

ELECTRICAL CURRENTS

A Newsletter from the Office of L&I Chief Electrical Inspector Wayne Molesworth

October 2022

Note from the Chief—Faith Jeffrey has Retired

I would like to personally thank Faith for her years of service and contributions to the Electrical Program.

Hired in 1990, she has been with L&I for over thirty years. In 1996, she came to the electrical program to help implement a new law that created an audit program. She was instrumental in establishing the program and was its supervisor until retirement.



Faith made many contributions; when legislative approval created the E-CORE team in 2005, leaders chose Faith to head it up. Her vast knowledge of program history and the electrical laws was a great

resource for our staff and legal team.

Faith and her husband are fulfilling a long-held desire to be snowbirds. They will keep their home in Lacey near grandkids and have a home in Texas to be with grandkids there who are involved in sports.

We all wish her well in this new chapter of her life.

Garage Receptacle Circuit – NEC 210.11(C)(4)

For dwelling units with attached and detached garages with electric power, the NEC 210.11(C)(4) requires a 120 volt 20 ampere circuit to supply garage receptacle outlets. It can also supply readily accessible outdoor receptacles. This circuit can supply no other outlets, just cord and plug connected equipment, no hardwired lighting, etc.

Locations of receptacles on this circuit must be as required by NEC 210.52(G)(1). Each vehicle bay must have at least one receptacle located not more than 5 ½ feet above the floor. As long as you meet this requirement, you are not restricted from installing receptacle outlets above that height inside the garage.

Requirements above do not apply when garage spaces are not attached to an individual dwelling unit of a multifamily dwelling.

Question of the Month:

What is the allowable ampacity of four 12-2 with ground nonmetallic-sheathed (Type NM) cables run through a single hole in wood framing that is to be sealed with foam insulation? All cables serve single-phase loads supplied by a 120/240-volt single-phase system.

See correct answer on page 2.

Safety Tip of the Month

As an electrical professional, be alert for electrical hazards on the jobsite that may injure or kill unsuspecting coworkers.

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.

We have the skills and knowledge to help keep people safe from electrical hazards on our job sites.

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Select Licensing & Permits, then Electrical

Apprenticeship Requirement Rulemaking Update

The Washington State Department of Labor and Industries (L&I) has posted a draft proposed rule related to journey level electrician examination qualifications after July 1, 2023. The current rule requires the completion of an apprenticeship program to qualify for the journey level (01) exam as of July 1, 2023, based on a change to the electrical laws under 2018's Substitute Senate Bill (SSB) 6126. Under the draft proposed rules, L&I is exercising the discretion provided in the law to allow temporary alternative pathways to qualify for the journey level exam through a "good cause" exemption.

The draft proposed rule identifies alternative pathways that are considered sufficient experience and training to qualify a candidate to take the journey level (01) exam under the "good cause" exemption. The latest version of the draft rule is now available online at the agency's [Electrical Rule Development webpage](#).

We welcome your input on this draft proposal. Please send input to Alicia Curry at Alicia.Curry@Lni.wa.gov. All preliminary input must be received by Wednesday, October 26, 2022. All stakeholders will also have the opportunity to provide comments during the public comment period. We will provide updates on the filing, when the public comment period begins, and when the public hearing will take place.

The agency is planning to file the CR-102 Proposed Rulemaking in late 2022.

We recently updated the [Electrical Apprenticeship webpage](#). There, you will find information for trainees and their employers and a list of registered apprenticeship programs.

For questions regarding SSB 6126, email SSB6126Implementation@Lni.wa.gov.

Circuits for Onsite Sewage Disposal Systems – WAC 296-46B-501(8)

For onsite systems, pumps and alarms must be on separate branch circuits. Sometimes systems have a disconnect for the pump motor and a separate high level alarm. Each of which must be on a separate circuit.

When systems have control panels that have overcurrent devices that establish separate branch circuits for the pump motor and alarm, there is no requirement to supply the panel with more than one circuit unless required by the manufacturer's instructions. For proper OCPD coordination, the supply circuit OCPD should be larger than any OCPD in the control panel.

If a system pumps sewage off of the property to a municipal sewage system, it is not an onsite system, WAC 296-46B-501(8) does not apply.

Answer to the Question of the Month: 20 Amperes. When more than two NM cables containing two or more current-carrying conductors are installed in the same hole in wood framing that is to be sealed with insulation, NEC® 334.80 requires the ampacity of each conductor to be adjusted in accordance with Article 310.

The ampacity of conductors of NM cable is based on the 90° C ampacity column of Table 310.16. For #12 conductors rated at 90° C, the ampacity is 30 amperes. Table 310.15(C)(1) requires the ampacity to be adjusted by 70 percent for this installation based on 8 current-carrying conductors, leaving a corrected ampacity of 21 amperes. This exceeds the 60° ampacity, so the final ampacity is 20 amperes.

Picture of the Month: An inspector found this incomplete raceway system when inspecting a new circuit added to the panel. When electrical inspectors find things like this, they issue a correction notice to the property owner.



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ELECTRICAL CURRENTS

A Newsletter from the Office of L&I Chief Electrical Inspector Wayne Molesworth September 2022

Question of the Month

True or False?

The Department of Labor and Industries may change the duties of the electrical administrator or master electrician described in [RCW 19.28.061](#) by following the formal WAC development process in the Administrative Procedure Act (Chapter 34.05 RCW). *See the correct answer on Page 2.*

July 1, 2023 Apprenticeship Requirement Rulemaking Update

In last month's newsletter, we announced the start of a rulemaking for apprenticeship requirements beginning July 1, 2023. Our intent is to use the discretion given to our agency for the next two years by the Legislature in SSB 6126, to continue to help the electrical industry while implementing the bill.

Some specific areas we are considering addressing through rulemaking include:

- How to provide for full consideration of trainee hours;
- How to recognize other existing paths toward EL01 exam qualification in addition to apprenticeship completion (i.e. military service recognition; state-licensed electricians from other jurisdictions; electricians with proof of 16,000 hours of experience; and recognition of individuals with 4,000 EL01 industrial/commercial hours lawfully accrued prior to July 1, 2023);
- How to address the period between completion of an apprenticeship program and passage of the exam.

This is possible through the "good cause" exemption found in [RCW 19.28.195](#). The department is still working with stakeholders to find the best path forward using and defining "good cause".

The rulemaking affects [WAC 296-46B-945](#). L&I anticipates filing the proposed rule in late 2022.

If you have questions please email them to SSB6126Implementation@LNI.WA.GOV

Learn more about the rulemaking in the links below.

[CR-101 Preproposal](#)

[Trades & Licensing Rules Under Development](#) (listed alphabetically) to find electrical safety standards, administration, and installation.

[Current electrical rulemaking.](#)

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Safety Tip of the Month

Back-to-school season is here again! Be on the lookout for children not only in school zones, but also in residential areas, playgrounds, and parks. Children are unpredictable and often take risks, ignore hazards, and fail to look both ways before crossing the street.

Give them a brake!

When is Existing Wiring Required to Comply with Current Codes?

Remodeled and repaired structures often involve changing only a portion of the wiring. [WAC 296-46B-010\(14\)](#) gives direction for these existing installations. All previously inspected wiring left untouched and in good condition will be considered acceptable when installed in accordance with the code in force at the time of its initial installation subject to the following considerations:

- The original use and occupancy class of the building or structure remains unchanged.
- Structures damaged by fire may require closer examination to determine suitability of the existing wiring.
 - ⇒ Over-heated insulation will be brittle and will flake off when slightly bent.
 - ⇒ Close examination may reveal physical damage by heat and structural collapse .
- Modifications to knob-and-tube wiring must be in accordance with [WAC 296-46B-394](#).
- Load centers will be inspected for overheating, grounding and bonding, and proper overcurrent protection.
- The grounding electrode system must be intact, and if the service is replaced, must meet current requirements.
- There are some specific NEC® requirements for upgrading existing wiring (e.g., 210.12(B) AFCI protection, 406.4 (D) receptacle replacements).

As always, inspectors and electricians must use their training and judgment when determining whether or not wiring must be updated.

Trainee or Apprentice—What is the Difference?

There are two types of trainees. Only one is an apprentice.

An apprentice is a trainee who is registered in a Washington State approved electrical apprenticeship program. Apprenticeship programs are formal training regulated by the [Washington State Apprenticeship and Training Council](#). Typically, employers, employer associations, and labor unions sponsor apprenticeship programs.

If you are trainee who is not registered with an apprenticeship program, you are not an apprentice.

[Find a 01 apprenticeship program by county and occupation](#). Occupations for (01) electricians are: Construction Electrician, Inside Electrician, or Inside Wireman.

Both trainees and registered apprentices must [renew](#) their trainee certificate every 2 years until they pass an exam to become an electrician.

Trainees and registered apprentices can view their hours of experience by using the [Verify](#) tool.

Answer to the Question of the Month:

False.

Only the legislature can change the RCW. The department has the responsibility to create rules (with stakeholder and Technical Advisory Committee input), but the rules cannot require anything that is not authorized in the statute.

Picture of the Month

An inspector went out to a home that had no power. During the inspection a couple “red flags” went up and the inspector decided to take a closer look at the meter. The seal and the meter had been tampered with and when the utility came, this is what they found.



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August 2022

Question of the Month

Surge Protection Devices (SPD). have code requirements when installing. The conductors used to connect the SPD to the line or bus and to ground shall not be longer than _____ and shall avoid any unnecessary bends. Is the answer:

- A) 12 inches B) 18 inches C) 24 inches D) necessary

See the correct answer on Page 2.

Proposed Rules for WAC 296-46B-945

The [Washington State Department of Labor & Industries](#) (L&I) is considering changes to the state's electrical rules. The result would provide more opportunities to qualify for journey level electrician (EL01) examination.

L&I filed a Preproposal Statement of Inquiry (CR-101) on Aug. 2.

“Good cause” exception

The changes would affect [Washington Administrative Code 296-46B-945](#).

The rule changes under consideration would allow journey level candidates to take the exam through a “good cause” exemption.

This would be done through an exception for “good cause” (allowed under RCW 19.28.195) available from July 1, 2023 (when the 2018 law takes effect) to July 1, 2025.

Why this is happening now

In 2018, [Substitute Senate Bill 6126 \(Chapter 249, Laws of 2018\)](#) implemented registered apprenticeship requirements only for journey level electrician (EL01) examination candidates. The requirements take effect July 1, 2023.

A trainee must be registered in an apprenticeship program when performing EL01 journey level electrical work. The trainee must complete the program to qualify for the exam. Employers need to become apprenticeship “training agents” to employ apprentices. The legislation also limited the ways to qualify for the EL01 exam.

This rulemaking also considers other changes to the rule for updates and housekeeping.

L&I anticipates filing the proposed rules in late 2022.

Rulemaking documents

[CR-101 Preproposal](#)

[Trades & Licensing Rules Under Development](#) (listed alphabetically) to find electrical safety standards, administration, and installation.

[Current electrical rulemaking](#).

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Safety Tip of the Month

DO NOT WORK ON ENERGIZED CIRCUITS!!!

Sorry for shouting, but as highly skilled electricians who know how to mitigate the hazards of working around dangerous electricity, we sometimes make foolish decisions.

The [National Census of Fatal Occupational Injuries in 2020](#) by the Bureau of Labor Statics reports 126 workers died nationwide from exposure to electricity.

Even seemingly minor work such as replacing light switches or changing luminaire ballasts, if done while the circuit is energized, could result in an accident and cause serious injury or even death! Take the time to deenergize every circuit you are working on.

Do not ruin your life and the lives of your loved ones by taking shortcuts and risks with electricity.



Washington State Department of
Labor & Industries

Year in Review

In the year ending on June 30, 2022, the electrical program accomplished:

261,919 inspections

77% of inspections completed within 24 hours of request

89% of inspections completed within 48 hours of request

1.8 million miles driven

27,342 [virtual inspections](#)

63,373 corrections written - 58% are serious corrections

81% of inspection requests made online

187,838 permits sold - 90% are contractor permits

99% of permits purchased online

8,428 total citations and warnings written

5,194 of the citations written targeted the underground economy.

2,310 hours of training and outreach done by [ECORE](#)

4,391 pages reviewed by plans examiners - 100% submitted online

20,138 licensees and certificates processed - 95% on line

6,793 new trainee certificates issued - 97% on line

278 reciprocal certificates issued to Oregon journeyman (J) license holders who completed Oregon apprenticeships

4.4 million hours of experience reviewed by the technical review team - 2.9 million hours approved, remaining hours were denied for cause or not considered because the applicant had all hours needed to qualify for exam.

720 hours of training delivered to new inspectors

This is just a snap shot of all the hard work that the Electrical program staff did last year.

