

SINGLE-FAMILY DWELLING SERVICE-ENTRANCE CALCULATIONS**Line item instructions**

1. Included in this floor area calculation are all lighting outlets and general-use receptacles. Do not include open porches, garages, or unused or unfinished spaces not adaptable for future use. See *NEC 220.12*, *Table 220.12*, and *220.14(J)*.
2. No further explanation needed.
3. Minimum of two 20-ampere branch-circuits. See *210.11(C)(1)*, *210.52(B)*, and *220.52(A)*.
4. Minimum of one 20-ampere branch-circuit. See *210.11(C)(2)*, *210.52(F)*, and *220.52(B)*.
5. No further explanation needed.
6. Apply the 100% and 35% demand factors from *Table 220.42*.
7. See *Table 220.55* for load values. Typical household electric ranges come under the 8 kW level.
8. See *Table 220.54* for load values. 5000 VA minimum or nameplate rating, whichever is larger.
9. Enter largest value, *220.60*. Also see *220.51* and *Article 440*.
10. This is the total for General Lighting, Small-Appliance, Laundry, Ranges, Ovens, Cooktop Units, and HVAC.
11. List fastened-in-place appliances. See *220.53*.
12. Apply 75% demand factor. Do not include electric ranges, electric clothes dryers, electric space heating, or air-conditioning equipment. See *220.53*.
13. No further explanation needed.
14. What is the largest motor? The largest motor can be difficult to determine because nothing is in place when service-entrance load calculations are made. It might be an air-conditioning unit or a heat pump. If the dwelling is cooled by an evaporative cooler, the largest motor might be the evaporative cooler motor. It could also be a furnace fan motor, a water pump, a large attic exhaust fan, a sump pump, or a large food waste disposer. Don't waste valuable time quibbling. Enter a large volt-ampere value to be on the safe side.
15. No further explanation needed.
16. No further explanation needed.
17. Shall not be smaller than 100 amperes, *230.42(B)* and *230.79*. See *Table 310.15(B)(16)*. Special conductor sizing might be permitted. *Table 310.15(B)(7)* may be used only for 120/240-volt, 3-wire, residential single-phase service-entrance conductors, service lateral conductors, and feeder conductors that serve as the main power feeder to a dwelling unit. Check whether this is permitted in your locality.
18. See *220.61* and *310.15(B)(7)*. Do Not Include Straight 240-Volt Loads.
19. See *220.61*. *NEC 310.15(B)(7)* permits the neutral conductor to be smaller than the ungrounded "hot" conductors if the requirement of *215.2*, *220.61*, and *230.42* are met. *NEC 220.61* states that a feeder or service neutral load shall be the maximum unbalance of the load determined by *Article 220*. When bare conductors are used with insulated conductors, the conductors' ampacity is based on the ampacity of the other insulated conductors in the raceway, *310.15(B)(4)*. The neutral conductor must not be smaller than the grounding electrode conductor, *250.24(B)(1)*.
20. See *Table 250.66*. Grounding electrode conductor based on size of service-entrance conductors.
21. Obtain dimensional data from *Table 1*, *Table 4*, *Table 5*, and *Table 8*, *Chapter 9, NEC*.