

**C405.13 Energy monitoring.**

New buildings with a gross conditioned floor area of not less than 10,000 square feet (929 m<sup>2</sup>) shall be equipped to measure, monitor, record and report energy consumption in accordance with Sections C405.13.1 through C405.13.6 for load categories indicated in Table C405.13.2 and Section C405.13.7 through C405.13.11 for end-use categories indicated in Table C405.13.8.

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**C405.13.1 Electrical energy metering.** For all electrical energy supplied to the building and its associated site, in...

**Table C405.13.2.** Where multiple meters are used to measure any end-use category, the data acquisition system shall total all of the energy used by that category. Not more than 5 percent of the measured design load for each of the end-use categories indicated in Table C405.13.2 shall be permitted to be from a load that is not within that category.

**TABLE C405.13.2**

...

**Load Category**

**Description of Energy Use**

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Building operations and Other  
Miscellaneous Loads

The remaining loads not included elsewhere in this table, including but not limited to vertical transportation systems, automatic doors, motorized shading systems, ornamental fountains, ~~ornamental~~ fireplaces, swimming pools, ~~inground~~ spas and snow-melt systems.

**C405.13.3 Electrical Meters ...**

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**C405.13.5 Graphical energy report.** A permanent and readily accessible reporting mechanism shall be provided in the *building* that is accessible by *building* operation and management personnel. The reporting mechanism shall have the capability to graphically provide the electrical energy consumption for each end-use category required by Section C405.13.2 not less than every hour, day, month and year for the previous 36 months. ~~The graphical report shall incorporate natural gas interval data or the ability to enter gas utility bills into the report.~~

~~C405.13.6 Non-electrical energy~~ Consumption of non-electrical fuel or energy sources including district heating or cooling shall be metered in accordance with Section C405.13.2 and C405.13.3.

~~C405.13.7~~ **C405.13.6 Renewable energy** Onsite renewable energy sources shall be metered with not less frequency than non-renewable energy systems in accordance with Section C405.13.3.

**C405.13.7 Non-electrical energy submetering.**

For all non-electrical energy supplied to the *building* and its associated site that serves the *building* and its occupants, submeters or other measurement devices shall be provided to collect energy consumption data for each end-use category required by Section C405.13.8.

**Exceptions:**

1. HVAC and water heating equipment serving only an individual dwelling unit shall not require end-use submetering.
2. End-use submetering shall not be required for fire pumps, stairwell pressurization fans or any system that operates only during testing or emergency.
3. End-use submetering shall not be required for an individual tenant space having a floor area not greater than 2,500 square feet (232 m<sup>2</sup>) where a dedicated source meter complying with Section C405.13.9 is provided.

**C405.13.8 End-use non-electrical submetering categories.**

Submeters or other *approved* measurement devices shall be provided to collect energy use data for each end-use category indicated in Table C405.13.8. Where multiple submeters are used to measure any end-use category, the data acquisition system shall total all of the energy used by that category. Not more than 5 percent of the measured design load for each of the end-use categories indicated in Table C405.13.8 shall be permitted to be from a load that is not within that category.

**TABLE C405.13.8 NON-ELECTRICAL ENERGY USE CATEGORIES**

<u>End-Use Category</u>	<u>Description of End Use</u>
<u>Total HVAC system</u>	<u>Heating and cooling systems, including but not limited to boilers, chillers and furnaces.</u> <u>District heating and cooling energy entering the buildings distribution system shall, be monitored at the point of entry to the building distribution system.</u>

<u>Process Loads</u>	<u>Any single load that is not included in the HVAC or service water heating categories where the rated fuel gas or fuel oil input of the load and that is not less than 5 percent of the sum of the rated fuel gas or fuel oil input of all monitored equipment, including but not limited to manufacturing equipment, process equipment, commercial kitchens, and commercial laundry equipment.</u>
<u>Other miscellaneous loads</u>	<u>The remaining loads not included elsewhere in this table, including but not limited to fireplaces, swimming pools, spas, gas lighting, and snow-melt systems.</u>
<u>Service Water Heating</u>	<u>Fuel used to heat potable water.</u>  <u>Exception: Water heating with design capacity that is less than 10 percent of the sum of the rated fuel gas or fuel oil input of all monitored equipment.</u>

**C405.13.9 Non-electrical submeters.**

Submeters or other measurement devices required by this section shall be configured to automatically communicate energy consumption data to the data acquisition system required by Section C405.13.10. Source submeters shall be allowed to be any digital-type meter that can provide a digital output to the data acquisition system. Required submetering systems and equipment shall be fully integrated into the data acquisition system and graphical energy report that updates at least hourly in accordance with Sections C405.13.10 and C405.13.11.

**C405.13.10 Non-electrical energy data acquisition system.**

A data acquisition system shall have the capability to store the data from the required submeters and other sensing devices for a minimum of 36 months. The data acquisition system shall have the capability to store real-time energy consumption data and provide hourly, daily, monthly and yearly logged data for each end-use category required by Section C405.13.8. The data acquisition system shall have the capability of providing *building* total non-electrical peak demand and the time(s) of day and time(s) per month at which the peak occurs. Where applicable as determined by the AHJ, peak demand shall be integrated over the same time period as the underlying whole *building* meter reading rate.

**C405.13.11 Graphical energy report.**

A permanent and readily accessible reporting mechanism shall be provided in the *building* that is accessible by *building* operation and management personnel. The reporting mechanism shall have the capability to graphically provide the non-electrical energy consumption for each end-use category required by Section C405.13.8 not less

than every hour, day, month and year for the previous 36 months. The graphical report shall incorporate natural gas interval data from the submeter or the ability to enter gas utility bills into the report.