

- (2) 100 percent of the nameplate rating(s) of the heat pump when the heat pump is used without any supplemental electric heating.
- (3) 100 percent of the nameplate rating(s) of the heat pump compressor and 65 percent of the supplemental electric heating for central electric space-heating systems. If the heat pump compressor is prevented from operating at the same time as the supplementary heat, it does not need to be added to the supplementary heat for the total central space heating load.
- (4) 65 percent of the nameplate rating(s) of electric space heating if less than four separately controlled units.
- (5) 40 percent of the nameplate rating(s) of electric space heating if four or more separately controlled units.
- (6) 100 percent of the nameplate ratings of electric thermal storage and other heating systems where the usual load is expected to be continuous at the full nameplate value. Systems qualifying under this selection shall not be calculated under any other selection in 220.82(C).

Section 220.82(C) requires that only the largest of the six choices needs to be included in the feeder or service calculation.

See also

Informative Annex D, Examples D2(a), D2(b), and D2(c), for examples of calculations using air conditioning and heating

220.83 Existing Dwelling Unit. This section shall be permitted to be used to determine if the existing service or feeder is of sufficient capacity to serve additional loads. Where the dwelling unit is served by a 120/240-volt or 208Y/120-volt, 3-wire service or feeder, calculating the total load in accordance with 220.83(A) or (B) shall be permitted.

- Δ (A) **Where Additional Air-Conditioning Equipment or Electric Space-Heating Equipment Is Not to Be Installed.** The percentages listed in Table 220.83(A) shall be used for existing and additional new loads.

TABLE 220.83(A) Without Additional Air-Conditioning or Electric Space-Heating Equipment

Load (kVA)	Percent of Load
First 8 kVA of load at	100
Remainder of load at	40

Load calculations shall include the following:

- (1) General lighting and general-use receptacles at 33 volt-amperes/m² or 3 volt-amperes/ft² as determined by 220.42
- (2) 1500 volt-amperes for each 2-wire, 20-ampere small-appliance branch circuit and each laundry branch circuit covered in 210.11(C)(1) and (C)(2)

- (3) The nameplate rating of the following:

- a. All appliances that are fastened in place, permanently connected, or located to be on a specific circuit
- b. Ranges, wall-mounted ovens, counter-mounted cooking units
- c. Clothes dryers that are not connected to the laundry branch circuit specified in item (2)
- d. Water heaters

- Δ (B) **Where Additional Air-Conditioning Equipment or Electric Space-Heating Equipment Is to Be Installed.** The percentages listed in Table 220.83(B) shall be used for existing and additional new loads. The larger connected load of air conditioning or space heating, but not both, shall be used.

TABLE 220.83(B) With Additional Air-Conditioning or Electric Space-Heating Equipment

Load	Percent of Load
Air-conditioning equipment	100
Central electric space heating	100
Less than four separately controlled space-heating units	100
First 8 kVA of all other loads	100
Remainder of all other loads	40

Other loads shall include the following:

- (1) General lighting and general-use receptacles at 33 volt-amperes/m² or 3 volt-amperes/ft² as determined by 220.42
- (2) 1500 volt-amperes for each 2-wire, 20-ampere small-appliance branch circuit and each laundry branch circuit covered in 210.11(C)(1) and (C)(2)
- (3) The nameplate rating of the following:
 - a. All appliances that are fastened in place, permanently connected, or located to be on a specific circuit
 - b. Ranges, wall-mounted ovens, counter-mounted cooking units
 - c. Clothes dryers that are not connected to the laundry branch circuit specified in item (2)
 - d. Water heaters

The optional methods described in 220.83(A) and (B) allow an additional load to be supplied by an existing service.

Calculation Example 1

220.83(A). An existing dwelling unit is served by a 100-A service. A 20 ft × 20 ft addition with a second laundry room is to be added to the dwelling. Determine if the service is properly sized to handle the increased load.