Thought leadership
Tech brief

Understanding National Electrical Code (NEC) six disconnect rule for switchboards and panelboards

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Executive summary—What is the NEC® six disconnect rule?

Generally, two locations within the power distribution system are important and play a unique role for the electrical workers on the field, service entrance equipment, and the equipment directly on the secondary of a transformer. The six disconnect rule per the 2017 version of NEC stated "The service disconnecting means for each service permitted by 230.2, or for each set of service-entrance conductors permitted by 230.40, Exception No. 1, 3, 4, or 5, shall consist of not more than six switches or sets of circuit breakers, or a combination of not more than six switches and sets of circuit breakers, mounted in a single enclosure, in a group of separate enclosures, or in or on a switchboard or in switchgear." This simply stated that only six breakers or disconnect means were permitted for branching out from a service.

To ensure more safety, NEC came up with a 2020 version of the six disconnect rule stating "Each service shall have only one disconnecting means unless the requirements of 230.71(B) are met."

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NEC 230.71 (B) Two to six service disconnecting means

Two to six service disconnects shall be permitted for each service permitted by 230.2 or for each set of service-entrance conductors permitted by 230.40. Exception No. 1, 3, 4, or 5. The two to six service disconnecting means shall be permitted to consist of a combination of any of the following:

- Separate enclosures with a main service disconnecting means in each enclosure
- Panelboards with a main service disconnecting means in each panelboard enclosure
- Switchboard(s) where there is only one service disconnect in each separate vertical section where there are barriers separating each vertical section
- Service disconnects in switchgear or metering centers where each disconnect is located in a separate compartment

Notes:

Metering centers are addressed in UL® 67, standard for panelboards information.

Examples of separate enclosures with a main service disconnecting means in each enclosure include but are not limited to motor control centers, fused disconnects, circuit breaker enclosures, and transfer switches that are suitable for use as service equipment.

Eaton service entry panelboards are equipped with main breaker, before they get distributed. A similar MLO may not be used for service entry per norms.

