

Standard for the Number of Secondary Distribution Boxes



Overview

SCE Manuals | SCEEntities seeking to install communications facilities onto SCE poles shall comply with SCE standards and General Order 95 (G.O. 95) 028028.

Key Takeaways

The number of secondary distribution boxes depends on load distribution, system reliability, and substation configuration, with each box sized to handle a portion of the total load while maintaining redundancy and voltage drop limits. Key Considerations



Load and Capacity: The number of secondary distribution boxes is determined primarily by the total electrical load and the capacity of each box. Each box should be sized to handle the connected load without exceeding its rated capacity, typically following NEC guidelines for residential or commercial services (e.g., 120/208 V panels limited to 200 A for residential use) and ensuring future expansion is possible .

System Configuration: Secondary distribution boxes are often part of a secondary unit substation, which includes transformers and low-voltage switchgear located close to the load center. Configurations can be radial, primary selective radial, or secondary selective, affecting the number of boxes required. For example, in a secondary selective system, two electrically independent unit substations may each supply approximately half the total load, allowing service continuity if one bus fails .

Redundancy and Reliability: For high-reliability applications, such as commercial buildings or critical infrastructure, multiple secondary distribution boxes may be installed to ensure that a single failure does not interrupt service. Spot networks or secondary selective networks may require multiple boxes fed by two or more transformers to maintain continuous power .

Voltage Drop and Cable Length: Secondary distribution boxes should be located close to the load to minimize cable lengths and voltage drop. This reduces the need for oversized conductors and improves efficiency .

Regulatory Compliance: Installation must comply with NEC and local codes. For sub-panels, neutral and ground bars must be separated, and each circuit must be clearly labeled. Panels should not exceed 80% of their rated capacity to allow for future expansion .

Practical Guidelines

- **Residential Systems:** Typically, one secondary distribution box per building is sufficient if the load is within the panel rating. Larger or multi-metered buildings may require multiple boxes to distribute load evenly .
 - **Commercial or High-Density Areas:** Multiple secondary distribution boxes are installed based on load concentration, redundancy requirements, and transformer capacity. Each box may serve a specific floor, section, or load type.
 - **Substation Design:** In secondary selective substations, two or more secondary distribution boxes may be used, each fed by separate transformers, with tie breakers to allow load transfer in case of failure .
- Summary:** The number of secondary distribution boxes is not fixed but is determined by load requirements, system configuration, redundancy needs, and compliance with electrical codes. Proper planning ensures safe, reliable, and efficient power distribution while allowing for future expansion.

Article Content

SEC DISTRIBUTION CONSTRUCTION STANDARD

4.7 The upper edge of the cable trench shall be 50 mm wider than the standard width of the trench to form a groove of 25 x 10 mm all

Choose & Install Low Voltage Distribution Boxes Practical Guide

Select and install low voltage distribution boxes . This guide covers sizing, mounting, cable management, maintenance

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

