House #1

A single family dwelling with two stories and full basement measures 12 m x 10 m. Outside walls are 200 mm thick. Service is single-phase 120/240 V. The following loads are to be considered:

4000 W Clothes Dryer
4000 W AC Unit

Demand Load
Total Area = ((12-(.2+.2) x (10-(.2+.2)) x 2.75 = 11.6 x 9.6 x 2.75 = 306 m²
5,000 W for the first 90 m²
1,000 W for the second 90 m²
1,000 W for the third 90 m²
1,000 W for the fourth 90 m² (or portion)
4,000 W Clothes dryer @100% (No Electric Range)
4,000 W AC Unit @100%

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16.000 W Total

Minimum allowable ampacity of service conductor = 16,000 W/240 V = 67 A

Service Calculation for Combining 8 row house units. (House #1)

Each unit had a demand of 16,000 W. If we look at Rule 8-202 (3) we have to combine the wattages without the heating or ac loads. If we subtract the AC Unit portion of the demand wattage we get 12,000 W.

12,000 W – Largest unit @100%
15,600 W – Next two largest units @65%
9,600 W – Next two largest unit @40%
9,000 W – Last three units @25%

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46,200 W Total
32,000 W (Add AC demand back in @ 100%)

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78,200 W (Total Demand Wattage for 8 units)
Minimum allowable ampacity of service conductor = 78,200/240 = 325.8 A
House #2

A single family dwelling with two stories and full basement measures 12 m x 10 m. Outside walls are 200 mm thick. Service is single-phase 120/240 V. The following loads are to be considered;
25,000 W Electric Baseboard Heating
14,000 W - Electric Range
3,000 W - Electric Heater
4,000 W Clothes Dryer
3,000 W Split AC Unit
4,000 W Hot Tub Heater

Demand Load
Total Area = ((12-(.2+.2) x (10-(.2+.2)) x 2.75 = 11.6 x 9.6 x 2.75 = 306 m²
5,000 W for the first 90 m²
1000 W for the second 90 m²
1000 W for the third 90 m²
1000 W for the second 90 m²(or portion)
21,250 W Electric heat (First 10 kW @100% Balance @75% Section 62)
6,800 W Range (6 kW for first 12 kW Balance @ 40%)
1,000 W Clothes Dryer (@25% because we included a range 4000 x .25)
750 W Water Heater (@25% because we included a range 3000 x .25)
4,000 W Hot Tub @ 100%
41,800 W Total

Minimum allowable ampacity of service conductor = 41,800/240 = 174 A

Service Calculation for Combining 8 row house units. (Previous slide)

Each unit had a demand of 41,800 W. If we look at Rule 8-202 (3) we have to combine the wattages without the heating or ac loads. If we subtract the electric space heating portion of the demand wattage we get 20,550 W.

20,550 W – Largest unit @100%
26,715 W – Next two largest units @65%
16,440 W – Next two largest unit @40%
15,412 W – Last three units @25%
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79,117 W Sub Total
130,000 W Add Electric Heat Back in (10kW@100% Balance @75%)
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209,117 W Total Demand
Minimum allowable ampacity of service conductor = 209,117/240 = 871 A