calculated with percentages) 	Same as 1999	Reduced use of: <ul style="list-style-type: none"> • Heating • Cooling Lighting reduction calculated with percentages	Not collected
Indoor temperature control	Not collected	Not collected	Not collected	Types of temperature controls: <ul style="list-style-type: none"> • Time-clock thermostat • Thermostat is manually reset • Part of EMCS 	Types of temperature controls: <ul style="list-style-type: none"> • Part of the BAS • Programmable thermostat • Manually change thermostat • Manually shut down equipment 	Which method is used to control indoor temperature: <ul style="list-style-type: none"> • Setting programmable thermostat • Manually adjusting thermostat • Turning equipment on and off • None
Advanced Metering Infrastructure (AMI) smart metering	Not collected	Not collected	Not collected	Not collected	Whether the building has AMI	Not collected
Green building certification	Not collected	Not collected	Not collected	Not collected	Whether the building has any type of green building certification, and if so, which type: <ul style="list-style-type: none"> • Energy Star • LEED • Green Globes • Other 	Not collected