

**SINGLE FAMILY SERVICE LOAD CALCULATIONS
BASED ON THE 2023 NEC SECTION 220.82**

GENERAL LOADS NEC 220.42

TOTAL SQ FOOTAGE (600 SQ FT X 3 VA) = 1,800 VA
 APPLIANCE CIRCUITS (0 X 1,500 VA) = 0 VA
 LAUNDRY CIRCUITS (1 X 1,500 VA) = 1,500 VA

 3,300 VA

FIRST 3,000 VA AT 100% 3,000 VA
 REMAINING VA AT 35%

 105 VA
 3,105 VA

NO RANGE0 AT 0 VA EA)
 PER TABLE 220.55 (0 VA X 1.00) = VA 0 VA

NO DRYER0 AT 0 VA EA)
 PER TABLE 220.54 (0 X 0 X 0.00) = 0 VA

APPLIANCES FASTENED IN PLACE NEC SECTION 220.53

MISC LOADS NEC 220.82(B)(4)

LARGEST HEATING OR COOLING LOAD 0 VA
 TOTAL LOAD

 3,105 VA

TOTAL AMPS (3,105 VA ÷ 240 V) = 13 A
 FUTURE AMPS (0%)

 0 A
DESIGN AMPS 13 A

PROJECT NAME SAMPLE
SUBPANEL NAME SP1

HEATING & COOLING LOADS - NEC 220.82(C)

(1) AC LOAD (0 VA X 100%) = 0 VA << LARGEST
 (2) HEAT PUMPS NO SUPP (0 VA X 100%) = 0 VA
 (3) ELECTRIC THERMAL (0 VA X 100%) = 0 VA
 (3) ELECTRIC THERMAL (0 VA X 65%) = 0 VA
 (4) ELECTRIC SPACE (0 VA X 65%) = 0 VA
 SUPPLEMENTAL HEAT (0 VA X 65%) = 0 VA
 (5) SPACE HEATING (0 VA X 40%) = 0 VA
 MORE THAN FOUR SEPARATELY CONTROLLED UNITS.
 (6) SPACE HEATING (0 VA X 40%) = 0 VA
 CONTINUOUS AT THE FULL NAMEPLATE VALUE.
 LARGEST HEATING OR COOLING LOAD 0 VA

NEUTRAL LOAD NEC 220.61

TOTAL SQ FOOTAGE (600 SQ FT X 3 VA) = 1,800 VA
 APPLIANCE CIRCUITS (0 X 1,500 VA) = 0 VA
 LAUNDRY CIRCUITS (1 X 1,500 VA) = 1,500 VA
 TOTAL CONNECTED NEUTRAL LOAD

 3,300 VA
 FIRST 3,000 VA @ 100% (3,000 VA X 1.00) = 3,000 VA
 3,000-120,000 VA @ 35% (300 VA X 0.35) = 105 VA
 OVER 120,000 VA @ 25% (0 VA X 0.25) = 0 VA
 SUBTOTAL

 3,105 VA

RANGE DEMAND
 TABLE 220.55 COLUMN C
 70% OF TABLE 220.55 (0 VA X 0.70) = 0 VA

DRYER DEMAND
 TABLE 220.54
 70% OF TABLE 220.54 (0 VA 0.00 VA X 0.70) = 0 VA

UNBALANCED MISC LOADS 0 VA

NEUTRAL LOAD VA

 3,105 VA

NEUTRAL LOAD (3,105 VA ÷ 240 V) = 13 A

FURTHER DEMAND FACTOR - NEC 220.61(B)(2)
 FIRST 200 A @ 100% (13 A X 1.00) = 13 A
 REMAINDER @ 70% (0 A X 0.70) = 0 A

MINIMUM NEUTRAL CONDUCTOR AMPACITY

 13 A

VOLTAGE DROP CALCULATIONS

(2 X 25' L X 0.3080 R X 13.0 A ÷ 1,000) = 0.2 VD
 (0.2 VD ÷ 240 V X 100) = 0.1 % VD

FAULT CURRENT CALCULATIONS

((12,386 AFC X 1.00 UA) + 0 MC) = 12,386 AFC
 (2 X 25 L X 12,386 AFC) ÷ (3,806 C X 1 N X 240 V) = 0.678 CF
 (1) ÷ (1 + 0.678 CF) = 0.596 CM
 (12,386 AFC X 0.596 CM) = 7,382 CLC

KEY

- A - Amps
- AFC - Available Fault Current
- C - Conductor Constance
- CF - Conductor Factor
- CLC - Conductor Let Through Current
- CM - Conductor Multiplier
- L - Length
- MC - Motor Contribution
- N - Number of Conductors
- R - Resistance
- UA - Utility Adjustment
- V - Volts
- VA - Volt Amps
- VD - Voltage Drop