

Stephen Thornton, Chief Electrical Inspector

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Question of the Month

Why do transformers hum? See the correct answer on Page 2.

Note From the Chief

It is my pleasure to announce that Dennis Straley has been appointed to the new Technical Specialist position and will be taking on the duties of the statewide electrical training coordinator. His appointment began October 1. Dennis is a certified ME01 master electrician and has been with the department for nine years. He has held positions as an electrical inspection supervisor in Tukwila and Bellevue, electrical inspector, and safety and health specialist for the division of occupational safety and health. He has been a valuable contributor to the current new inspector training and has been involved since the inception of the program. I look forward to working with Dennis to help further promote the growth and training of both our existing and new inspection staff. In the last 2 years, due to restoration of positions that were lost in the recent recession, and the replacement of those leaving the department, we have added 35 new staff. In addition, we are looking forward to adding more in the future to help provide better service to our customers as inspection and compliance workloads continue to increase with the recovering economy.

As Chief, I see the Electrical Program growing and becoming more efficient through use of our [LEAN](#) process, which helps us identify and eliminate waste, and increase efficiency. We will also be looking to continue to put pressure on the true underground economy as we do our daily inspections and conduct our ongoing [E-CORE](#) sweeps. Our focus as we go forward will be on working closely with the construction industry, stakeholders and neighboring inspection AHJs. I will be looking to create an environment of cooperation and trust between the Department and our stakeholders in a joint effort to combat the true underground economy while keeping the construction industry safe and jobs moving forward.

Inspector Training – No inspections on December 9th and 10th

There will be no inspections scheduled in L&I's jurisdiction on December 9th and 10th. The department will be holding a two day training for all L&I inspectors. We regret the inconvenience this may cause to our customers who rely on timely inspections. We have found that a statewide approach to training improves consistency and is the most efficient use of our limited training budget. Please let your customers know and plan for your inspections accordingly.

Engineering Evaluations

The department is pleased to announce that there are now six engineers approved to perform engineering evaluations of industrial utilization equipment and industrial control panels, as defined in [WAC 296-46B-903](#). The engineering evaluation is used to determine that equipment conforms to applicable electrical standards. Engineering evaluations were created to allow customers an alternative method to get their industrial equipment approved for use. If the evaluating engineer determines that the equipment meets the applicable standard(s), the engineer will place an approval label on the equipment. The electrical inspector will accept the approving engineer's label as verification that the equipment is appropriate for use.

The contact information for all [approved engineers](#) is located on the electrical program website and updated regularly as individual engineers are approved. Following is the contact information for the currently approved engineers.

Safety Tip of the Month

Your job as an electrical professional is very important to the safety of Washington's citizens. According to the U.S. Fire Administration, for the most recent year's data, [residential building electrical malfunctions](#) caused 26,800 fires, 280 deaths, 1200 injuries, and caused an estimated \$1,021,300,000 in losses.

Never cut corners when it comes to safe wiring practices. Make sure your electrical installations are permitted and inspected, and meet all minimum code requirements.