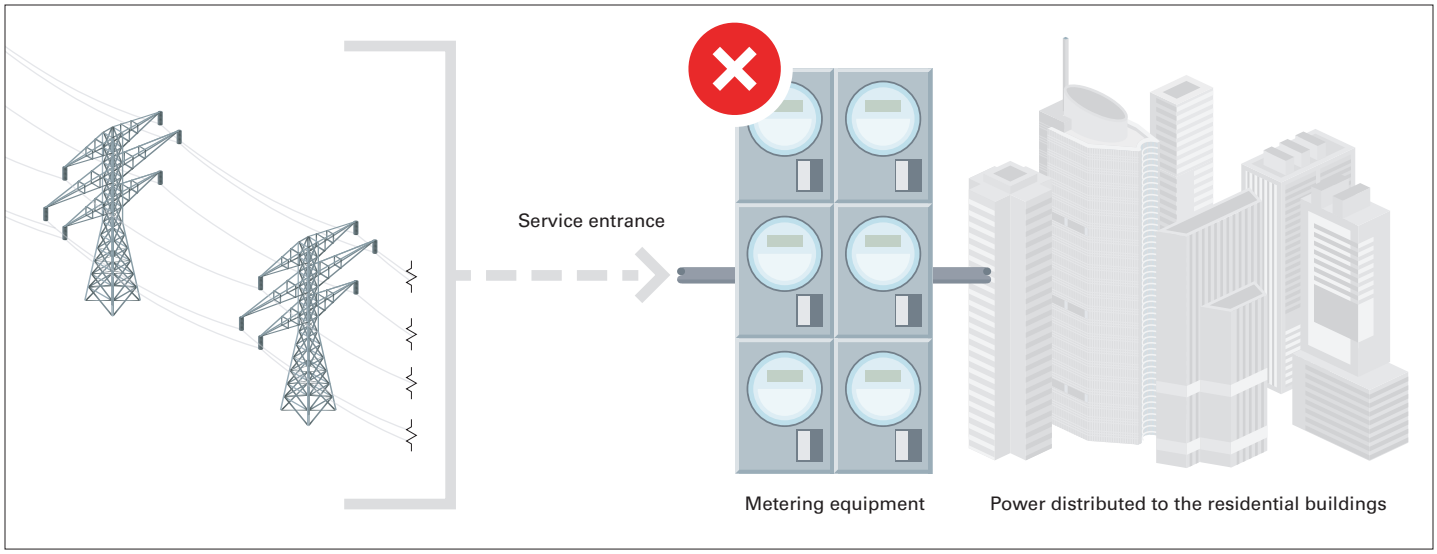

Figure 1. Service entrance having six disconnects per NEC 2017; this is no longer allowed per the 2020 NEC

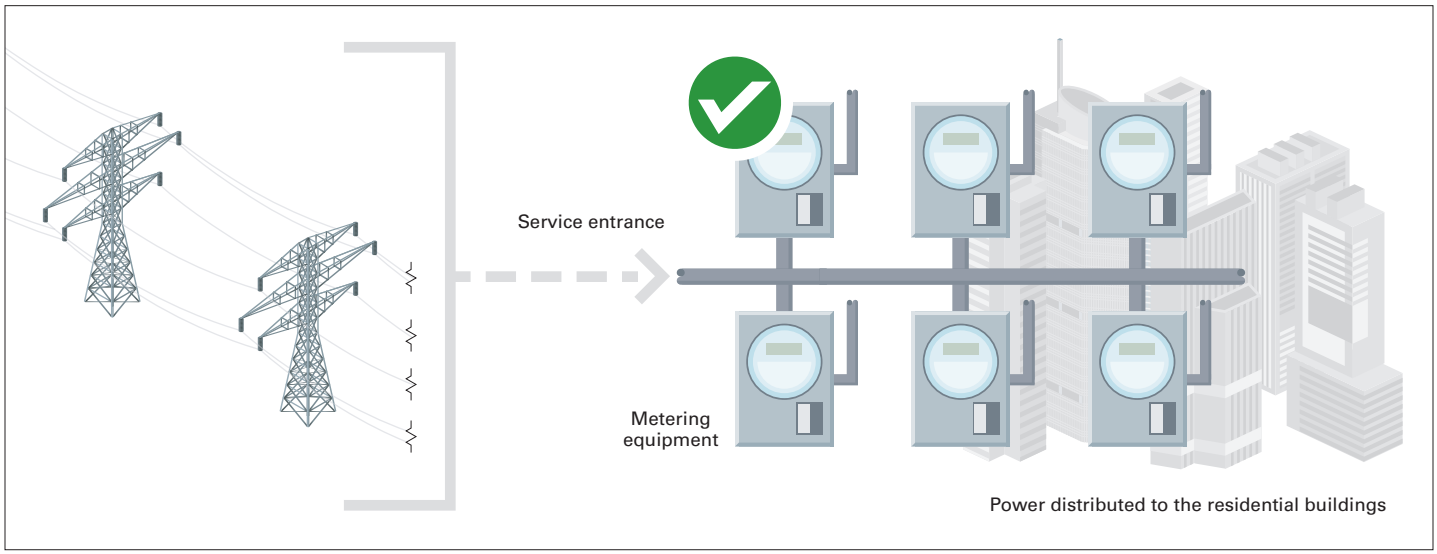

Figure 2. NEC 2020 requires separate enclosures

Application summary

The six disconnect rule has been altered to no longer allow a single enclosure to house the grouped disconnects. The 2020 NEC requires separation as to supply each respective disconnect with its own individual enclosure, vertical section, or compartment depending on the application. The intention of this modification is to decrease the likelihood where personnel or tools could come in contact, inadvertent or otherwise, with an energized entity of the system while performing maintenance on a single disconnect.

Safety comes first.

Abide with the NEC guidelines.

For more information, contact your local representative or visit

Eaton.com/panelboards

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