

## Interpretation #5: Sizing Conductors for Single-Phase Dwelling Services and Feeders

**Purpose:** To provide consistent application of the requirements for Single-Phase Dwelling Services and Feeders.

**Question:** When can you use Table 310.12 Single-Phase Dwelling Services and Feeders?

**Reference:** 2022 California Electrical Code (CEC) (2020 NEC) 2022 San Francisco Electrical Code (SFEC) Article 310 Conductors for General Wiring

**Comment:**

a) The Service Lateral Conductors (Underground System or Overhead System) to a One Family Dwelling Unit, or Individual Dwelling Unit in a Two Family or Multifamily Dwelling can use Table 310.12. (See Exhibit 310.1) & (310.12 (A) Services)

b) The Service Lateral Conductors (Underground System or Overhead System) to a Two Family or Multifamily Dwelling cannot use Table 310.12. (Use Table 310.16) (See Exhibit 310.1) & (310.12 (A) Services)

c) The Feeder Conductors (Load Side of the Main OCPD) to a One Family Dwelling Unit can use Table 310.12. (See Exhibit 310.1) & (310.12 (B) Feeders)

d) The Feeder Conductors (Load Side of the Main OCPD) to a Two Family Dwelling or Multifamily Dwelling can use Table 310.12. (See Exhibit 310.1) & (310.12 (B) Feeders)

### **Reference Code: 2020 NEC Article 310**

#### **310.12 Single-Phase Dwelling Services and Feeders.**

For one-family dwellings and the individual dwelling units of two-family and multifamily dwellings, service and feeder conductors supplied by a single-phase, 120/240-volt system shall be permitted to be sized in accordance with 310.12(A) through (D).

For one-family dwellings and the individual dwelling units of two-family and multifamily dwellings, single-phase feeder conductors consisting of two ungrounded conductors and the neutral conductor from a 208Y/120volt system shall be permitted to be sized in accordance with 310.12(A) through (C).

### **310.12 (A) Services.**

For a service rated 100 amperes through 400 amperes, the service conductors supplying the entire load associated with a one-family dwelling, or the service conductors supplying the entire load associated with an individual dwelling unit in a two-family or multifamily dwelling, shall be permitted to have an ampacity not less than 83 percent of the service rating. If no adjustment or correction factors are required, Table 310.12 shall be permitted to be applied.

### **310.12 (B) Feeders.**

For a feeder rated 100 amperes through 400 amperes, the feeder conductors supplying the entire load associated with a one-family dwelling, or the feeder conductors supplying the entire load associated with an individual dwelling unit in a two-family or multifamily dwelling, shall be permitted to have an ampacity not less than 83 percent of the feeder rating. If no adjustment or correction factors are required, Table 310.12 shall be permitted to be applied.

### **310.12 (C) Feeder Ampacities.**

In no case shall a feeder for an individual dwelling unit be required to have an ampacity greater than that specified in 310.12(A) or (B).

**Comment:** The following examples support the language of 310.12(C):

- a) 310.12(C) Feeder Ampacities: **This code section clarifies that the Feeder Conductors for an individual dwelling unit are not required to be larger than the Service Conductors.**
- b) **Example #1: One Family Dwelling: 1 Phase 120/240V 3W 100A Meter / Main Electrical Service: Table 310.12 can be used for the Service Entrance Conductors & Feeder Conductors - Service or Feeder Rating 100A 4 AWG Copper. Comment: Feeder Conductors are the same size as the Service Entrance Conductors per 310.12(C).**
- c) **Example #2: Two Family or Multi Family Dwellings: 1 Phase 120/240V 3W 200A Electrical Service with Two 100A Meter / Mains: Table 310.16 shall be used for the 200A Service Lateral Conductors – Service Rating 200A 75 Degree C 3/0 AWG 200A and Table 310.12 can be used for the Two 100A Service Entrance Conductors and Table 310.12 can be used for the Feeder Conductors - Service or Feeder Rating 100A 4 AWG Copper. Comment: The Feeder Conductors can be sized per Table 310.12 or Table 310.16 per 310.12(C).**

### **310.12 (D) Grounded Conductors.**

Grounded conductors shall be permitted to be sized smaller than the ungrounded conductors, if the requirements of 220.61 and 230.42 for service conductors or the requirements of 215.2 and 220.61 for feeder conductors are met.

Where correction or adjustment factors are required by 310.15(B) or (C), they shall be permitted to be applied to the ampacity associated with the temperature rating of the conductor.

Informational Note No. 1: The service or feeder ratings addressed by this section are based on the standard ampere ratings for fuses and inverse time circuit breakers from 240.6(A).  
 Informational Note No. 2: See Example D7 in Annex D.

**Table 310.12 Single-Phase Dwelling Services and Feeders**

Service or Feeder Rating(Amperes)	<u>Conductor (AWG or kcmil)</u>	
	Copper	Aluminum or Copper-Clad Aluminum
100	4	2
110	3	1
125	2	1/0
150	1	2/0
175	1/0	3/0
200	2/0	4/0
225	3/0	250
250	4/0	300
300	250	350
350	350	500
400	400	600

Note: If no adjustment or correction factors are required, this table shall be permitted to be applied.

