A106.2.5 Duct system testing. Low pressure duct systems shall be leak tested and shall have a rate of air leakage of 80 percent or less than that specified in R402.2.2.1 of the *Energy Conservation Code*. Other duct systems shall be leak-tested in accordance with the SMACNA *HVAC Air Duct Leakage Test Manual* and shall have a rate of air leakage (CL) less than or equal to 4 as determined in accordance with Equation 4-5 of the *Energy Conservation Code*.

A106.2.5.1 Documentation. Documentation shall be furnished by the designer demonstrating that representative sections totaling not less than 50 percent of the duct area have been tested and that all tested sections meet the requirements of Section A106.2.4.

Exception: Projects entailing more than seven (7) duct systems shall utilize a sampling protocol approved by the code official.

A106.2.6 Ductless systems. Where a minimum of 85 percent of the total floor area of a building is served by ductless systems for space conditioning, or duct systems less than 10 feet (3048 mm) in length, project teams shall receive one project elective.

A106.3 Service water heating project elective. Buildings seeking a service water heating project elective in accordance with Sections A102.2 and A106.3 shall comply with Sections A106.3.1 through A106.3.3.

A106.3.1 Prescriptive path. The building shall be designed prescriptively in accordance with Section 601.3.2.

A106.3.2 Occupancy. The building shall be designed to serve one of the following occupancies:

1. Group A-2, restaurants and banquet halls;
2. Group F, laundries;
3. Group R-1, boarding houses (transient), hotels (transient), motels (transient);
4. Group R-2 buildings;
5. Group A-3, health clubs and spas; and
6. Group I-2, hospitals, mental hospitals and nursing homes.

A106.3.3 Service water heating efficiency. The efficiency of the service water heating equipment shall be at least 10 percent greater than the efficiencies shown in the *Energy Conservation Code* and ASHRAE 90.1 or the service water heating equipment shall be ENERGY STAR qualified.

A106.4 Interior lighting power density reduction. Projects seeking the lighting power density reduction elective shall be designed prescriptively in accordance with the *Energy Conservation Code*. Projects seeking the lighting power density elective shall receive one project elective for 10 percent reduction, two project electives for 15 percent reduction, three project electives for 20 percent reduction, four project electives for 25 percent reduction, and five project electives for 30 percent reduction compared to the requirements of the *Energy Conservation Code*.

Commercial buildings seeking the lighting power density reduction elective shall have at least 50 percent of the total building area designed and installed for permanent light fixtures.

Exception: Groups R-2, R-3, and R-4 shall not achieve this project elective.

A106.5 Passive design project elective. Buildings seeking a passive design project elective in accordance with Sections A102.2 and A106. 5 shall comply with Sections A106.5.1 and A106.5.2.

A106.5.1 Performance path. The building shall be designed using the performance path in accordance with Section 601.3.1.

A106.5.2 Passive design provisions. The simulation of energy use performed pursuant to Section 602 shall document that not less than 40 percent of the annual energy use reduction realized by the proposed design has been achieved through passive heating, cooling, and ventilation design, as compared to the standard reference design. Passive heating and cooling shall use strategies including, but not limited to, building orientation, fenestration provisions, material selection, insulation choices, overhangs, shading means, microclimate vegetation and water use, passive cooling towers, natural heat storage, natural ventilation, and thermal mass.

A106.6 Renewable energy system project electives. Buildings seeking a renewable energy system project elective or electives shall be equipped with one or more renewable energy systems that have the capacity to provide the percent of annual energy used within the building as selected in Table A106.

A106.7 Energy display. Buildings seeking an energy display project elective shall install a permanent, readily accessible and visible display adjacent to the main building entrance or on a publicly available web site. The display shall be capable of providing all of the following:

1. The current energy demand for the whole building, updated for each fuel type.
2. The average and peak demands for the previous day and the same day the previous year.
3. The total energy usage for the previous 18 months.

A106.8 Auto demand response system for lighting. Buildings seeking an auto demand response system for lighting project elective shall install a system capable of reducing total connected power of lighting as determined in accordance with the *Energy Conservation Code* by not less than 15 percent.

A106.9 Insulation and fenestration project electives. For projects seeking the insulation and fenestration project elective, the *building thermal envelope* shall exceed the requirements of *Energy Conservation Code* by not less than 10 percent. A second project elective shall be given for projects that exceed the *building thermal envelope* by 20 percent or more. Specifically, for purposes of compliance with this code, each *U*-factor, *C*-factor, *F*-factor and SHGC in the specified tables shall be reduced by 10 percent to determine the prescriptive criteria.