Top Eight Corrections Written Last Year

3,598 - No access for inspection (RCW 19.28.101)

2,631 - GFCI protection in dwellings (NEC 210.8(A))

2,313 - Notifying the department work was ready for inspection when it was not ready (WAC 296-46B-906(7)(B))

1,272 - Not following the manufacture's instructions (NEC 110.3(B))

1,225 - Failing to install surge-protective devices when required (NEC 230.67)

1,041 - Covering an electrical installation before it was inspected (RCW 19.28.101)

1,030 - Corrections not completed at the next inspection ((WAC 296-46B-906(7))

968 - Electrical wiring and equipment not accessible at time of inspection ((WAC 296-46B-010(4))

Answer to Question of the Month:

The correct answer is D). See 2020 NEC 242.24 for the full text.

Article 242 covers the requirements for all over voltage installations and is a new section for the 2020 NEC. Article 242 is a combination of the previous articles 280 and 285.

Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* The electrical contractor was just going to “temp some things in” while working on a remodel. There was a family living in the home during the remodel project that took several months. Share this with a coworker and see if you can find any concerns.



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July 2022

Question of the Month

What is the penalty for the first-time offense of causing or failing to correct a serious violation? (A serious violation is, among other things, one that creates a hazard of fire or danger to life safety).

See the correct answer on Page 2.

What is the Big Deal About July 1, 2023?

On that date, a law passed in 2018 goes into effect. It requires:

- Trainees to be registered in apprenticeship programs when performing work limited to 01 journey level electricians.
- Employers to become apprenticeship training agents to employ apprentices.
- Trainees to complete an apprenticeship program to qualify for an 01 journey level exam.
- There are no changes for contractors performing only specialty work defined in WAC [296-46B-920\(2\)](#). Trainees doing only specialty work are not required to be registered apprentices.

A few things to consider now:

- **Apply for the 01 exam as soon as you have hours and education.** If you have not completed an apprenticeship program, make sure our electrical licensing section receives your application and supporting documentation before July 1, 2023. Before that date, applicants can qualify for examination without completing a formal apprenticeship program. Once a person applies and is approved for an exam, they are forever qualified to reapply and be approved, even if requirements to qualify change.
- **Do you have to start over in an apprenticeship program?** No. Apprenticeships programs can grant advanced standing based on experience hours approved by our electrical licensing section. Until July 1, 2023, apprenticeship programs can consider 01 industrial/commercial hours of experience and hours worked in the following specialty categories—02, 03, 04, 06, 06A, and 07 as well as approved training school and military experience. Anyone can view your hours by using our [Verify](#) tool.

Trainees considering becoming apprentices can claim credit for hours of experience by submitting one or more [Affidavit of Experience for Washington Electrical Trainees](#) (F500-149-000). See the form for information about fees and where to mail it.

- **Don't Wait.** Get all your documentation in as soon as you are able to ensure you get all your credit.
- **Good Cause.** From July 1, 2023 to June 30, 2025 there is a “good cause” provision in the law. It allows rules that may provide exceptions from apprenticeship completion requirements depending on circumstances. We are looking for ways to maximize this provision for everyone’s benefit. L&I will file a CR-101 to begin formal rulemaking to define the “good cause” provision. Stay tuned, more to come in later editions of this newsletter.

You can stay up to date with the changes by checking out the website.

<https://lni.wa.gov/licensing-permits/electrical/electrical-licensing-exams-education/electrical-apprenticeship>

Safety Tip of the Month

A fall from a ladder could kill you or disable you permanently.

- Always use the right ladder for the job. A chair is not a ladder!
- Get help with heavy or long ladders.
- Make certain your footing is solid.

Review the OSHA ladder bulletin at:

<https://www.osha.gov/Publications/OSHA3625.pdf>

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How to Avoid Employing People with Expired Certificates

Right now there are expired electricians and trainees working for unknowing electrical contractors. This can lead to trouble for everybody. It is not lawful to employ electricians and trainees while their certificates are expired or inactive. It is easy to check status by using our [Verify](#) tool. It displays certificate details, including:

- Expiration date and status
- Hours of education (both CEU and trainee basic classroom instruction)
- Lapses under Past and Related Licenses header
- Hours of experience
- Violations

As an employer, you may want to consider using a calendaring program to set a reminder 90 days prior to your employees' expiration date. If someone is looking for an approved class to fulfill their education requirements, you can refer them to the [Basic Classroom Instruction & Continuing Education](#) page on our website.

Why are My Affidavits Not Approved?

From the expiration date their training certificate, trainees who are not registered apprentices have 180 days to turn in affidavits for the previous 2 years. Affidavits received by L&I after the deadline are not approvable. There is no one with the authority to make an exception. Here are some other common reasons affidavits are denied:

- No update fee – see affidavit form for instructions
- Affidavit has errors, alterations or omissions
- The employer's permit history and payroll records do not support the amount or type of experience claimed.
- Claiming hours for periods when a training certificate has lapsed or expired.

For receipt of delivery, use certified mail. Find the mailing address and instructions on the form: [Affidavit of Experience for Washington Electrical Trainees](#) (F500-149-000). Learn more about [reporting hours of experience](#).

Want to be an Electrical Inspector?

Do you enjoy a challenge? Do you want to be home in the evenings? Have you ever thought about becoming an Electrical Inspector for L&I? It may be the right time for you because most regions of the state have openings. If you enjoy serving customers and interacting with many people everyday, this is the job for you. We offer a work/life balance that is difficult to find anywhere else. The electrical program ensures electrical safety in Washington and helps businesses by fighting underground electrical economy. Inspectors see a wide variety of interesting and complex electrical installations every day.

Find an application for an opening near you:

<https://www.governmentjobs.com/careers/washington?keywords=L%26I%20electrical> .

For questions, please contact: Jobs@Lni.wa.gov.

Answer to Question of the Month: \$1000 - [WAC 296-46B-915](#)(13) specifies the penalty amounts for this violation. Second offense is \$3000 and the third offense is \$5000. Check out [WAC 296-46B-990](#)(3) to see what is defined as a serious violation. An act of serious noncompliance may also result in suspension or revocation of an electrical contractor's license or an electrician's certificate.

Picture of the Month: *If viewing this document online, Click on the picture to open a larger image.* The owner of this service didn't understand why it could not be reenergized until the inspector explained the problem of insects and birds making homes in the equipment.



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June 2022

Question of the Month

How long after receiving a correction notice from L&I does a permit holder have to correct a noncompliant installation?

See the correct answer on page 2

01 Electrical Contractors – Now is the Time to Become a Training Agent.

The passage of [Substitute Senate Bill 6126](#) in 2018 has changed how new journey level electricians are certified. Requirements brought on by this legislation affect every contractor with trainees that are training to become 01 general journey level electricians. Nothing changes for specialty contractors or trainees who work for them.

To be ready for July 1, 2023:

- Contractors have to become registered apprenticeship training agents to employ trainees learning the work of 01 journey level electricians.
- Trainees doing the kind of work limited to journey level electricians must be registered apprentices in the same apprenticeship as their training agent (employer).

Trainees will not qualify for 01 examinations after July 1, 2023 without completing apprenticeship requirements.

Contractors: Find information about becoming a training agent at:

<https://lni.wa.gov/licensing-permits/apprenticeship/offer-a-registered-apprenticeship>.

Trainees: Learn about becoming an apprentice at:

<https://lni.wa.gov/licensing-permits/apprenticeship/become-an-apprentice>.

Find recognized 01 General Journey Level Apprenticeship Programs in your county:

[Area 1 Inside Electrical JATC](#) – Clark, Klickitat, Skamania, Cowlitz, and Pacific. (Program regulated by Oregon)

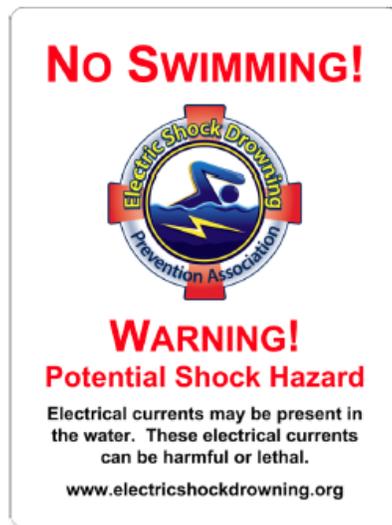
[Electrical Management Group of Washington](#) – Clark, Cowlitz, Wahkiakum, Pacific, Lewis Asotin, Benton, Columbia, Franklin, Garfield, Kittitas, and Walla Walla Counties.

[Construction Industry Training Council of Washington - Construction Electrician](#) – All counties in Washington.

[Frontier Apprenticeship & Training](#) (Frontier Electric of Washington employees only) – Clark, Cowlitz, Lewis, Skamania.

[IBEW 48 NECA-IBEW Electrical JATC](#) – Clark, Cowlitz, Klickitat, Skamania, Wahkiakum. (Program regulated by Oregon)

[Inland Empire Electrical Training Trust](#) – Adams, Ferry, Lincoln, Pend Oreille, Spokane, Stevens, Whitman.



Safety Tip of the Month

Do not allow yourself or others to swim near a dock or marina where electrical power is present. Stray leakage current in the water can paralyze or kill. If you must enter the water to work on a boat or dock, turn off and lock out all sources of electricity first.

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Washington State Department of
Labor & Industries

[LU 112 - NECA Electrical Apprenticeship Committee](#) – Asotin, Benton, Columbia, Franklin, Garfield, Walla Walla, Yakima, Kittitas.

[Northwest Washington Electrical Industry Joint Apprenticeship and Training Committee](#) – Chelan, Douglas, Grant, Island, Okanogan, San Juan, Skagit, Snohomish, Whatcom.

[Performance Electrical Apprenticeship Committee](#) ([Boone Electric Construction BOONEEC952BM employees only](#)) - Pierce, King, Thurston, Lewis, Snohomish, Spokane, Pend Oreille, Stevens, Lincoln, Whitman

[Puget Sound Electrical Joint Apprenticeship and Training Committee](#) – Jefferson, King, Kitsap, Clallam,

[Southwest Washington Electrical Joint Apprenticeship and Training Committee](#) – Pacific, Lewis, Grays Harbor, Mason, Pierce, Thurston.

[Titan Electrical Apprenticeship & Training](#) ([Titan Electrical LLC TITANEL877RD employees only](#)) - Chelan, Douglas, Grant, Kittitas, Klickitat, Yakima, Benton, Franklin, Walla Walla, Adams, Lincoln, Snohomish, King, Pierce

[Tradesmen Apprenticeship & Comprehensive Training](#) (Tradesmen Electric employees only) – Clark, Cowlitz, Lewis, Skamania.

Fees for Meter/Mast Repair and or Replacement

[WAC 296-46B-910](#)(1)(c)(ii) and (2)(b)(ii) set fees for the maintenance/repair of a meter/mast (no alteration to the service or feeder) at \$49.40 for residential and \$91.20 for commercial repairs. This subsection’s lower fees are intended to cover the inspection cost for wind, weather, vehicular, meter terminal failure, or other damage to existing meter/mast systems. Work includes the replacement or repair of the meter, mast, and/or conductors up to the first point of termination on the service or building disconnecting means. Any relocation of the mast or meter and overhead/underground conversions need to be permitted as altered services. A meter/mast repair is not the replacement of equipment housing a service or building disconnect.

Hold-Down Accessories for Plug-In Back-Fed Circuit Breakers

When back feeding a panel with a plug-in type circuit breaker or plug-in type main lug assembly, only accessories included in the panel manufacturer’s instructions are allowed to hold down a back-fed device. The panel manufacture’s hold down accessory is the only approvable method to comply with NEC 408.36(D).

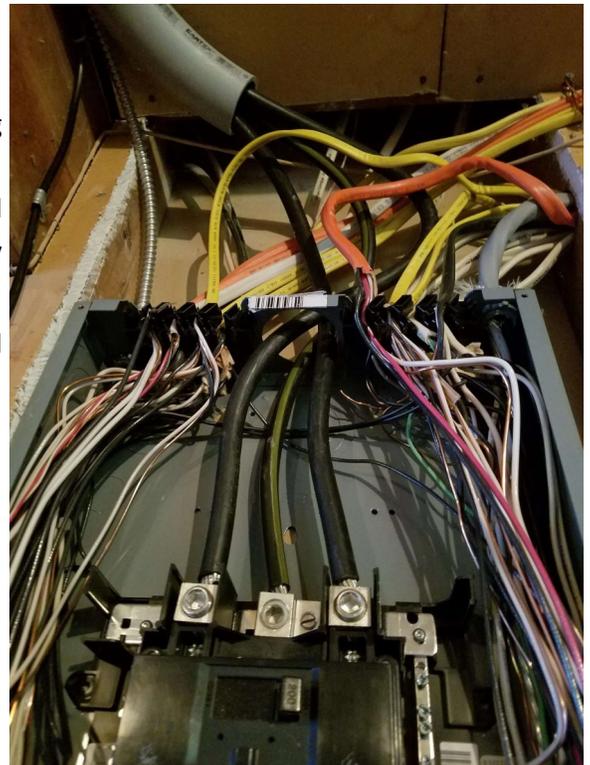
Exception: Listed *interactive* power production sources are excluded from this requirement by NEC 705.12(E)

Answer to Question of the Month:

Fifteen calendar days - [RCW 19.28.101](#), [WAC 296-46B-901 \(15\)](#). We do send you 2 letters to help remind you.