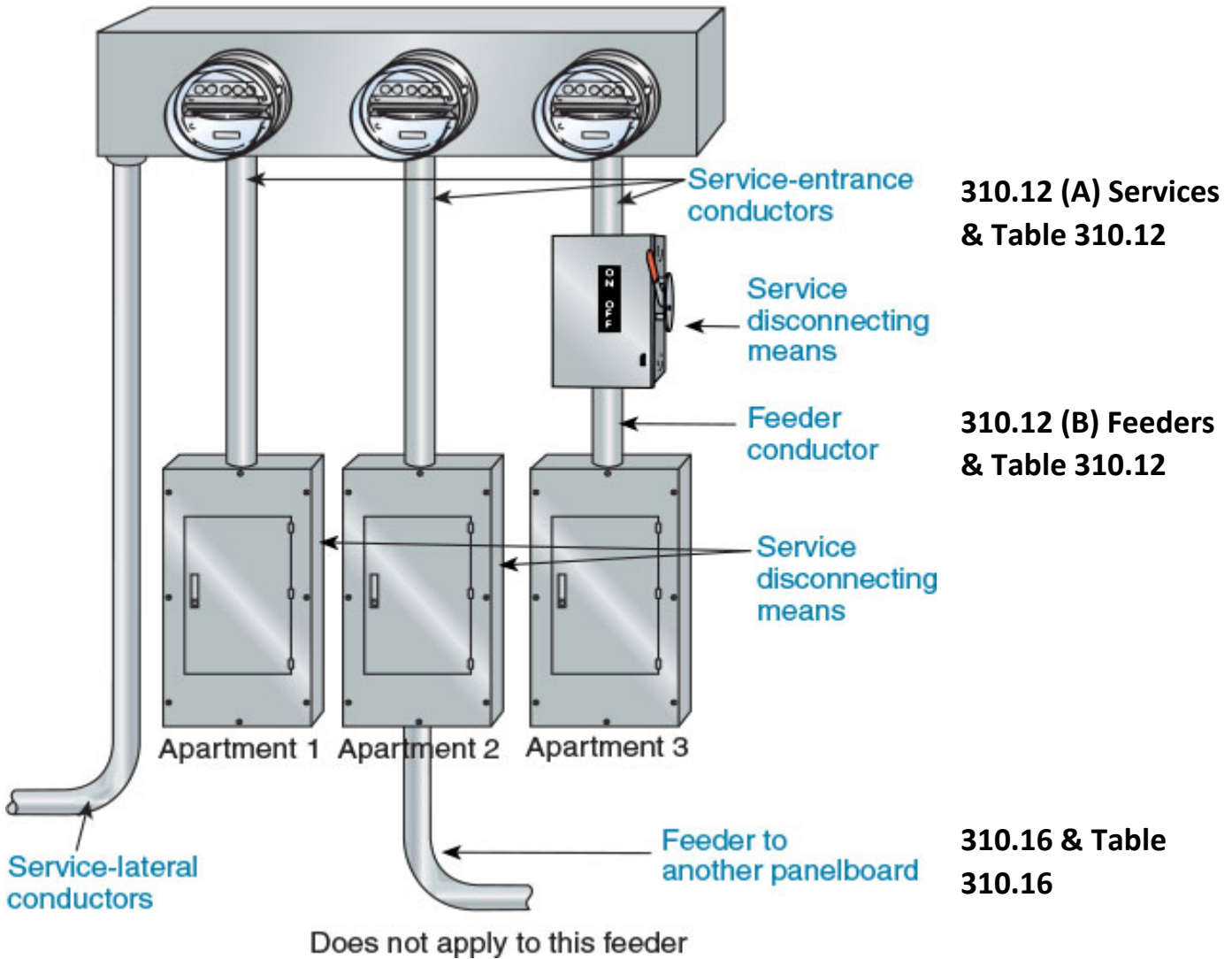
**Commentary: Reference 2020 NEC Hand Book Article 310 & Exhibit 310.1**

The main service or feeder to a dwelling unit is permitted to be sized at 83 percent of the disconnect rating. The calculation is not based on the rating of the overcurrent device protecting the main feeder. The minimum disconnect rating for a dwelling unit is 100 amperes according to 225.39 and 230.79. This calculation applies only to conductors carrying 100 percent of the dwelling unit’s diversified load.

**If a 120/240-volt single-phase service supplies a one-family dwelling or an individual unit of a two-family or multifamily dwelling, the reduced conductor size is applicable to the service-entrance conductors or feeder conductors that supply the dwelling unit. The feeder conductors to a dwelling unit are not required to be larger than its service-entrance conductors.**

Exhibit 310.1 illustrates where Table 310.12 could be applied. The reduced conductor size permitted is applicable only to the service-entrance conductors run to each apartment from the meters. The reduced conductor size permitted is also applicable to the feeder conductors run to Apartment 3 in the exhibit from the service disconnecting means, because that feeder carries the entire load.

**EXHIBIT 310.1 One application where the reduced conductor size is applicable to the service-entrance conductors.**



**Comment: Service Lateral Conductors Underground or Overhead 310.16 & Table 310.16**