A106.10 Permanent shading devices for fenestration. Projects seeking the permanent shading devices project electives shall comply with one of the following for *vertical fenestration* on the west, south, and east façades. One project elective shall be granted for exterior shading devices and one project elective shall be granted for interior shading devices.

1. *Vertical fenestration* shall be shaded by permanent projections that have an area-weighted average projection factor of not less than 0.50. The building is allowed to be rotated up to 45 degrees to the nearest cardinal orientation for purposes of calculations and showing compliance.
2. *Vertical fenestration* shall have direct solar radiation for fewer than 250 hours per year because of shading by permanent external buildings, existing permanent infrastructure, or topography.
3. *Vertical fenestration* shall have automatically controlled shading devices capable of modulating in multiple steps the amount of solar gain and light transmitted into the space in response to daylight levels or solar intensity that comply with all of the following:
   a. Exterior shading devices shall be capable of providing at least 90 percent coverage of the *fenestration* in the closed position.
   b. Interior shading devices shall be capable of providing at least 90 percent coverage of the *fenestration* in the closed position and have a minimum solar reflectance of 0.50 for the surface facing the *fenestration.*
   c. A manual override located in the same *enclosed space* as the *vertical fenestration* shall override operation of automatic controls no longer than 4 hours.
   d. Acceptance testing and commissioning shall be conducted to verify that automatic controls for shading devices respond to changes in illumination or radiation intensity.
4. *Vertical fenestration* shall have automatically controlled *dynamic glazing* capable of modulating in multiple steps the amount of solar gain and light transmitted into the space in response to daylight levels or solar intensity that comply with all of the following:
   a. *Dynamic glazing* shall have a lower labeled *SHGC* equal to or less than 0.12, lowest labeled *VT* no greater than 0.05, and highest labeled *VT* no less than 0.40.
   b. A manual override located in the same *enclosed space* as the *vertical fenestration* shall override operation of automatic controls no longer than 4 hours.
   c. Acceptance testing and commissioning shall be conducted to verify that automatic controls for *dynamic glazing* respond to changes in illumination or radiation intensity.

A106.11 Air leakage testing. Projects shall receive two project electives where the tested air leakage is 0.15 cfm/ft^2 under a pressure differential of 0.3-inch water column (1.57 lb/ft^2 or 1.25 L/s.m^2 under a pressure differential of 75 Pa). Testing shall occur after rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, heating, ventilating and air-conditioning (HVAC) systems, plumbing, and electrical equipment and appliances. Testing shall be done in accordance with ASTM E779, CAN/CGSB-149.10- M86, CAN/CGSB-149.15-96 or equivalent.

Where the tested rate exceeds 0.15 cfm/ft^2 but is less than 0.20 cfm/ft^2, a visual inspection of the air barrier shall be conducted and any leaks noted shall be sealed to the extent practicable. An additional report identifying the corrective actions taken to seal leaks shall be submitted to the code official and the building owner, and shall be deemed to satisfy the requirements of this section.

A106.12 Waste water heat recovery. Projects that install a waste water heat recovery system shall qualify for a project elective provided that the system preheats the incoming water used for hot water functions by not less than 10°F (5.6°C).

A106.13 Circulating hot water systems. Projects seeking a circulating hot water systems project elective shall not have continuous, timer, or water temperature-initiated (aquastat) operation of circulating pumps. Gravity or thermosyphon circulation loops are prohibited. Pumps on circulating hot water systems shall be activated on demand by either a hard-wired or wireless activation control located within the room of final usage and of one of the following types:

1. A normally open, momentary contact switch.
2. Occupancy sensors.
3. A flow switch.
4. A door switch.

A106.14 [Reserved]

A106.15 High efficiency appliance elective. Projects seeking one (1) high efficiency appliance elective shall install 100 percent Consortium for Energy Efficiency (CEE) approved appliances, commercial clothes washers, commercial kitchen equipment, and new consumer electronics (including computers, monitors, copiers, printers, and A/V equipment) used in the final project. Additionally, ENERGY STAR dryers shall be installed as applicable to the final occupancy. Fifty percent of the appliances must be new for the project to receive any electives in this section.

Projects shall earn two electives by meeting all the requirements for the first elective, and in addition installing 100 percent CEE tier 2 products for those product types available in the CEE standard.

Projects shall earn three electives by meeting all the requirements for the first two electives, and in addition installing 100 percent CEE tier 3 products for those product types available in the CEE standard.