Picture of the Month: *If viewing this document online, Click on the picture to open a larger image.*

Too many corrections to list? Most egregious? Open conductors passing through a sharp metal hole? Conduit incomplete? What do you think?



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April 2022

Question of the Month — What is the best method to communicate access instructions to your electrical inspector?

- A) Call the inspector the morning of the inspection.
- B) Email the inspector.
- C) Leave a voicemail message at the inspector's desk phone.
- D) Leave details in the comment field of an online inspection

Legislative Update

2018's [SSB 6126](#) established apprenticeship completion requirements for all 01 general electrician exam candidates applying after July 1, 2023. After that date, unless previously approved, no one qualifies for 01 general electrician exam unless they have completed a Washington 49.04 apprenticeship or equivalent apprenticeship in another state.

This requirement is not affected by failure of this session's housekeeping bill [SB 5599](#). The failed bill provided additional paths to exam eligibility for out of state applicants and people with military experience as well as assure that more OJT experience could count toward apprenticeship completion for current trainees.

Further Delay Announced - Requirements for Metering Centers and Power Outlets

Another delay is necessary due to unprecedented affects of the pandemic on manufacturing. The delay allows manufacturers the time they need to produce products that do not have more than one service disconnect in an enclosure.

- For metering centers having two to six service disconnects in the same enclosure, we are delaying enforcement of NEC 230.71(B)(4) until January 1, 2023. Because of this, the exception to 2017 NEC 408.3(A)(2) supersedes 2020 NEC 230.62(C) until that date.

For permits purchased after January 1, 2023, metering center service disconnects must be in separate compartments and comply with NEC 230.71(B)(4) and 2020 NEC 230.62(C).

- For power outlets certified to UL 231, an indefinite delay applies to enforcement of 2020 NEC 230.71(B)(4) requirements. Because of this, the exception to 2017 NEC 408.3(A)(2) supersedes 2020 NEC 230.62(C). Some of the common uses of power outlets are service equipment for recreational vehicles and temporary power on construction sites.

Ugly Picture of the Month: *If viewing this document online, Click on the picture to open a larger image.* An electrical inspector found this installation by a property owner.

The owner told the inspector he "watched a lot of videos" to figure out what to do. There is no substitute for a well trained electrician. How many code violations do you see?

Safety Tip of the Month

The amount of electricity required to harm a person is very small. According to the OSHA publication [Controlling Electrical Hazards](#), 50 to 150 milliamperes of electricity will cause

- Extreme pain
- Respiratory arrest
- Severe muscular contractions
- Possible death

Use extreme caution, follow all safety procedures, and use required personal protective equipment while working on or near energized circuits.



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Washington State Department of
Labor & Industries

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- Trainees expiring before April 1, 2022 may continue to work legally for 90 days from the date their certificate expires. Such trainees must complete 48 hours of basic classroom instruction and renew no later than 90 days after their expiration date.

WAC Rules Updated — Effective April 1

For a year we have been updating WAC 296-46B-995 *Electrical Board—Appeal Rights and Hearings*. L&I accepted a rulemaking petition requesting the rule changes. The rules governing appeals and the appeal process before the Electrical Board were confusing and out of date. We have adopted changes that clarify, simplify, and make the procedure for appeals to the board easier to understand and navigate. The adopted rules include changes to:

- Procedural requirements for the electrical board.
- Appeal and hearing requirements
- Cleaning up of the language such as punctuation, typographical and reference corrections, formatting and removal of obsolete language.

The electrical program accepted public comments and held a public hearing on January 6, 2022. We filed a CR-103 rulemaking order to adopt the rules on March 1, 2022. The new rules will take effect on April 1, 2022. You can view or download the rulemaking documents including a copy of the revised rule language by visiting the [Electrical Laws and Rules](#) web page.

When is a Building Weatherproof Enough To Install Dry Location Wiring and Equipment?

Neither the National Electrical Code® nor Part A of the electrical rules in WAC [296-46B](#) require a specific level of building completion before wiring and equipment installation may begin. The Code does recognize that a normally dry location may be subject to dampness or wetness while a building is under construction. However, this does not allow Type NM and other cables and equipment not rated for wet locations to be subjected to water damage during the construction process.

The minimum requirements for a building to be considered dry are when the wall and roof sheathing are installed and the roof is completely covered by a waterproof membrane such as roofing felt. Flat roofs must be watertight. If wind driven rain is likely, contractors would be wise to cover the rough openings or have windows in place before wiring or installing equipment. If dry location wiring or equipment gets wet by any method, the inspector may require wiring or equipment to be replaced prior to approval as described in [WAC 296-46B-110\(2\)](#) and the National Electrical Manufacturer's Association's (NEMA's) *Evaluating Water-Damaged Electrical* publication.

NEMA's *Evaluating Water-Damaged Electrical Equipment* is available for download at no charge at www.nema.org/stds/water-damaged.cfm. It provides advice on the safe handling of electrical equipment and wiring that has been exposed to water. These guidelines must be treated as manufacturer's installation instructions.

Answer to Question of the Month: D) Leave details in the comment field of your [online inspection request](#).

Inspectors start their day from the field and download inspection requests remotely. Your comments save everybody time when you provide instructions so your inspector can get in without making phone calls for access just let the inspector know how to get in—Key is under a rock by the..., garage code is..., furnace is in the crawlspace..., the dog is friendly, watch out for the cat!..., etc. Having to make phone calls reduces our time to complete inspections. Help us help you by making inspection arrangements in advance to reduce the number of inspector phone calls.

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ELECTRICAL CURRENTS

A Newsletter from the Office of L&I Chief Electrical Inspector Wayne Molesworth

April 2022

Question of the Month — What is the best method to communicate access instructions to your electrical inspector?

- A) Call the inspector the morning of the inspection.
- B) Email the inspector.
- C) Leave a voicemail message at the inspector's desk phone.
- D) Leave details in the comment field of an online inspection

Legislative Update

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Wayne Molesworth, Chief Electrical Inspector

Vol. 25 No. 3

March 2022

Question of the Month

When the new apprenticeship law comes into effect in July 1, 2023, what is the effect on trainees learning to be specialty electricians and specialty electrical contractors that employ them?

See the correct answer on page 2

Temporary Allowances for Trainees Ending on March 31, 2022

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Safety Tip of the Month

Planning some projects this spring that require digging?

[Washington 811](#) has resources to help you find buried utilities.

Dial 811 or check out www.callbeforeyoudig.org.

Do you Know About July 1, 2023 Apprenticeship Requirements?

If you are a trainee learning to become a 01 journey level electrician, or somebody who employs them, you must take action to be ready for apprenticeship requirements that go into effect on July 1, 2023.

Apprenticeship requirements enacted by the legislature in 2018 do not apply to anyone training to be a specialty electrician or specialty contractors who employ them.

To ensure that everyone knows about coming requirements:

- In 2018, we sent 28,000 letters about coming requirements to every active contractor, trainee, and trainee in inactive status.
- In 2019, trainees we began sending informational letters to trainees every time they applied, renewed or requested a reprint. So far, we have sent more than 31,000 letters.
- L&I inspectors have distributed about 20,000 green 5" x 7" cards on jobsites since June of 2019. One side of the card has information for trainees, the other for contractors.
- Fourteen editions of this newsletter have provided apprenticeship information to about 11,000 subscribers. More to come in future editions.
- Every Contractor, electrician, trainee, and administrator will soon receive another round of information about apprenticeship requirements.

Apprenticeship programs have capacity to support new registered apprentices and training agents. A training agent is someone who employs registered apprentices.

Find more information in the [February 2022](#) edition of this newsletter.

Legislative Update – SB 5599

SB [5599](#) has passed out of the Senate and is now working its way through the House. This bill does not affect anyone who is training to become a specialty electrician. It is a housekeeping bill that amends July 1, 2023 apprenticeship completion requirements enacted by SSB [6126](#) for those qualifying for 01 journey level exams and the contractors that employ them.

Amendments ensure that no trainees have to start over and complete 8000 hours while in a 01 apprenticeship. This allows apprenticeships to consider advanced placement based on hours already on record for trainees. Other amendments ensure that military and out of state applicants have a clear path to qualifying for 01 journey level exams.

If you would like to comment on this bill, the legislature provides this link:

<https://app.leg.wa.gov/pbc/bill/5599>.

You may also share your opinions by contacting your legislator through the legislative website at:

<http://www.leg.wa.gov/LIC/Pages/hotline.aspx>.

Working on Energized Service Drops

Who can disconnect and/or reconnect a secondary service drop on the utility's side of the meter? Only individuals who meet the training and experience requirements in [WAC 296-45](#), *Electric Power Generation, Transmission, and Distribution*. These workers are considered "qualified electrical employees" and able to work on or with exposed energized lines or equipment operating at 50 volts or more.

Information on electrical safety-related work practices can be found in the [General Safety and Health Standards, WAC 296-24-965](#) and [NFPA 70E](#). These resources will give guidance to employers on allowing qualified electricians to work on energized utilization systems under limited circumstances. Work practices found in [WAC 296-45-065](#) are applicable to work performed on the utility side of the metered demarcation line.

The training that qualified electrical employees includes,

- Training necessary to work on energized primary and secondary conductors.
- Qualifying employees to take clearances (i.e. how to receive authorization to work) on the transmission and distribution lines or equipment to control the energy sources.

The training that certified electricians receive may not focus on working on energized lines and equipment, except for testing and special situations.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* The owner of this service did not understand why it could not be re-energized. The inspector was able to explain the issues. The birds nest in the bottom had eggs in it.

Answer to Question of the Month

No effect. It only affects those learning to be general journey level (01) electricians and those that employ them. Find more information about apprenticeship requirements in the [February 2022](#) edition of this newsletter.



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Question of the Month

When the NEC requires an equipment ground fault protection system for a service, when must it be tested?

See the correct answer on page 2

01 Electrical Contractors – Are You an Apprenticeship Training Agent Yet?

Since the passage of [Substitute Senate Bill 6126](#) in 2018, there have been a number of new apprenticeship programs established for (01) apprentices, bringing the number available to 13. Others are in the works.

Requirements brought on by this legislation affect every contractor with trainees that are training to become 01 general journey level electricians. Nothing changes for specialty contractors or trainees who work for them.

Before July 1, 2023:

1. Contractors must become registered apprenticeship training agents to employ trainees doing the work of 01 journey level electricians.
2. Trainees doing this kind of work must be registered apprentices in the same apprenticeship as their training agent (employer).

Trainees will not qualify for 01 examinations after July 1, 2023 without completing apprenticeship requirements.

Contractors: Find information about becoming a training agent at:

<https://lni.wa.gov/licensing-permits/apprenticeship/offer-a-registered-apprenticeship>.

Trainees: Learn about becoming an apprentice at:

<https://lni.wa.gov/licensing-permits/apprenticeship/become-an-apprentice>.

Recognized 01 General Journey Level Apprenticeship Programs and counties where they operate:

1. [Area 1 Inside Electrical JATC](#) – Clark, Klickitat, Skamania, Cowlitz, and Pacific. (Program regulated by Oregon)
2. [Electrical Management Group of Washington](#) – Clark, Cowlitz, Wahkiakum, Pacific, Lewis Asotin, Benton, Columbia, Franklin, Garfield, Kittitas, and Walla Walla Counties..
3. [Construction Industry Training Council of Washington - Construction Electrician](#) – All counties in Washington.
4. [Frontier Apprenticeship & Training](#) (Frontier Electric of Washington employees only) –_Clark, Cowlitz, Lewis, Skamania.
5. [IBEW 48 NECA-IBEW Electrical JATC](#) – Clark, Cowlitz, Klickitat, Skamania, Wahkiakum. (Program regulated by Oregon)
6. [Inland Empire Electrical Training Trust](#) – Adams, Ferry, Lincoln, Pend Oreille, Spokane, Stevens, Whitman.
7. [LU 112 - NECA Electrical Apprenticeship Committee](#) – Asotin, Benton, Columbia, Franklin, Garfield, Walla Walla, Yakima, Kittitas.
8. [Northwest Washington Electrical Industry Joint Apprenticeship and Training Committee](#) – Chelan, Douglas, Grant, Island, Okanogan, San Juan, Skagit, Snohomish, Whatcom.
9. [Performance Electrical Apprenticeship Committee](#) (Boone Electric Construction BOONEEC952BM employees only) - Pierce, King, Thurston, Lewis, Snohomish, Spokane, Pend Oreille, Stevens, Lincoln, Whitman
10. [Puget Sound Electrical Joint Apprenticeship and Training Committee](#) – Jefferson, King, Kitsap, Clallam,

Safety Tip of the Month

Standing water, ice, or snow may conceal hidden hazards. Avoid slips, trips and falls by wearing proper footwear and proceeding with caution at all times.

Trust your instincts and training. If your path is unsafe, find a safe route to get there or do not go!