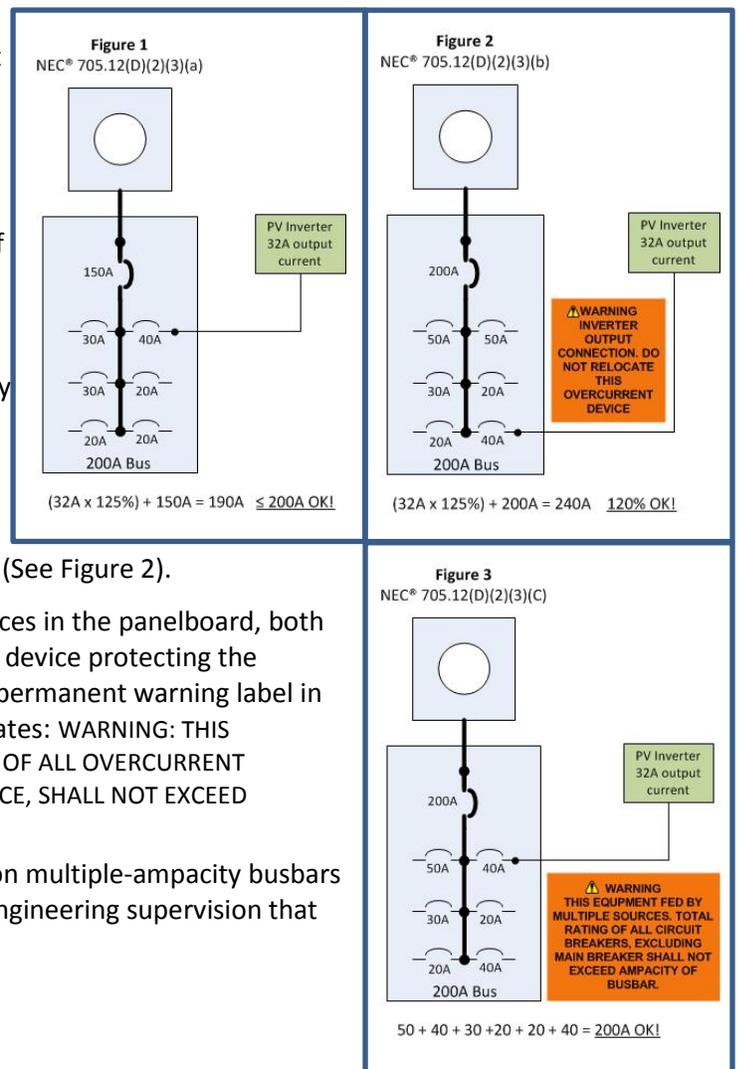
- LDW Engineering, Leonard D. Whalen, P.E. 425-891-9926 leonard.whelen@gmail.com
- Parker Messana & Associates, Jacob V. Rovinsky, P.E. 253-926-0884 www.pma-eng.com
- Picatti Bros. Inc., David J. Picatti, P.E. 509-248-2540 davidp@picatti.com
- Picatti Bros. Inc., James M. Smith, P.E. 509-248-2540 jsmith@picatti.com
- Power Science Engineering, C. (Sank) Sankaran, P.E. 206-306-6745 www.power-sci.com
- Talos Engineering Inc., Jason Merrick, P.E. 509-893-5799 ext. 1001 jmerrick@talosengineering.com

Interconnected Electric Power Production Sources – Point of Connection Part 3, Busbar Connections – NEC® 705.12(D)(2)(3)

This is the third article in a series about point of connection requirements for interconnected electric power production sources. [October's article](#) discussed supply side connections. [November's article](#) discussed connections to feeders. In this edition, we will discuss methods for making interconnections to busbars.

When the output of a utility interactive inverter is connected to a load center or panelboard, the possibility of overloading exists because two sources of power are supplying the same busbar. To avoid overloading busbars, one of the following four methods in NEC® 705.12(D)(2)(3) must be used to determine the ratings of busbars in panelboards that have both utility and alternate sources connected to them:

- 705.12(D)(2)(3)(a) – 100 percent rule: The sum of 125 percent of the inverter(s) output circuit current and the rating of the overcurrent device protecting the busbar shall not exceed the ampacity of the busbar (See Figure 1).
- 705.12(D)(2)(3)(b) – 120 percent rule: Where the inverter output is connected on the opposite end of the busbar from the utility supply, the sum of 125% of the inverter(s) output circuit current and the rating of the overcurrent device protecting the busbar shall not exceed 120 percent of the ampacity of the busbar. A permanent warning label in accordance with NEC® 110.21(B) shall be installed adjacent to the backfed breaker from the inverter that states: WARNING: INVERTER OUTPUT CONNECTION; DO NOT RELOCATE THIS OVERCURRENT DEVICE (See Figure 2).
- 705.12(D)(2)(3)(c) – The sum of all overcurrent devices in the panelboard, both load and supply devices, except for the overcurrent device protecting the busbar shall not exceed the rating of the busbar. A permanent warning label in accordance with 110.21(B) shall be installed that states: WARNING: THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR. (See Figure 3)
- 705.12(D)(2)(3)(d) Connections shall be permitted on multiple-ampacity busbars or center-fed panelboards where designed under engineering supervision that includes fault studies and busbar load calculations.



Answer to Question of the Month:

Because they can't remember the words. 🎵 🎶 🎵 🎶

Best wishes to all for a safe and happy holiday season!

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