



**State of Wisconsin**  
**DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES**  
**ELECTRICAL PROGRAM**

## **FREQUENTLY ASKED QUESTIONS**

### **Question 1:**

The 2011 NEC requires a grounded (neutral) conductor at each switch location. There are two exceptions. Does the second exception permit "fishing" a cable from a basement or attic into the switch box at a future date? What about closing up a basement ceiling at a future date? Do we then need to "fish" cables with neutrals up to all switch locations?

### **Answer:**

The new requirement is found in the 2011 NEC, Article 404 Switches, (C) Switches Controlling Lighting Loads. The requirement states:

"Where switches control lighting loads supplied by a grounded general purpose branch circuit, the grounded circuit conductor for the controlled lighting circuit shall be provided at the switch location."

NEC 404.2(C) Exception (2) permits the grounded (neutral) conductor to be omitted from a switch enclosure where: "Cable assemblies for switches controlling lighting loads enter the box through a framing cavity that is open at the top or bottom on the same floor level, or through a wall, floor, or ceiling that is unfinished on one side."

A neutral conductor is not required at a switch box where access to the box within the framing cavity is practical from either above or below. Practical means using normal installation techniques to fish an additional cable into the box after initial construction. A switch box installed under any permitted exception shall not be required to have a grounded conductor added at a later date should the unfinished side of the wall, floor, or ceiling be finished or otherwise altered by changes to the building construction.

### **Question 2:**

The 2011 NEC under 250.110 exception 2 states that: "Distribution apparatus such as transformers and capacitor cases, mounted on wooden poles at a height of 8' above ground or grade level shall not be required to be grounded."

How do we argue that? If this is allowed it would mitigate the problem of the two services on the farm being tied together inadvertently. Let me know what your thoughts are I would appreciate additional input.

### **Answer:**

No. NEC 250.30(C), 250.30(A)(2), and 250.110

Isolation transformers are not to be allowed. If there was a fault on the primary, there would be no way for the fault to clear and it would energize the GEC, neutral, supply side bonding jumper, and equipment grounds downstream. According to the figure below, if the fault occurs on H2 as indicated by orange flash on the drawing, all lines and equipment highlighted in red would become energized with no way to clear the fault. I think we could use 250.110 to require the equipment ground to be ran with the primary.