11. [Southwest Washington Electrical Joint Apprenticeship and Training Committee](#) – Pacific, Lewis, Grays Harbor, Mason, Pierce, Thurston.
12. [Titan Electrical Apprenticeship & Training](#) (Titan Electrical LLC TITANEL877RD employees only) - Chelan, Douglas, Grant, Kittitas, Klickitat, Yakima, Benton, Franklin, Walla Walla, Adams, Lincoln, Snohomish, King, Pierce
13. [Tradesmen Apprenticeship & Comprehensive Training](#) (Tradesmen Electric employees only) – Clark, Cowlitz, Lewis, Skamania.

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Legislative Update

The legislature is in session and lawmakers are considering several bills that affect electricians and contractors.

- HB [1831](#) – Requires an additional certification for electricians to work on electric vehicle chargers. This certification is in addition to certifications already required to do such work. If you would like to comment on this bill, the legislature provides this link: <https://app.leg.wa.gov/pbc/bill/1831>.
- SB [5599](#) – This bill does not affect anyone who is training to become a specialty electrician. It is a housekeeping bill that amends July 1, 2023 apprenticeship completion requirements enacted by SSB [6126](#) for those qualifying for 01 journey level exams and the contractors that employ them.

Amendments ensure that no trainees have to start over and complete 8000 hours while in a 01 apprenticeship. This allows apprenticeships to consider advanced placement based on hours already on record for trainees. Other amendments ensure that military and out of state applicants have a clear path to qualifying for 01 journey level exams. If you would like to comment on this bill, the legislature provides this link: <https://app.leg.wa.gov/pbc/bill/5599>.

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Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image. A lot is going on in this service panel and inspector found in a shed. How many safety violations do you see?*

Answer to Question of the Month

Before placing into service. The purpose is to verify proper installation and operation of the system as determined by the manufacturer's published instructions. This test or a subsequent test must include all service voltage feeders unless the installer can demonstrate, in a manner acceptable to the department, that there are no grounded conductor connections to the feeder(s). Check out WAC [296-46B-230\(11\)](#) to learn more.



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Question of the Month

See the correct answer on page 2

How long is the window for renewing an electrician certificate without requiring the electrician to retake the examination?

Rule Making Public Hearing

For almost a year, we have been updating WAC 296-46B-995 *Electrical Board – Appeal Rights and Hearings*. There will be a public hearing on January 6, 2022. This chance for public input is remote using virtual and telephonic means.

Learn how to attend or submit written comments by viewing the [Public Hearing Information Packet](#) on our [Electrical Laws, Rules and Policies web page](#).

The rules governing appeals and the appeal process before the Electrical Board are confusing and out of date. We are clarifying, simplifying, and making the procedures for appeals to the board easier to understand and navigate. If adopted, the new procedures for appeals are expected go into effect April 1, 2022.

Supply Side Emergency Disconnects

New requirements for outdoor emergency disconnects for one- and two-family dwellings in NEC 230.85 and the supply side allowances in NEC 230.82 (5) and (10) are making things interesting for everyone.

The purpose of this article is to clarify a few things in regards to supply side emergency disconnects labeled EMERGENCY DISCONNECT, NOT SERVICE EQUIPMENT.

- **Approvable:** Switches, circuit breakers, or manual or automatic transfer switches listed and labeled as “Suitable for use as service equipment” where bonding of non-current-carrying metal parts to the grounded conductor complies with Part V of NEC Article 250. Typically, 3 wires in, 3 wires out, neutral properly bonded to the disconnect enclosure.
- **Not approvable** whenever labeled EMERGENCY DISCONNECT, NOT SERVICE EQUIPMENT: Equipment labeled “Suitable for use only as service equipment” or equipment like a panel board that allows points of connection for equipment not allowed on the supply side by NEC 230.82(10).

When connecting interconnected electric power production equipment, like generators, to transfer switches used as supply side emergency disconnects labeled EMERGENCY DISCONNECT, NOT SERVICE EQUIPMENT, all non-current-carrying metal parts must be a bonded to the grounded conductor as required in Parts V of NEC Article 250. Equipment grounding must comply with Part VII of NEC Article 250. Typically, 3 wires in, 3 wires out, neutral and any equipment grounds properly bonded to the disconnect enclosure.

Safety Tip of the Month

Working outside in the cold months can be hazardous. Being aware of the signs of hypothermia can help save a life.

- Uncontrollable shivering –
- Pallid Cold skin – Slurred Speech –
- Loss of consciousness – Drowsiness –
- Nausea – Clumsiness – Confusion –

To help someone you think might have hypothermia get him or her:

- Medical attention – a warm place –
- Remove wet clothing –
- Warm them under dry blankets or clothes -

Learn more at:

<https://www.cdc.gov/disasters/winter/staysafe/hypothermia.html>

Apply to be an Electrical Inspector Today!

If you enjoy putting your knowledge to the test, helping people and battling the underground economy, then it may be the right time to join our team. Inspectors have a great benefit package and a work/life balance that is hard to find working in the field.

In the past few months, we have filled a few vacancies, but there are still many openings across the state and all areas are recruiting. If you are a Washington 01 master electrician or a Washington 01 journey level electrician who has held that certificate for at least 4 years.

Find an application for an opening near you:

<https://www.governmentjobs.com/careers/washington?keywords=L%26I%20electrical>.

For questions, please contact: Jobs@Lni.wa.gov.

Virtual Electrical Inspection Program Grows

Contractors and electricians are the ones to thank for the growth and success of the [Virtual Electrical Inspection](#) (VEI) program.

In 2019, VEI started as a pilot program with three inspectors. Today, there are 10 full time VEI inspectors, each one averaging over 15 inspections a day. They are not the only ones working hard, our field inspectors made about 270,000 inspection stops last year!

Contractors and electricians say that getting a VEI before they leave the jobsite is convenient for their customers. Corrections are usually resolved during the inspection. With no return trips, everyone saves time and money.

How VEI works:

- A journey level or specialty electrician must participate during the inspection.
- VEI is just for inspections that take 15 minutes or less, including services under 400 amps.
- We use the *SKYPE Application* for VEI. Here is a [step-by-step guide](#) to help you get set up.
- On the jobsite, make sure you have at least a 4G, LTE, or Wi-Fi connection.
- Use Google Chrome to [schedule](#) your inspection for the day and time you want.
- Questions? Contact us at 360-902-5299 or VirtualElectricalInspection@Lni.wa.gov.

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

NM-B cable, conduit straps and duct tape! Oh my! Nothing is going right in this picture. Luckily, this was found before someone was injured. From the indoor boxes with the duct tape seals, indoor panel and SE cable across the ground it is an accident waiting to happen. How many violations can you find?

Answer to Question of the Month

180 days – An electrician's certificate can be renewed ninety days prior the day of expiration and ninety days after the expiration date. Renewing after the expiration date will cause the renewal fee to double. Waiting more than ninety days after the expiration date requires reexamination. Save the time and money, renew online [here](#).



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Question of the Month

Electrical equipment and wiring that has been submerged or exposed to water must comply with the following: All breakers, fuses, controllers, receptacles, lighting switches/dimmers, electric heaters, and any sealed device/equipment (e.g. relays, contactors, etc.) must be _____. A) cleaned, B) replaced, C) repaired, D) dried out –

See the correct answer on page 2

Flood Damaged Equipment and Wiring

Recently, areas of Washington have experienced damage from flooding. The combination of floodwater and electricity can be very dangerous.

Have a qualified person disconnect power before you allow anyone to get near a submerged or recently submerged electrical system.

Rules - [WAC 296-46B-110\(2\)](#) require that all breakers, fuses, controllers, receptacles, lighting switches/dimmers, electric heaters, and any sealed device/equipment (e.g., relays, contactors, etc.) submerged or exposed to water must be replaced.

All other electrical equipment (e.g., wiring, breaker panelboards, disconnect switches, switchgear, motor control centers, boiler controls, HVAC/R equipment, electric motors, transformers, appliances, water heaters, and similar appliances) must be replaced or may be reconditioned by the original manufacturer, or by their approved representative.

Learn more on our webpage [After Floods & Other Natural Disasters](#).

Tools for Maintaining Your Certification

Electricians, trainees, and administrators have many tools available to keep their certifications in active status. Renew before you expire – online services make it easy!

1. Find classes to complete your [education requirements](#).
2. Make sure we can contact you – [Change your Address – Get a Replacement – Renew online](#)
3. Use the [Verify](#) tool to view your education credit, hours of experience for trainees, and lapses in trainee certification. Find trainee lapses under past and related licenses. If there none shown, there are no lapses.

Affidavit Deadline for Trainees who are not Registered Apprentices

From the expiration date their training certificate; trainees have 180 days to turn in affidavits for the previous 2 years. Affidavits received by L&I after the deadline are not approvable. For receipt of delivery, use certified mail. Find the mailing address and other instructions on the form: [Affidavit of Experience for Washington Electrical Trainees](#) (F500-149-000).

Employers must supply a completed affidavit to any trainee within 20 days of trainee's request. Any employer who refuses to supply an affidavit could receive citations. Learn about [reporting hours of experience](#) and check out [WAC 296-46B-942\(8\)\(d\)](#) for more information.

Safety Tip of the Month

This time of year, it is common to decorate homes and businesses with hanging holiday lights on trees, gutters, windows, etc.

Before you plug in your lights or extension cords take the time to inspect them to make sure they are in good shape.

When you plug them in, make sure you have good solid connections. If installed outdoors be sure to use GFCI protected outlets.

Have a safe holiday season!

NEC 334.12(B) Physical Protection of Type NM Cable in Damp or Wet Conditions

The interior of conduits installed outdoors is not a damp or wet location when used for physical protection of Type NM cables under the following conditions:

1. Cables emerge unbroken from a building interior, attic, or crawlspace and remain unbroken until terminated; and
2. Flexible metal conduits are not used; and
3. No conduit systems are longer than 10 feet or below grade; and
4. Sealants prevent air movement and conduits naturally drain.

Learn more about damp and wet locations – review definitions for “location” in NEC Article 100.

Rule Making Update

For almost a year, we have been updating WAC 296-46B-995 *Electrical Board – Appeal Rights and Hearings*. The rules governing appeals and the appeal process before the Electrical Board are confusing and out of date. L&I accepted a petition for rulemaking from the state’s Electrical Board to amend the rules for the purposes of clarifying, simplifying, and making the procedures for appeals to the board easier to understand and navigate.

We filed the CR-102 Proposed rulemaking on November 16, 2021, announcing a public comment period. A virtual/telephonic public hearing will be January 6, 2022.

Learn how to attend or submit written comments by viewing the [Public Hearing Information Packet](#) on our [Electrical Laws, Rules and Policies web page](#).

If adopted, the new procedures for appeals are expected go into effect April 1, 2022

Now Hiring Statewide – Become an Electrical Inspector Today!

Tired of not knowing where your next job will be? Fed up with not having a balance between work and life? Ready for a challenge?

We have vacancies state wide, come join our team: [Become an L&I Electrical Inspector](#).

Being an electrical inspector is a great job for people who like people. If this describes you, and you are a Washington 01 master electrician or Washington 01 journey level electrician who has held that certificate for at least 4 years, please consider a job as an electrical inspector. Find an application for an opening near you:

<https://www.governmentjobs.com/careers/washington?keywords=L%26I%20electrical>

For questions, please contact: Jobs@Lni.wa.gov.

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

There is a lot going on in this picture starting with no grounded conductor, line and load reversed at service equipment, no grounding electrode system, what else?

I am glad inspections are required to keep people safe from unsafe installations made by untrained installers.

Answer to Question of the Month

The answer is B – replaced. Check out WAC [296-46B-110\(2\)\(a\)](#), or find the answer in the article above.



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(TDD/TTY users, please call 360-902-5797.) Labor & Industries is an Equal Opportunity employer.

Question of the Month

Is Arc-Fault Circuit-Interrupter (AFCI) protection required for existing dwelling unit branch circuits when replacing circuit breakers or changing a panel? *See correct answer on Page 2*

Improved Online Services

Learn about services and information now available online:

- CHANGE, RENEW OR REPLACE – Update your address and contact info, renew, or order a reprint of your card online: (<https://lni.wa.gov/licensing-permits/manage-licenses-certifications>).
- Anyone can view education credit, affidavit hours, and lapses in trainee certification using our verify tool (<https://secure.lni.wa.gov/verify/>).

AFCI Safety

According to the National Electrical Manufacturers Association's (NEMA) website [AFCI Safety](#): "Arc Fault Circuit Interrupters (AFCIs) were created as a direct response to a U.S. Consumer Product Safety Commission report conducted by Underwriters Laboratories (UL) that identified an electrical problem in branch circuit wiring systems that was causing numerous residential fires.

In 1999, AFCIs became a requirement in the National Electrical Code (NEC®). An AFCI breaker provides a higher level of protection than a standard circuit breaker by detecting and stopping a hazardous arcing condition before it can become an electrical fire."

Learn about safe and effective ways to install and troubleshoot issues with AFCIs: www.afcisafety.org/ul-training-course/.

Get help from AFCI manufacturers for unwanted tripping issues: www.afcisafety.org/home-owners/unwanted-tripping/.

