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White Paper #2301

New NEC Provisions Will Make Power Distribution Buildings Larger

Published: 12/18/2023

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To Our Most Valued Customers

RE: New NEC provisions will make power distribution buildings larger

In keeping with our commitment to our valued partners for custom-engineered power distribution products, Powell's PCR®-Code Compliance team focuses on keeping our standards in compliance with applicable laws and regulations, across different states and jurisdictions. Powell takes pride in delivering superior products that are engineered to our customers' specifications, and we want to ensure our customers and suppliers are aware of latest and upcoming regulatory changes that directly affect their projects. Our code compliance team continuously monitors codes and standards enforced by state jurisdictions and has identified some important ongoing changes that affect PCR® design.

The latest National Electrical Code (NEC), published in 2023, includes updated requirements for equipment egress clearances. There have been modifications to the code from the 2017 edition to the 2020 edition, and subsequently some additional changes in the 2023 edition. These new requirements affect how the space around electrical equipment shall be considered, affecting both the design and cost of PCR®s housing electrical equipment.

Egress in NEC 2017 and NEC 2020

While the 2017 edition of NEC did not make a specific mention of egress pathways, the 2020 edition of NEC requires that a minimum 24-in clear pathway be maintained in front of all large electrical equipment (6ft-wide equipment and wider) measured with the equipment doors open at 90 Degrees.

In most cases, electrical working clearances from NEC Table 110-34 will still control the design for medium voltage equipment > 1,000v; however, in the case of equipment facing other equipment, the 24-inch clear pathway (110.33) could result in larger spacing between the lineups.

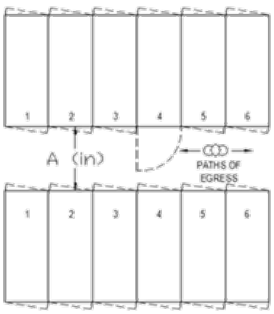
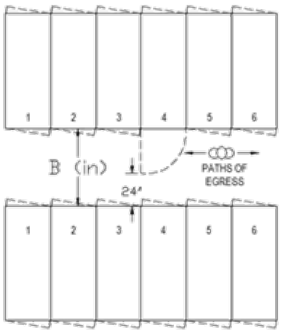
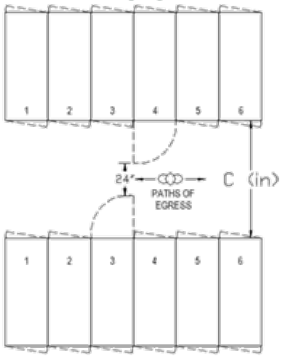
For cases where two equipment lineups are facing each other, the NEC 2020 does not specify that the 24-inch minimum clearance be maintained with the front access doors concurrently open on each side of the PCR® aisle.

Egress in NEC 2023

This new edition clarifies that all equipment doors should be considered open when calculating the 24-inch clear pathway. “Open equipment doors shall not impede access to and egress from the working space. Access or egress is impeded if one or more simultaneously opened equipment doors restrict working space access to be less than 610 mm (24 in.) wide and 2.0 m (6½ ft) high.” Additionally, while the requirement in previous editions applied only to large electrical equipment, the updated requirement applies to equipment of any size and voltage class, irrespective of the size or length of the lineup.

The chart below provides worst-case-scenario required aisle widths for the case of equipment facing equipment for different voltage classes in compliance with the 2017, 2020, and 2023 edition of the NEC. There is a significant increase in required aisle width from the 2020 to the 2023 edition of the code, which is driven by the requirement that equipment doors should be considered simultaneously opened.

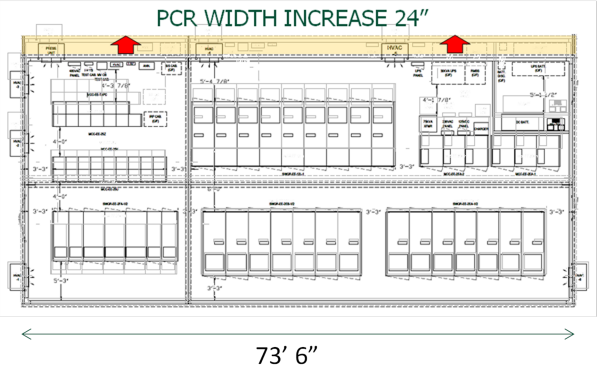
Table 1 - Worst-case scenario required aisle width for equipment facing equipment.[1]

Equipment Class	NEC 2017 A (in)	NEC 2020 (one door) B (in)	NEC 2023 (both doors) C (in)
			
480 V MCC (24” Max)	48	48	72
480 V SWGR (34” Max)	48	58	92
5kV SWGR/MCC (36” Max)	60	60	96
15kV SWGR	72	72	96
27kV & 38kV SWGR (54” Max)	108	108	132

[1]The table assumes two facing lineups having the same type of equipment and rating.

Compliance with this new requirement will generally result in an increase of the overall floor size of a PCR® or of any other type of building that houses electrical switchgear. The below figure shows an example of a PCR® layout and how the overall dimensions could impact the size of the building, in order to maintain compliance with the NEC provisions.

Code	PCR Width	Additional Floor Space
NEC 2017	33 ft	0
NEC 2020 Single Door	34 ft	73 ft^2
NEC 2023 Both Doors	35 ft	146 ft^2



As of December 2023, a few states have adopted 2023 edition of NEC, twenty states have adopted the 2020 version of NEC, while others are still enforcing older editions of the NEC codes.

Because upcoming legislative changes across jurisdictions can happen quickly and with short notice, Powell recommends that our valued customers evaluate code compliance early in the design and planning stages, prior to purchasing any PCR® from Powell or any other building manufacturer. A design that does not comply with State mandated legislation could put a project at a halt, and result in costly delays or even a complete redesign and manufacturing of the building.

Powell is able to assist our valued customers in determining how a new project would be designed to comply with any adopted state or local jurisdiction’s Building, Energy, and Fire Code changes. Please contact your local Powell representative for any questions you may have on latest code changes and building code compliance for your next project.

Powell Industries, Inc. has been designing, manufacturing and packaging equipment and systems for the distribution and control of electrical energy for over seven decades. Headquartered in Houston, Texas, Powell is a customer- focused, technology-driven, and solutions-oriented company offering single point sourcing to our customers, no matter how diverse the project.