Question of the Month – When sizing grounded service entrance, feeder, or branch-circuit conductors, it is important to know what type of load is being supplied by the conductors to prevent overheating and damage to conductors and equipment. An informational note in NEC 220.61(C) states A 3-phase, 4-wire, wye-connected power system used to supply power to nonlinear loads may necessitate that the power system design allow for the possibility of high harmonic neutral conductor currents. What are nonlinear loads? See correct answer on Page 2.

Rule Update – WAC 296-46B Revisions

The process for revising WAC 296-46B is underway. The department accepted revision proposals and applications to serve on the Technical Advisory Committee (TAC) in September and October. The August 2018 Special Edition newsletter gave details about how to be involved in the rulemaking process to update the electrical rules.

We are in the process of compiling proposals and selecting members for the TAC committee, which will meet December 5 in Tacoma. If you are selected to serve on the TAC committee, you will be notified shortly, and will receive all proposals to review prior to the meeting where the department will receive advice from the TAC committee. Proposals will also be posted on the Rule Development page of our website.

The passage of two laws affecting electrical stakeholders require rulemaking. They are:

- **Substitute Senate Bill 6126** requires completion of an apprenticeship to qualify for the journey-level electrician exam beginning July 1, 2023.
- **Engrossed Substitute House Bill 1952** allows city electrical inspection jurisdictions to enforce electrical licensing, certification, and trainee supervision laws.

As required, L&I provided public notice about this rulemaking by filing a CR101 in September. As the proposal process moves forward, there will be opportunities to provide written comments or present testimony at public hearings. See the Rule Development page of our website for more information.

If you have any questions, please contact Alicia Curry, at 360-902-6244 or Alicia.Curry@Lni.wa.gov.

Exceptions Offered for Untimely Affidavits of Experience

We have seen too many affidavits of experience denied because they were turned in later than allowed. We have heard you; we understand the impacts. We are improving our communication about requirements and offering a one-time exception as follows:

- Affidavits for legally obtained hours worked on or after June 30, 2014 are eligible for consideration if received before July 1, 2019. Hours worked before June 30, 2014, are not eligible.
- Beginning July 1, 2019, trainees must turn in affidavits of experience for the prior 2 years within 180 days from the date when their certificate expires. Untimely affidavits will be denied.

Safety Tip of the Month

Portable generators are useful during power outages and on construction sites. Be aware of the dangers of improper use of portable generators. One of the most common dangers associated with portable generators is carbon monoxide poisoning.

Make sure your generator is in a well-ventilated outdoor area. Never use a generator in an attached garage, even with the door open.

Place generators so that exhaust fumes will not enter the building through windows, doors, or other openings.

You can download a helpful generator safety publication from the National Fire Protection Association [here](http://www.ElectricalCurrents.Lni.wa.gov).
The requirements above do not apply to hours worked while a registered apprentice in a recognized electrical construction trade apprenticeship program.

For questions about this opportunity, please email us at ElectricalProgram@lni.wa.gov, or give us a call 360-902-5269.

**Residential Specialty Scope of Work — Was Three Stories for Multifamily - Now Six – Why?**

Dwellings located over other occupancies like commercial spaces and public parking garages are common. Most are five over two’s - five stories of dwellings over 2 stories of commercial space and parking. Often, O2 residential contractors, electricians, and trainees are able to wire the dwellings if nonmetallic-sheathed cable is permitted.

The NEC once restricted the use of nonmetallic-sheathed cable to three stories. This is why the O2 residential specialty in WAC 296-46B-920(2)(a) had a limit to match. Now, the NEC permits use by Building Construction Types. There are five Building Construction Types - Types I-V. The higher the number, the less resistance to fire. The NEC permits use of nonmetallic-sheathed cable in Building Construction Types III, IV, and V.

Generally, nonmetallic-sheathed cable is not permitted in a building if a firefighter cannot get to the highest floor with a 75-foot ladder. Taller buildings are required to be more fire resistant. Building Construction Type I usually applies to tall buildings. Nonmetallic-sheathed cable is not permitted in Types I and II.

To determine Building Construction Types, rely on the building plans approved by a local building official. Approved plans include an architectural analysis that calls out Building Construction Types. It is normal for buildings to use several Building Construction Types.

To determine if the nonmetallic-sheathed cable is within the O2 residential scope of work, look at the building plans. Are there no more than six stories of multifamily dwellings of Types III, IV, or V construction above grade or above Types I or II construction? Is the local building code going to allow nonmetallic-sheathed cable? If so, multifamily sections of the building are within the O2 residential scope of work. Scope is limited to installation of non-metallic sheathed cable, except for services and/or feeders, exposed installations where physical protection is required, and for wiring buried below grade. Ancillary areas, equipment, and systems directly associated with the functionality of the residential unit areas are within the O2 residential scope as allowed in WAC 296-46B-920(2)(a)(i).

Hourly rated building separations – walls, floors, and ceilings – between Building Construction Types or types of occupancies often establish scope of work boundaries. A typical five over two has an hourly-rated horizontal building separation between the second and third stories. If you are a O2 residential specialty contractor, electrician or trainee, your scope of work limits you to working within the multifamily occupancy - meaning no work whatsoever in other occupancies. This means electricians certified to work in all occupancies take over any wiring passing between occupancies. They also install any wiring and equipment that is not ancillary to the dwelling occupancy, like that described in WAC 296-46B-920(2)(a)(ii).

If you have questions, about what is included or not included in a scope of work, send us an email at ElectricalProgram@Lni.wa.gov or give us a call at 360-902-5249.

**Ugly Picture:** If viewing this document online, click on the picture to open a larger image. While inspecting for a homeowner, an inspector found this dangerous installation using energized service conductors for temporary power. The inspector contacted the utility and power was disconnected.

**Answer to Question of the Month:** NEC 100 – Nonlinear loads:
A load where the wave shape of the steady-state current does not follow the wave shape of the applied voltage. Informational Note: Electronic equipment, electronic/electric discharge lighting, adjustable-speed drive systems and similar equipment may be nonlinear loads. These loads may cause higher current to flow in the grounded (neutral) conductor than ungrounded conductors causing potential overheating and damage to equipment and conductors. Certain installations may require grounded conductors to be larger than ungrounded conductors to prevent overheating – see NEC 310.15(A)(3).