Temporary Allowances for Trainees Ending on March 31, 2022

After receiving advice from the Electrical Board during last week's meeting, we are announcing March 31, 2022 as the end date for temporary allowances for trainees. After March 31, 2022:

- Education providers must cease virtual delivery of [basic classroom instruction](#) classes for trainees. All instruction after March 31, 2022 must be in person.
- Trainees expiring before April 1, 2022 may continue to work legally for 90 days from the date their certificate expires. Such trainees must complete 48 hours of basic classroom instruction and renew no later than 90 days after their expiration date.
- Trainees expiring on or after April 1, 2022 must complete 48 hours of basic classroom instruction and renew before their expiration date.

Safety Tip of the Month

With the end of Daylights saving time, daylight is very limited this time of the year. High visibility is your best bet for safe working or outdoor activities in low light conditions. Always wear reflective clothing or accessories so that others can see you. Wearing reflective clothing reduces the possibility of injury from a motor vehicle or other mobile equipment.

Be safe be seen.

Response Times and Inspector Vacancies

Every inspection request is important. Until staffing levels improve, installations that pose life-safety risks, hold up other trades or industry, or delay property transactions are a priority.

Response times for other installations may be delayed. We appreciate your patience and cooperation while we work to resolve this issue. Learn more about how to communicate with our staff in the [October 2021](#) edition of this newsletter.

Now Hiring in Your Back Yard – Become an Electrical Inspector Today!

Tired of not knowing where your next job will be? Or fighting traffic getting there? Ready for a change?

We have about 35 vacancies, come join our team: [Become an L&I Electrical Inspector](#).

Being an electrical inspector is a great job for people who like people. If this describes you, and you are a Washington 01 master electrician or Washington 01 journey level electrician who has held that certificate for at least 4 years, please consider a job as an electrical inspector.

Find an opening near you and an application:

<https://www.governmentjobs.com/careers/washington?keywords=L%26I%20electrical>

For further information, please contact: Jobs@Lni.wa.gov.

Rulemaking update

For almost a year, we have been updating WAC 296-46B-995 Electrical Board – Appeal Rights and Hearings. The rules governing appeals and the appeal process before the Electrical Board are confusing and out of date. L&I accepted a petition for rulemaking from the state’s Electrical Board to amend the rules for the purposes of clarifying, simplifying, and making the procedures for appeals to the board easier to understand and navigate.

We are ready to file the rule change with the state Registrar’s office in early December with public input and comment opportunities coming after the holidays in early January. The goal is to have these rules in place in April 2022.

Stay up to date with these rules by checking the rulemaking page on our website. <https://lni.wa.gov/licensing-permits/electrical/laws-rules-policies>

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

Is there a code violation in this picture? The NEC establishes minimum standards for electrical installations and electricians are welcome to overbuild their services.

Answer to Question of the Month Not always. An exception to 2020 NEC 210.12(D) states AFCI protection shall not be required where the extension of the existing conductors is not more than 6 ft. and does not include any additional outlets or devices. This would allow circuit breakers or a panel to be replaced without providing AFCI protection if the conditions in the exception are met. If a circuit is extended more than 6 ft., 2020 NEC 210.12(D) requires AFCI protection where branch-circuit wiring is modified, replaced, or extended in any of the areas specified in 210.12(A), (B), or (C).



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Question of the Month

What is the proper way for trainees to submit their affidavits of experience? *See correct answer on Page 2*

Rod Mutch is Retiring!



Rod on the summit of Mount Adams

Rod's contributions since joining L&I in 2001 are invaluable; he is a great leader and friend to many. He inspired new ideas and drove innovation while serving as an inspector, lead inspector, technical specialist and chief inspector.

We will miss Rod and know that everybody that worked with him over the years will greatly feel this loss. At the same time, we are happy to know that he will be enjoying a well-earned retirement with family and friends.

Please join us in congratulating Rod on a job well done and wishing him well in his new adventures!

Inspector Vacancies Are Up – Response Times May Follow

For a variety of reasons, vacancies are increasing in the L&I electrical inspector ranks – about 20 openings currently. Maybe more as opportunities improve for 01 journey level electricians, a group that includes all electrical inspectors in the state.

Every inspection request is important. Until staffing levels improve, installations that pose life-safety risks, hold up other trades or industry, or delay property transactions are a priority. Response times for other installations may suffer. We appreciate your patience and cooperation while we work to resolve this issue.

We are actively recruiting inspector candidates. Find out more:

<https://www.governmentjobs.com/careers/washington?keywords=electrical>.

Question about an inspection request? Email the L&I office nearest your project. Include your permit number and what you want us to know. Please do not email inspection requests.

Bellingham@lni.wa.gov

Bellevue@lni.wa.gov

Aberdeen@lni.wa.gov

Everett@lni.wa.gov

Kelso@lni.wa.gov

Kennewick@lni.wa.gov

MtVernon@lni.wa.gov

Pullman@lni.wa.gov

Sequim@lni.wa.gov

Silverdale@lni.wa.gov

Spokane@lni.wa.gov

Tacoma@lni.wa.gov

Tumwater@lni.wa.gov

Tukwila@lni.wa.gov

Vancouver@lni.wa.gov

UnionGap@lni.wa.gov

MosesLake@lni.wa.gov

EastWenatchee@lni.wa.gov

Safety Tip of the Month

The severity and effects of an electrical shock depend on a number of factors,

- The pathway through the body
- The amount of current
- The length of time of the exposure
- Whether the skin is wet or dry.

The effect of the shock may range from a slight tingle to severe burns to cardiac arrest.

GFCIs help by detecting when electricity is not following the normal path through the circuit, but they are not the first method to protect you.

Always use lockout/tagout and verify the circuit is off before you work on it.

Trainees – Get Credit for Hours Worked Under Temporary Allowances

Trainees working under temporary allowances allowing more time to complete required education may claim hours of experience for that time as follows:

- Trainees expiring on or after October 29, 2020 may continue to work after their certificate expires for 90 days and may claim experience hours for that time. This allowance is temporary – end date not known.
- Until January 26, 2021, after paying their renewal fee without completing educational requirements, trainees could continue to work and get credit for their hours if their expiration dates were between March 13, 2020 and October 28, 2020.

Tools for Trainees:

- Use our [Verify](#) tool and search by name to locate your certificate number if you do not have it handy. You can also check to see if you completed 48 hours of education needed to renew. Contact your education provider if credit is missing.
- After you meet education requirements, [renew online](#). Despite appearances, you do not have to register as a contractor. Just put in your info and proceed, make selections accordingly. If the address shown there is not correct, update it. Your card will arrive in about 30 days. Some are taking a few days longer.
- Trainees - Do not forget to [submit your affidavits on time](#).
- Learn more at: <https://lni.wa.gov/licensing-permits/electrical/electrical-licensing-exams-education/electrical-trainee>.

Find more information about temporary allowances for trainees in the [September 2021](#) edition of this newsletter:

You Submitted a Form, Why is it Taking so Long?

If you sent in an affidavit, a change of assignment, or another paper form, you are probably wondering what is going on. You are not alone; the current backlog of 7 weeks or more is not acceptable.

How did we get here? The shift to telework forced electrical staff to image paper documents so their coworkers could process them remotely. Fewer staff processing and vacancies due to a hiring freeze set us on a tough road.

Wait times will soon improve. We are developing processes to hand off documents to our imaging department to allow staff to focus on processing. We can now recruit for vacancies– having a full staff will help everyone get faster service.

Learn about easy things to do for quicker service:

- Avoid the wait that comes with paper, only [Renew, Change or Reprint](#) online!
- Only use forms dated 7-1-2021 or after. Even the sharpest eyes play tricks, have someone else look things over and make sure everything is complete. If a fee is required, include it. Questions? Contact your [local office](#) by phone for assistance.
- Do not email forms. Risks are too high – they could get lost – confidential information may be exposed.

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

An electrical inspector found this panel when a property owner complained about a neighbor stealing power. How many code violations can you find?

Answer to Question of the Month Follow the instructions on the form and use this version: [Affidavit of Experience for Washington Electrical Trainees](#) (F500-149-000).

Learn more: <https://lni.wa.gov/licensing-permits/electrical/electrical-licensing-exams-education/electrical-trainee#reporting-your-hours-of-experience>



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Question of the Month

You are installing EMT with listed rain tight compression couplings and XHHW-2 conductors on the roof of an office building to supply power to an HVAC heat pump. Is an equipment grounding conductor required to be provided within the raceway?

See correct answer on Page 2

Temporary Allowance for Virtual Basic Trainee Classes Continue

In June 2020 we announced temporary allowances so approved classroom training providers could provide their classes through internet-based instruction platforms.

Here is a recap of the guidelines that are still in effect.

1. Trainees and instructors must continuously interact in real time by live audio and video during the entire period of instruction and by live video during competency examinations.
2. Providers must:
 - a) Allow department oversight by sending an invitation to ElectricalProgram@lni.wa.gov for every internet trainee class. Invitations must include: a hyperlink to join the class, any passwords, L&I issued course approval number, class agenda (name of class and instructor, date of class, starting time, ending time, breaks, etc.)
 - b) Limit class size to fifteen students or less
 - c) Verify student identity using government issued photo identification.

We do not know when this temporary allowance will end. It likely will end after normal classroom education can safely resume. We will obtain advice from the Electrical Board and industry stakeholders before we announce an end date. We will provide plenty of advanced notice of that date in this newsletter..

Temporary Allowance Continues for Trainees to Work While Completing Classroom Training

The COVID-19 pandemic continues to challenge the ability of trainees to complete the required classroom education to renew their certificates. Temporary measures remain in place to increase availability of education during this time.

The temporary allowance allows trainees to work while in expired status for 90 days after their expiration date while completing their required classroom training.

If required training is not completed within the additional time allowed, trainees cannot lawfully work in the electrical trade and their hours of experience cannot be counted. The trainee will need a properly renewed (active) training certificate. This temporary allowance does not remove the fees for a late renewal or add time to the deadline for turning in affidavits of experience.

Trainees - Do not wait until the last minute to complete educational requirements! You can find class providers on the list of [approved basic trainee classes](#) at the [Basic Classroom Instruction & Continuing Education](#) page of our website.

Safety Tip of the Month

Fire season is here!

Be aware of your surroundings

Avoid parking in tall grass; your exhaust may start a fire.

Be sure safety chains on trailer hitches are short and do not drag on the ground causing sparks.

Be prepared; carry a fire extinguisher, shovel, and a bucket in case you have to help put out a fire.

Fees for After-Hours Inspections

Occasionally, a customer requires an inspection outside the normal business hours of 7:30 a.m. to 4:00 p.m., Monday through Friday. Such inspections must be pre-arranged with the [electrical inspection supervisor near you](#) or [Virtual Electrical Inspection](#) supervisor if you are using that service. For inspections outside of normal business hours, fees apply in addition to regular permit fees. If an after-hours inspection is pre-arranged 24 or more hours (before noon of the previous working day) in advance, the fee for the inspection will be the portal-to-portal hourly rate specified in [WAC 296-46B-906\(11\)](#) in addition to the regular permit fee.

For Inspections where the department has not been given at least 24 hours' notice, the fee will be the portal-to-portal fee plus the after-hours surcharge of WAC 296-46B-906(5)(f) (currently \$125.40), plus the regular permit fee. These fees are not available online and must be paid at a service location or as a fee due issued by an inspector.

The exception to this rule is for temporary stage or concert inspections only, which will be the greater of the permit fee from WAC 296-46B-906(3), or the portal-to-portal hourly fee; in addition to the short-notice surcharge if applicable.

When Must a Trainee Submit Experience Hours to the Department?

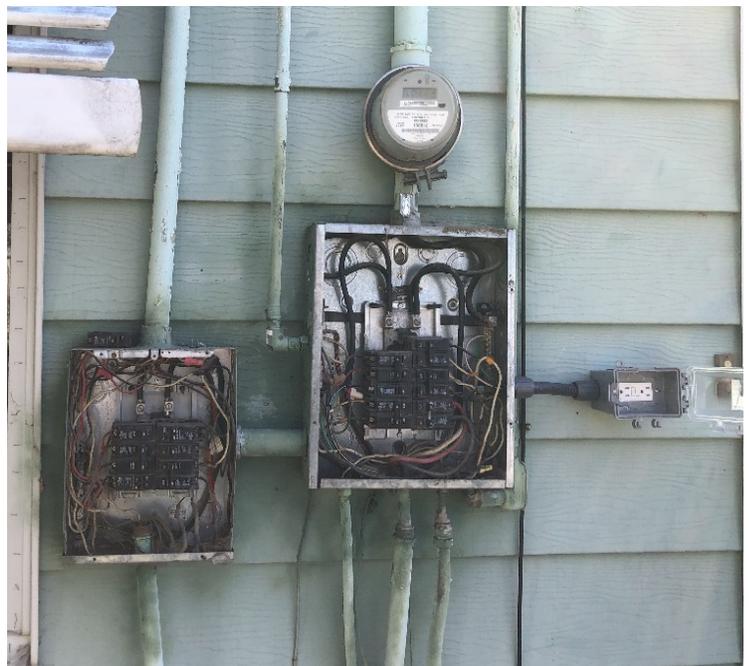
If not registered in a department-approved apprenticeship, affidavits of experience are eligible for consideration if received by the department no more than 180 days from the expiration date of the associated training certificate. The expiration date closest to the period claimed on the affidavit is the date used to determine eligibility.

