

**Question of the Month** – You are installing a feeder connected to an overcurrent device that does not have a listed continuous load rating. You have calculated the load for the feeder at 733,200 volt-amps, of which 388,800 is continuous load. What is the minimum ampacity for the 480V 3-phase feeder ungrounded conductors to supply this load? *See correct answer on Page 2.*

## You Can Help Make Electrical Rules

You can submit a proposal or apply to serve on the Technical Advisory Committee (TAC). See the [August 2018 Special Edition](#) newsletter for details about how you can be involved in the rulemaking process to update the [WAC 296-46B](#) electrical rules.

From September 5, through October 19, 2018, we are accepting rule change proposals and applications for membership on the TAC committee. Complete details are in the August 2018 Special Edition newsletter.

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 last month. 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 about how to participate, and to obtain a rule proposal form.

If you have any questions, please contact Alicia Curry, at 360-902-6244 or [Alicia.Curry@lni.wa.gov](mailto: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.  
This exception applies to all affidavits received through June 30, 2019. We are reviewing untimely affidavits and crediting hours accordingly.
- Beginning July 1, 2019, trainees must turn in affidavits of experience for the prior 2 years within 180 days from of the date when their certificate expires. Untimely affidavits will be denied.

The requirements above do not apply to hours worked while a registered apprentice in a recognized electrical construction trade apprenticeship program.

If you have questions about this opportunity, please email us at [ElectricalProgram@lni.wa.gov](mailto:ElectricalProgram@lni.wa.gov), or give us a call 360-902-5269.

### Safety Tip of the Month

As an electrical professional, be alert for electrical hazards on the jobsite that may injure or kill unsuspecting co-workers. Never leave an energized electrical panel without a cover. Make sure receptacles used for temporary power are GFCI protected, and be on the lookout for improper temporary wiring splices and damaged cords or tools.

## One-Line Diagram of Feeders Required For Inspection of Most Large Jobs

Feeders rated over 400 amperes (of any voltage), and those rated over 600 volts require a detailed one-line diagram to be available to the inspector during the first inspection. If not stamped by a professional engineer, the diagram must be signed and dated by the project owner (if they are doing the work) or the assigned administrator or master electrician of a contractor doing the work.

WAC 296-46B-215(1) *Other than plan review projects, the installer must provide a one-line diagram showing the service and feeder details for the project before the initial inspection can be approved for all non-dwelling services or feeders:*

- (a) Larger than 400 amperes; or
- (b) Over 600 volts.

*The diagram must be signed and dated by the project owner if the owner is doing the work, the assigned administrator or master electrician if an electrical contractor is doing the work, or stamped with an engineer's mark and signature who is registered under chapter 18.43 RCW. The diagram must show:*

- (c) *All services including: wire size(s), wire type(s), service size(s) (e.g. voltage, phase, ampacity), overcurrent protection, available symmetrical fault current at the service point, equipment short-circuit rating, total load before and after demand factors have been applied including any demand factors used, and a panel schedule where multiple disconnecting devices are present; and*
- (d) *All feeders including: wire size(s), wire type(s), feeder size(s) (e.g. voltage, phase, ampacity), overcurrent protection, total calculated load before and after demand factors have been applied including any demand factors used, and a panel schedule(s) where multiple disconnecting devices are present.*

*If the installer deviates, in any way, from the service/feeder design shown on the diagram, a supplemental diagram must be supplied to the inspector showing the most recent design before inspection can proceed. Load reductions and moving branch circuit locations within a panelboard do not require a supplemental diagram. Written documentation must also be provided to the inspector that the supplemental diagram was provided to the project owner at the time of submission to the inspector.*

*The diagram must be available on the job site during the inspection process.*

## System Design Review – Required for all PV and Wind Electric Systems

Just like the requirements for one-line diagrams for services and feeders, wind turbine and solar photovoltaic (PV) installers must provide detailed design documents when requesting an inspection. [WAC 296-46B-690\(3\)](#) and [694](#) require a system design review to be available to the inspector at the time of the first inspection.

WAC [296-46B-100](#) defines "System design review" as *a set of design documents that include the manufacturer's installation information, a legible one-line diagram of the system design, and calculations used to determine voltage and current within the system. The one-line diagram must show the system equipment, devices, overcurrent protection, conductor sizing, grounding, ground fault protection if required, and any system interconnection points. The review must be available to the inspector during all inspections.*

**Ugly Picture:** *If viewing this document online, click on the picture to open a larger image.*

How many code violations can you spot? This is a new service for a recreational vehicle installed by a property owner and requested for inspection. One of our newer inspectors inspected it. In an email message to me, he said, "this is the first job I've inspected that absolutely would have self-destructed upon energization." After the inspection, the owner hired a licensed electrical contractor to finish the job correctly. In this state, property owners without the slightest idea of safe wiring practices may perform any wiring on property they own. Luckily, the power company did not energize it without inspection.

**Answer to Question of the Month:** 1000 amperes – NEC 215.2(A)(1): Total load = noncontinuous load + 125% of continuous load.  $(733,200 - 388,800) + (388,800 \times 1.25) = 830,400$  volt-amperes; 3 phase current = volt-amperes  $\div (V \times \sqrt{3})$ ;  $830,400 \div (480 \times 1.73) = 1000$



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<http://www.ElectricalCurrents.Lni.wa.gov>

Electrical Section Internet Address: <http://www.ElectricalProgram.Lni.wa.gov/>

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