Time is not your friend when it comes to justifying hours and types of experience – employers go out of business, supervising electricians, and administrators move on. Too often, trainees end up with no one to vouch for their experience or records to support it. The law addresses this problem. RCW [19.28.161\(2\)](#) requires training certificates to be renewed every two years. At the time of renewal, the holder of a training certificate is required by law to provide the department with an accurate list of the holder's employers for the previous two-year period and the number of hours worked for each employer.

Find out more about all this and our easy to use one page affidavit here:

<https://lni.wa.gov/licensing-permits/electrical/electrical-licensing-exams-education/electrical-trainee#reporting-your-hours-of-experience>

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* After a fire in the living room, started by the fireplace, a restoration company asked an electrical contractor to check out this service. With no main breaker and a NEMA 1 enclosure outdoors it is a wonder that there were not problems before. Luckily the electrical contractor did not have the service energized, but rather replaced it and repaired the damaged circuits.



Answer to Question of the Month:

WAC 296-46B-358(2) says, "Where electrical metallic tubing is installed in wet locations, an equipment grounding conductor must be provided within the raceway sized per NEC 250.122.

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Question of the Month

An electrician installs an emergency disconnect on the outside of a single family home. There is no grounding electrode conductor connected to the emergency disconnect. What signage is required?

See correct answer on Page 2

Last Year in Review

In the year ending on June 30, 2021, the electrical program accomplished:

- 272,731 inspections
- 78% of inspections completed within 24 hours of request
- 90% of inspections completed within 48 hours of request
- 1.9 million miles driven

- 11,462 virtual inspections
- 74,293 corrections written - 56% are serious corrections
- 83% of inspection requests made online
- 179,710 permits sold – 90% are contractor permits
- 87% of permit fees were collected online
- 10,266 total citations and warnings written
- 6,101 of the citations written targeted the underground economy.
- 2,342 hours of training and outreach done by ECOPE
- 5,073 pages reviewed by plans examiners– 80% submitted online
- 19,019 licensees and certificates processed – 94% on line
- 6,612 new trainee certificates issued – 98% on line
- 445 01 general journey level reciprocal certificates issued to Oregon license holders.
- 6.9 million hours of experience reviewed by the audit team – 2.4 million hours denied - Some of the reasons are due to lack of verification, lapse certification or untimely affidavits
- 1540 hours of training delivered to new inspectors

This is just a snap shot of all the hard work that the Electrical program staff did last year.

The Top Five Corrections Written Last Year

1. 4,146 – No access for inspection (RCW 19.28.101)
2. 3,499 – Notifying the department work was ready for inspection with it was not ready (WAC 296-46B-906(7)(B))
3. 3,205 – GFCI protections in dwellings (NEC 210.8(A))
4. 2,000 – Not following the manufactures instructions (NEC 110.3(B))
5. 1,611 – Failing to properly fill out the panel schedule (NEC 408.4 (A))

Safety Tip of the Month

The work of an electrician is challenging and rewarding. Knowledge of safe work practices and electrical laws, codes, and rules are essential to maintaining worker safety and ensuring installations meet the minimum requirements for safety to life and property.

Those learning the trade do not have the experience and knowledge required to make safe installation choices and require supervision throughout their training period.

[RCW 19.28.161\(3\)](#) and [WAC 296-46B-100](#) describes proper supervision. Proper supervision consists of the trainee being on the same job site and under the control of an appropriately certified supervising electrician.

Lack of proper supervision not only creates potentially hazardous conditions, it is illegal and could result in civil penalties being assessed to the contractor, administrator, and trainee.

Keep Your RCW/WAC up to date

Laws and rules that govern the electrical trade in Washington change often. We make it easy to keep track of the changes by providing insert and replacement pages on our website in the [Electrical Laws and Rules](#) section. Download the new page, print it and add it to your copy.

Get Your Inspection Faster With Good Work Descriptions and Driving Directions

Trying to find a jobsite and find what you need to inspect with little or no information to go on can make for slow going. Inspectors rely on driving directions and permit and inspection descriptions to get the job done. It slows everything down when they do not have good information.

Job descriptions – A few details are all it takes. The following are actual job descriptions from permits:

Good	Bad
<ul style="list-style-type: none"> • Circuit to new heat pump in back yard • Add an outlet at vanity in master bathroom • 100 amp underground feeder from panel in garage to wiring in new barn 	<ul style="list-style-type: none"> • Extend circuit • Lights • Run a circuit • Homeowner request

Can you tell the difference? The first three are clear and make it easier for the inspector to find the work you need inspected. The last four are virtually useless. Do not be shy! Permit job description fields take up to 255 characters.

Driving directions – It is equally important to provide good directions to your jobsite. Inspectors bounce all over, sometimes from the other side of the state. Please do not cut and paste directions from mapping websites. Always provide directions from the nearest main street, highway, or intersection. Better directions means inspectors can get more inspections done.

Here are examples of bad and good directions:

Good	Bad
<ul style="list-style-type: none"> • North on Hwy 821 from Selah, 1.2 miles past Pomona, right on Selah Creek Dr. • I-82 East to Exit 75, right on McCreddie, right on Wine Country Rd. 	<ul style="list-style-type: none"> • Just past the green shop on Brown Rd. • Hwy 20 • Use Google Maps

We have all struggled to find our way at one time or another. It is easy to tell the difference between good and bad driving directions. Together we can improve and everyone will benefit.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* An electrical contractor installed this disconnect for a future heat pump. How many code violations do you see? Is the equipment connected to the Equipment Grounding Conductor? If we closed the breaker in the panel, what could happen?

Answer to Question of the Month: According to NEC 230.85 "... other disconnect switches or circuit breakers on the supply side of each service disconnect that are suitable for use as service equipment..." shall "...be marked as follows: EMERGENCY DISCONNECT, NOT SERVICE EQUIPMENT." This label will still need to follow the rules of markings found in NEC 110.21(B) and identification plates in WAC 296-46B-100.



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Question of the Month

In addition to the requirements for GFCI protection in 210.8(B), are there any other requirements for GFCI protection at your county fair?
See correct answer on Page 2

Further Delay for 2020 NEC 230.71(B)(4) Requirements - Metering Centers and Power Outlets

For metering centers having two to six service disconnects in the same enclosure, we are officially delaying enforcement of NEC 230.71(B)(4) until July 1, 2022. Because of this, the exception to 2017 NEC 408.3(A)(2) supersedes 2020 NEC 230.62(C) until that date.

This delay extends one announced in this newsletter in November 2020, allowing metering center manufacturers additional time to make products that do not have more than one service disconnect in an enclosure.

When permits are purchased after June 30, 2022, metering center service disconnects must be in separate compartments and comply with NEC 230.71(B)(4) and 2020 NEC 230.62(C).

For power outlets certified to UL 231, an indefinite delay applies to enforcement of 2020 NEC 230.71(B)(4) requirements. Because of this, the exception to 2017 NEC 408.3(A)(2) supersedes 2020 NEC 230.62(C). Some of the common uses of power outlets are service equipment for recreational vehicles and temporary power on construction sites.

Trainee Hours and Renewal Lapses are now Online

Our Verify tool - <https://secure.lni.wa.gov/verify/> - now allows anyone to see affidavit hours and renewal lapses. Search by training certificate number if you can. If you prefer to search by name, narrow the number of results by selecting Electrical > Electrical Trainees after results appear.

Looking for lapses? Verify displays them under the Past and Related Licenses link in the results. If the Past and Related Licenses link is not present, there are no lapses or other licenses to display. Changes to make things more apparent are on the way

July 1st Changes – Fees and Examinations

July is here and there are some reminders about updates to the electrical program.

- New fees are now in effect. Fees for online services update automatically. Here is a link to the new fee schedule: <https://lni.wa.gov/licensing-permits/docs/2021WAC296-46B-Fee-insert-pages.pdf>.
- All exams are now from the 2020 NEC. Current RCW 19.28 and WAC 296-46B are available to print from the [Electrical Laws and Rules](#) page of our website. Contact an [office location](#) near you to learn more about how to obtain paper copies of the laws and rules.

Electrical Safety Around Water

With summer in full swing, it is a good time to remind everyone about electric shock drowning hazards.

Danger exists anywhere the use of electricity and water coexist – marinas, launch ramps, private docks, boatlifts, swimming pools, hot tubs, spas, and irrigation pumps in contact with a body of water. Can you name others?

These areas can contain stray electrical currents in the water, possibly leading to electric shock drowning or injury from shock, including death.

Learn how to protect yourself and others:
<https://www.nfpa.org/Public-Education/Staying-safe/Electrical-safety-around-water>

Property Flipper Legislation will Protect Home Buyers

A law designed to protect home buyers from shoddy electrical wiring becomes effective July 25, 2021. [Substitute Senate Bill \(SSB\) 5267](#) requires those doing electrical work associated with flipping property to be certified electricians working for licensed electrical contractors. During consideration of this bill, electrical inspectors provided many examples of unsafe electrical wiring performed by property flippers that included stories of new owners having to hire electrical contractors to make repairs, sometimes at significant cost.

Generally, property owners are exempt from electrical licensing and certification laws in accordance with [RCW 19.28.261](#). SSB 5267 modifies that exemption for properties offered for sale within twelve months after obtaining it. This change aligns electrical laws with existing laws that require property flippers to be registered construction contractors or hire one to superintend any construction work.

NFPA is Seeking Comments on the 2023 NEC

The 2023 NEC is well on its way to publication.

The process for creating the next edition of the NEC starts just a few months after the publication of the previous edition. Each edition starts with a request for public input. Anyone can make a suggestion on how to change the NEC. This public brainstorming results in a list of ideas to improve the NEC and is collected into a First Draft.

The First Draft of the NEC 2023 is open for public comment until August 19, 2021. This is an opportunity for stakeholders, industry leaders and installers to give their thoughts on the possible changes. The comments go to a vote by code making panels to accept, amend or reject the comments.

If you are interested in seeing the proposed changes, or wish to make a comment and get involved in code making, go to [www.NFPA.org](http://www.nfpa.org), search for NEC and select next edition. If you are viewing this online, here is a link [NEC 2023 edition](#). Learn more about code making at:

<https://www.nfpa.org/Codes-and-Standards/Standards-Development/How-the-process-works>

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

This property owner wanted to keep power to the shed while doing an addition. They made a double male-ended cord from a 14 AWG extension cord and plugged it into a 240v 30amp indoor receptacle outside on a post.

Shortcuts like this can cause injury or death. Our system of permits and inspections caught and corrected this hazard before it was too late.

Answer to Question of the Month:

NEC 525.23 (A)(1) and (2) state that all 125v single phase non-locking receptacles and 125v single phase 15 and 20 amp used for assembly and disassembly or readily accessible to the public must be GFCI protected. Further, all equipment that is readily accessible to the public supplied from 125v single-phase 15 and 20 amp branch circuits need GFCI protection.



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Wayne Molesworth, Chief Electrical
Inspector

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June 2021

This Month's Question of the Month

Where and how would you bond a flexible metal gas piping system? *See correct answer on Page 2*

Exams Updated to the 2020 NEC Beginning July 1, 2021

Starting July 1, 2021, all electrical examinations are based on the 2020 NEC, [WAC 296-46B](#), and [RCW 19.28](#).

The Electrical Board, having responsibility for coordination with the department in preparation and administration of examinations, endorsed this change.

Like the codes, laws, and rules they are based on, exam questions do not change significantly over time.

All examinations are open-book and exam candidates can bring any original copyrighted reference material into the exam with them. Copies of RCW 19.28 and WAC 296-46B may be used and are available to print from the [Electrical Laws and Rules](#) page of our website. You can also update your printed copies with recent WAC and RCW changes by printing the insert pages available on this web page.

For more information about the exams, you can refer to [WAC 296-46B-960](#) or visit the [Electrical Examination](#) page of our website.

Electrical Fee Increase – Effective July 1, 2021

For a few months, we have been updating you about the change in our fee schedule. Fees have remained unchanged for the last four years.

To keep up with higher costs associated with inspection and licensing services, we have adopted rules to increase electrical fees based on the Office of Financial Management (OFM) 5.79% [fiscal growth factor](#) projections.

A fee increase allows the program to continue providing quality and timely services to assure safe electrical installations in homes, businesses, industry, and institutions to protect people and property from electrical hazards.

The electrical program accepted public comments, and held a public hearing on May 11, 2021. We adopted the rules and filed the CR-103 rulemaking order on May 18, 2021.

You can view or download the rulemaking documents including a copy of the revised fees by visiting the [Electrical Laws and Rules](#) web page.

Safety Tip of the Month

Arc flash hazards are a real threat to electricians. There have been great advancements in PPE to reduce injuries and technologies to prevent property damage from arc flashes.

There is no practical protection from an arc blast. The concussive force is more than enough to cause physical trauma and lung damage even if you are wearing protective clothing.

Do not work on an energized electrical system.
Remember to follow Lock Out/Tag Out procedures for setup, maintenance, service or repair of any system.

Enforcement for Metering Centers Begins July 1

In the November 2020 newsletter, we announced the delay of adopting NEC 230.71(B)(4) requirement for service disconnects in metering centers to be in separate compartments if within the same enclosure. This delay was to give manufactures more time to produce and distribute metering centers that meet the new requirements.

Enforcement of NEC 230.71(B)(4) will begin on July 1, 2021 requiring all metering centers with two to six service disconnects to have each service disconnect located in a separate compartment.

This requirement will still not apply to equipment certified to UL 231 Standard for Power Outlets. Some of the common uses of power outlets are service equipment for recreational vehicles and temporary power on construction sites.

Natural Gas Meter? Double-Check Your Bonding.

A common mindset among electricians is, if it is metal, bond it. That is not always the case. Natural gas utilities use a corrosion control system (cathodic protection) to protect metallic fuel lines from deteriorating. When we include these fuel lines in our grounding and bonding installation it defeats this important safety system putting others at risk.

Electricians need to be aware of the requirements of other mechanical and energy systems on site. NEC 250.53(B) prohibits the use of underground gas lines as a grounding electrode. If you need to bond the fuel lines within the building according to NEC 250.104 and WAC296-46B-250, the bonding connection must be on the customer side of the meter.

Each gas utility meter has insulated fittings to keep their system isolated from the mechanical and electrical systems of a customer. If an electrician bonds the wrong side of the meter, they have not bonded the building metal piping system, and circumvented the cathodic protection system, which can lead to a gas leak, injury or a structure fire.

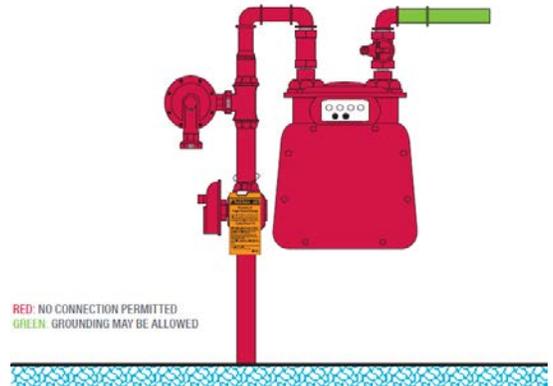
Answer to Question of the Month:

WAC [296-46B-250](#) (9) states for flexible metal gas piping, installed new or extended from an existing rigid metal piping system the installer will either provide a copy of the manufacturer's bonding instructions and follow those instructions, or install a bonding conductor that is:

1. At a minimum 6 AWG copper; and
2. Terminated at an accessible location at the gas meter end of the gas piping system on either a solid iron gas pipe or a cast flexible gas piping fitting using a listed grounding connector; And, connect to either the service equipment enclosure, service grounding electrode conductor or electrode, or neutral conductor bus in the service enclosure.

Ugly Picture of the Month:

If viewing this document online, click on the picture to open a larger image. This is an installation found by a Puget Sound Energy employee. What is wrong? Does the ground clamp on the supply side of the gas meter defeat the utility's cathodic protection system and violate NEC 250.53(B)? – YES. Is the gas piping system inside the building bonded as required? – NO. Did the installer use a ground clamp that is rated for outdoors? – NO.



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Congratulations Lanny Hughes!

Thank you to all who submitted an answer for last month's question of the month, and congratulations to Lanny Hughes for being the first to respond with the correct answer. Here is the correct answer: B) 22,540 VA. A permit was issued on October 31, 2020, so the project falls under the 2020 NEC. A bank is an office-type occupancy according to the note to Table 220.12. Table 220.12 changed significantly in the 2020 edition. General lighting load: $9,800 \text{ ft}^2 \times 1.3 \text{ VA/ft}^2 = 12,740 \text{ VA}$. Since the number of receptacles is not stated in the question, receptacle load is $9,800 \text{ ft}^2 \times 1 \text{ VA/ft}^2 = 9,800 \text{ VA}$ per 220.14(K). $12,740 \text{ VA} + 9,800 \text{ VA} = 22,540 \text{ VA}$.

Safety Tip of the Month

As warmer months are coming it is important to remember that the proper clothing and Personal Protective Equipment (PPE) are an important element in our daily work.

- It is important that you have the correct equipment for the task you are performing and use it properly.
- PPE may be sweltering hot or cumbersome however, do not let a little discomfort keep you from using your safety equipment.
- To combat the effects of the added layers of PPE, sip water though out your day and take breaks as needed to cool down.

More information about working in the heat can be found at <https://lni.wa.gov/safety-health/safety-training->

This Month's Question of the Month – What is the minimum conductor ampacity for a branch circuit supplying a single continuous duty 5 HP, single-phase 230 volt high-efficiency squirrel cage motor with a nameplate full load current of 24 amps? *See correct answer on Page 2*

Bring Your New Code Books to all Examinations Beginning July 1, 2021

On July 1, 2021, all electrical examinations will be based on the 2020 NEC, [WAC 296-46B](#), and [RCW 19.28](#). The Electrical Board, having responsibility for coordination with the department in preparation and administration of examinations, endorsed this change.

Like the codes, laws, and rules they are based on, exam questions do not change significantly over time. All examinations are open-book and exam candidates can bring any original copyrighted reference material into the exam with them. Copies of RCW 19.28 and WAC 296-46B may be used and are available to print from the [Electrical Laws and Rules](#) page of our website. You can also update your printed copy with the insert pages available on this web page. This change will affect all examinations taken on or after July 1, 2021, even those resulting from failing to pass a previous exam.

For more information about the exams, you can refer to [WAC 296-46B-960](#) or visit the [Electrical Examination](#) page of our website.

New Affidavit of Experience Form Has Been Streamlined

We have been reviewing our forms in an effort to make it easier for customers to do business with us. We have streamlined the [Affidavit of Experience for Washington Electrical Trainees](#) form. We have combined the previous two forms into one form that includes sections for reporting hours requiring 75% and 100% supervision on the same one-page form. Also gone is the requirement for the trainee to provide a notarized signature on the form. All requirements for submitting affidavits of experience remain the same. To receive credit for hours worked, trainees, unless registered in an approved electrical apprenticeship program must submit affidavits no later than 180 days after the date their training certificate expires for hours worked in the 24 months before that date. An update fee is required for each affidavit submitted more than 30 days after the training certificate expires. No fee is required to submit it earlier.

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Legislative Update – Property Flipper Bill Signed by the Governor

One bill that affects the electrical program, [Substitute Senate Bill 5267](#) has passed the Legislature and was signed by the Governor. The bill requires those doing electrical work associated with flipping property to be certified electricians working for licensed electrical contractors. It will be effective on July 24, 2021 (90 days after the end of the 2021 regular legislative session). During consideration of this bill, electrical inspectors provided many examples of unsafe electrical wiring performed by property flippers that included stories of new owners having to hire electrical contractors to make repairs, sometimes at significant cost.

Generally, property owners are exempt from electrical licensing and certification laws in accordance with [RCW 19.28.261](#). This bill modifies that exemption for properties offered for sale within twelve months after obtaining it. This change aligns electrical laws with existing laws that require property flippers to be registered construction contractors or hire one to superintend any construction work.

You can get information about the bill by visiting [Substitute Senate Bill 5267](#) on the Washington legislature bill information web page.

Rulemaking Updates

Increase Electrical Fees? – Fees have remained unchanged for the last four years. To keep up with higher costs associated with inspection and licensing services, we are proposing rulemaking to increase electrical fees based on OFM's 5.79% [fiscal growth factor](#) projections.

A fee increase enables the program to continue providing quality and timely services to assure safe electrical installations in homes, businesses, industry, and institutions to protect people and property from electrical hazards.

We filed a [CR-102](#) Proposed Rule Making on April 6, 2021, announcing a public comment period. A virtual/telephonic public hearing will be held May 11, 2021. You can get information about how to attend or submit written comments by viewing the [Public Hearing Information Packet](#) on our [Electrical Laws, Rules, and Policies](#) web page.

If adopted, the new fees will be effective July 1, 2021. Watch for more information about this rulemaking in the coming months.

WAC 296-46B-995 Electrical Board – Appeal Rights and Hearings - On December 1, 2020, L&I filed a CR-101 to begin the rule making process for amending [WAC 296-46B-995](#) in response to a petition for rule making. The petition seeks to clarify, simplify, and make the procedures for appeals to the board easier to understand and navigate, as well as to help reduce confusion for those that appeal decisions to the board.

You can find a copy of the First Draft of these changes as well as more information about these and other rule making activities on the Rule Development tab of our [Electrical Laws, Rules, and Policies](#) web page.

Ugly Picture of the Month: Improper use of an extension cord ruined this family's day. This century-old home was heavily damaged because of an extension cord and adapter in a bedroom with multiple devices plugged into it. Thankfully, no one was injured, and the home may be salvageable.

Answer to Question of the Month: 35 amperes. NEC 430.22 – Conductors supplying a single, continuous duty motor must have an ampacity not less than 125% of the motor full-load current rating as determined by 430.6(A)(1), which refers to table values (in this case, Table 430.248). Do not use motor nameplate rating to determine conductor ampacity in this application.



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Question of the Month – The first person to correctly answer this question and show their math wins recognition in the next edition.

A design-build project on a new 9800 square foot bank building requires you to calculate the electrical load. L&I issued an electrical permit for this project on October 31, 2020. What is the general lighting and receptacle load when the actual number of general-purpose receptacle outlets is unknown? Allowances for buildings designed and constructed to comply with the Washington State Energy Code do not apply.

A) 12,740 VA B) 22,540 VA C) 34,300 VA D) 44,100 VA

See where to send your answer on Page 2

Safety Tip of the Month

Soon the weather will improve and water sports and boating will return. Do not allow yourself or anyone else to swim near a dock or marina where electrical power is present. Unlike a properly wired swimming pool, marinas lack essential safeguards to protect swimmers from electric shock. If you must enter the water to work on a boat or dock, turn off and lock out all sources of electricity first.

Ceiling Mounted Outlet Boxes in Dwellings – When are Fan Rated Boxes Required?

In the 2020 NEC, changes in 314.27(C) have created confusion. Knowing the meaning of, “in a location acceptable for the installation of a ceiling-suspended (paddle) fan” is essential to determining where boxes intended for fans are required.

We interpret the second paragraph of 314.27(C) to apply to all outlet boxes mounted in the ceilings of habitable rooms of dwelling occupancies except:

1. Areas within four feet of walls or soffits, or
2. Areas directly above permanently installed island or peninsular countertop surfaces.

When changing the application of a ceiling-mounted outlet box to support a paddle fan, strict adherence to 314.27(C) is required. Permits and inspections are required to install new ceiling suspended (paddle) fans.

Trainees – 90 Day Temporary Allowance to Work While Expired

Without a doubt, social distancing requirements brought on by the COVID-19 pandemic affected availability of basic classroom training for trainees. Unprecedented conditions required unprecedented measures.

As it became apparent that no end to the pandemic was in sight, we provided more time for trainees to complete educational requirements as follows:

- 1) Trainees with expiration dates between March 13, 2020 and October 28, 2020 could work after renewing without completing educational requirements until January 26, 2021.
- 2) In the June 2020 edition of this [newsletter](#), we put in place a temporary allowance for virtual basic classroom classes to increase availability of trainee education.
- 3) Trainees expiring on or after October 29, 2020 may continue work after their certificate expires for 90 days. This allowance is temporary.

Watch for announcements about when these temporary allowances end in future editions of this newsletter.

Legislative Update

One bill that affects the electrical program, [Substitute Senate Bill 5267](#) has passed the Legislature and is headed to the Governor's desk for signature. The bill requires those doing electrical work associated with flipping property to be certified electricians working for licensed electrical contractors. During consideration of this bill, electrical inspectors provided many examples of unsafe electrical wiring performed by property flippers that included stories of new owners having to hire electrical contractors to make repairs, sometimes at significant cost.

Generally, property owners are exempt from electrical licensing and certification laws in accordance with [RCW 19.28.261](#). This bill modifies that exemption for properties offered for sale within twelve months after obtaining it. This change aligns electrical laws with existing laws that require property flippers to be registered construction contractors or hire one to superintend any construction work.

You can get information about the bill by visiting [Substitute Senate Bill 5267](#) on the Washington legislature bill information web page.

Rule Making Updates

Increase Electrical Fees? – Fees have remained unchanged for the last four years. To keep up with higher costs associated with inspection and licensing services, we are considering rule making to propose a fee increase equal to OFM's 5.79% [fiscal growth factor](#) projections.

A fee increase enables the program to continue providing quality and timely services to assure safe electrical installations and inspections in homes, businesses, industry, and institutions to protect people and property from electrical hazards.

We provided official public notification of this proposed rulemaking by filing a [CR-101](#) on February 16, 2021. Watch for more information about this rule making in the coming months. You can find more information about these and other rule making activities on the Rule Development tab of our [Electrical Laws, Rules, and Policies](#) web page.

WAC 296-46B-995 Electrical Board – Appeal Rights and Hearings - On December 1, 2020, L&I filed a CR-101 to begin the rule making process for amending [WAC 296-46B-995](#) in response to a petition for rule making. The petition seeks to clarify, simplify, and make the procedures for appeals to the board easier to understand and navigate, as well as to help reduce confusion for those that appeal decisions to the board.

Ugly Picture of the Month: Don't think electricity is hazardous? Think again. This explosion and fire occurred when a worker simply operated a circuit breaker in a dead-front panel. It is likely that the equipment was not properly rated for the available fault current. The worker was burned severely, but recovered. Protect yourself, always stand clear and use proper personal protective equipment when operating a circuit breaker, even when no live parts are exposed.

Answer to Question of the Month:

Show your work when you send your answer to us at ElectricalProgram@Lni.wa.gov. Put "Currents question" in the subject line. Include your name and we will publish it in the next edition if you are first.



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Question of the Month – Which of the following is true about a simple series circuit with constant voltage: 1) Power decreases with decreases in resistance. 2) Power increases with increases in resistance. 3) Voltage increases with increases in power. 4) Current increases with decreases in resistance.

See correct answer on Page 2

Purchase Class B Labels (Permits) Online!

No more label books to keep track of, everything is electronic! Licensed electrical contractors having secure Electronic Permit and Inspection System (EPIS) accounts can now purchase 20 Class B permits online. Look for a new tab to “Purchase Class B Labels” under “Manage Class B Permits/Labels” in your EPIS account.

The process and requirements for validating and posting is unchanged (See [WAC 296-46B-908](#)). You will not receive a book of labels. Once purchased and validated, you can either print a label image to post on the jobsite or just post the label number there.

Updated Electrical Exam Questions – Tentative Target Date is July 1, 2021

Current exam questions come from the 2017 NEC and current laws and rules. By July 1, 2021, we hope to have the process of updating the exam questions to the 2020 codes, laws and rules completed. After that time, anyone taking any part of any exam should prepare to answer updated questions. Typically, exam questions are general in nature and do not change much. Watch for updates in future editions of this newsletter.

01 Electrical Contractors – Are You an Apprenticeship Training Agent Yet?

Since the passage of [Substitute Senate Bill 6126](#) in 2018, there have been 3 new apprenticeship programs established for (01) apprentices, bringing the number available to 11. Others are in the works.

Requirements brought on by this legislation affect every contractor with trainees that are training to become 01 general journey level electricians. Nothing changes for specialty contractors or trainees who work for them.

Beginning on July 1, 2023:

1. Contractors must have already joined a registered apprenticeship program as a training agent to employ trainees doing the work of 01 journey level electricians.
2. Trainees doing this kind of work must be registered apprentices in the same apprenticeship as their training agent (employer).
3. Trainees are not allowed to qualify for 01 examinations after that date without completing an apprenticeship.

Contractors: Find information about becoming a training agent at:

<https://lni.wa.gov/licensing-permits/apprenticeship/offer-a-registered-apprenticeship>.

Trainees: Learn about becoming an apprentice at:

<https://lni.wa.gov/licensing-permits/apprenticeship/become-an-apprentice>.

Learn about recognized 01 General Journey Level Apprenticeship Programs and counties where they operate:

1. [Area 1 Inside Electrical JATC](#) – Clark, Klickitat, Skamania, Cowlitz, and Pacific.
2. [Electrical Management Group of Washington](#) – Clark, Cowlitz, Wahkiakum, Pacific, Lewis.
3. [Construction Industry Training Council of Washington - Construction Electrician](#) – All counties in Washington.

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Safety Tip of the Month
Standing water, ice, or snow may conceal hidden hazards. Avoid slips, trips, and falls by wearing proper footwear and proceeding with caution at all times. Trust your instincts and training. If your path is unsafe, find a safe route to get there or do not go!

4. [Frontier Apprenticeship & Training](#) (Frontier Electric of Washington employees only) – Clark, Cowlitz, Lewis, Skamania.
5. [IBEW 48 NECA-IBEW Electrical JATC](#) – Clark, Cowlitz, Klickitat, Skamania, Wahkiakum.
6. [Inland Empire Electrical Training Trust](#) – Adams, Ferry, Lincoln, Pend Oreille, Spokane, Stevens, Whitman.
7. [LU 112 - NECA Electrical Apprenticeship Committee](#) – Asotin, Benton, Columbia, Franklin, Garfield, Walla Walla, Yakima, Kittitas.
8. [Northwest Washington Electrical Industry Joint Apprenticeship and Training Committee](#) – Chelan, Douglas, Grant, Island, Okanogan, San Juan, Skagit, Snohomish, Whatcom.
9. [Puget Sound Electrical Joint Apprenticeship and Training Committee](#) – Jefferson, King, Kitsap, Clallam,
10. [Southwest Washington Electrical Joint Apprenticeship and Training Committee](#) – Pacific, Lewis, Grays Harbor, Mason, Pierce, Thurston.
11. [Tradesmen Apprenticeship & Comprehensive Training](#) (Tradesmen Electric employees only) – Clark, Cowlitz, Lewis, Skamania.

Legislative Update

Lawmakers are considering one bill that affects the electrical program. [Substitute Senate Bill 5267](#) passed the Senate and is being considered in the House. The bill requires electrical work associated with flipping property to be done by licensed electrical contractors and certified electricians.

Generally, property owners are exempt from electrical licensing and certification laws in accordance with [RCW 19.28.261](#). This bill modifies that exemption for persons or companies that are in the business of obtaining, upgrading, and selling the property within twelve months of purchase. This change aligns electrical laws with existing laws that require property flippers to be registered construction contractors or hire one to superintend any construction work.

Review [Substitute Senate Bill 5267](#) and comment if you desire. A comment button is located below the bill number on the webpage linked above. You may also share your opinion by contacting your legislator through the legislative website at: <http://www.leg.wa.gov/LIC/Pages/hotline.aspx>.

Rule Making Updates

WAC 296-46B-995 Electrical Board – Appeal Rights and Hearings - On December 1, 2020, L&I filed a CR-101 to begin the rule making process for amending [WAC 296-46B-995](#) in response to a petition for rule making. The petition seeks to clarify, simplify, and make the procedures for appeals to the board easier to understand and navigate, as well as to help reduce confusion for those that appeal decisions to the board.

Increase Electrical Fees? – Fees have remained unchanged for the last four years. To keep up with higher costs associated with inspection and licensing services, we are considering rule making to propose a fee increase equal to OFM's 5.79% [fiscal growth factor](#) projections.

A fee increase enables the program to continue providing quality and timely services to assure safe electrical installations and inspections in homes, businesses, industry, and institutions to protect people and property from electrical hazards.

Watch for more information about this rule making in the coming months. You can find more information about these and other rule making activities on the Rule Development tab of our [Electrical Laws, Rules, and Policies](#) web page.

Ugly Picture of the Month: Sorry, we are taking a break from ugliness this month. Watch for more next month!

Answer to Question of the Month: 4). According to Ohm's law, current increases with decreases in resistance. Basic electrical theory questions are on every open-book electrical examination. Knowledge of basic electrical theory is an important fundamental required for all electricians, even specialty electricians. Before attempting your exam, look up the definition of electrical theory in [WAC 296-46B-970](#), study these principles, and bring an electrical theory reference book with you to your open-book examination.

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Question of the Month – How quickly is a ground-fault circuit-interrupter (GFCI) designed to trip? *See correct answer on Page 2*

Legislative Update

This year's regular session began January 11, and is scheduled to end April 25, 2021. Lawmakers are considering bills that may affect you. Of the bills introduced so far this session, two affect the electrical industry. The bills are not sponsored by L&I.

Review the bills and comment if you desire. A comment button is located below the bill number on the webpages linked below. You may also share your opinion by contacting your legislator through the legislative website at: <http://www.leg.wa.gov/LIC/Pages/hotline.aspx>.

[Senate Bill 5267](#) – Requires electrical work associated with flipping property to be done by licensed electrical contractors and certified electricians. Generally, property owners are exempt from electrical licensing and certification laws in accordance with [RCW 19.28.261](#). This bill modifies that exemption for persons or companies that are in the business of obtaining, upgrading, and selling the property within 2 years of purchase. This change aligns electrical laws with existing laws that require property flippers to be registered construction contractors or hire one to superintend any construction work.

[House Bill 1187](#) – Expands the work scope for HVAC/refrigeration specialty electrical contractors and electricians (06A and 06B). This would allow them to install, repair, replace, or maintain branch circuits between outdoor units and indoor units of split ductless HVAC systems in dwelling units.

Rule Making Updates

WAC 296-46B-995 Electrical Board – Appeal Rights and Hearings - On December 1, 2020, L&I filed a CR-101 to begin the rule making process for amending [WAC 296-46B-995](#) in response to a petition for rule making. The petition seeks to clarify, simplify, and make the procedures for appeals to the board easier to understand and navigate, as well as to help reduce confusion for those that appeal decisions to the board.

Increase Electrical Fees? – Fees have remained unchanged for the last four years. To keep up with higher costs associated with inspection and licensing services, we are considering rule making to propose a fee increase equal to OFM's [5.79% fiscal growth factor](#) projections.

A fee increase enables the program to continue providing quality and timely services to assure safe electrical installations and inspections in homes, businesses, industry, and institutions to protect people and property from electrical hazards.

Watch for more information about this rule making in the coming months. You can find more information about these and other rule making activities on the Rule Development tab of our [Electrical Laws, Rules, and Policies](#) web page.

Training Certificate Renewal Requirements – Important Things to Know

Trainees who are coming up for renewal need to be aware of some important items. Please share this information with all electrical trainees.

Safety Tip of the Month

According to [OSHA](#), an average of 15 workers are killed on the job every day. Excluding highway collisions, the four leading causes of construction worker fatalities are:

- Falls
- Struck by an object
- Electrocutions
- Caught in or between objects

Please watch for and eliminate these "Fatal Four" hazards in your workplace.

Basic Classroom Training Required – Before you can renew your training certificate, you must have completed 48 hours of basic classroom education since your certificate became active. If your education requirement is not complete by the expiration date of your certificate, you cannot renew it and you cannot work in the electrical construction trade. If you do not renew by your expiration date, you will have to pay a late renewal fee. To assist trainees during the Covid-19 pandemic, the department has made some temporary allowances:

- Basic classroom instruction providers may temporarily conduct classes with virtual methods using internet-based platforms under specified conditions. We published details in the [August 2020 newsletter](#). Check with course providers for more details. You can find a list of classes on the [basic classroom instruction](#) page of our website.
- To allow additional time for trainees to complete basic classroom education required to renew, trainees may work with an expired certificate for 90 days after their certificate expires. This temporary allowance was made last year due to decreased availability of classes and will continue until further notice. Watch this newsletter for updates.

Submit Affidavits of Experience On Time – Trainees who are not registered in an approved apprenticeship have 180 days after the expiration date of their training certificate to submit affidavits of experience to receive credit for hours worked since their last training certificate was effective – see [WAC 296-46B-942\(d\)](#). This applies even if you cannot renew due to lack of completion of basic trainee education. You can get a copy of the affidavit of experience form by visiting the [Electrical Trainee](#) page of our website.

Installation Methods – Power and Control Tray Cable: Type TC

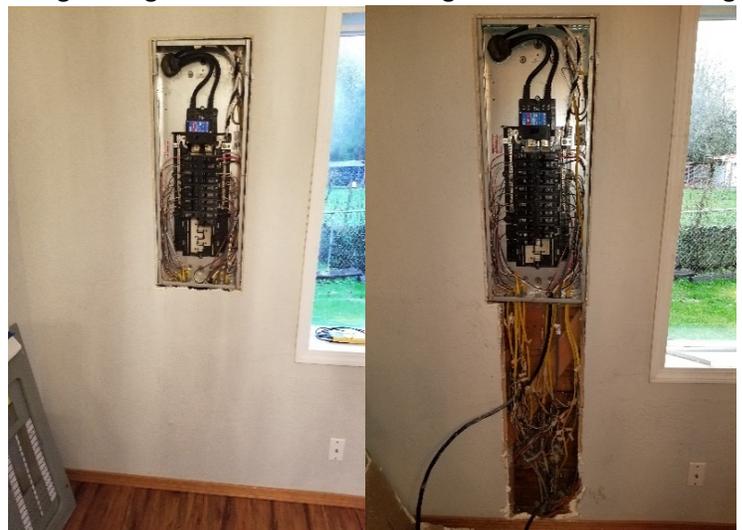
Manufacturers of ductless split-system HVAC systems typically specify Type TC cable for the branch-circuit wiring between outdoor and indoor units. [WAC 296-46B-336](#) allows the use of Type TC cable in any location allowed for nonmetallic-sheathed cable in NEC 334 when installation requirements in NEC 336, 334, and WAC 296-46B-334 are met.

Pay close attention to cable installation and cable marking requirements for particular applications in NEC 336.10. For exposed runs, the cable must be marked Type TC-ER. In one- and two-family dwelling units, Type TC-ER-JP (joist pull) must be used where pulled through building framing. You can find cable marking information in UL's [Wire and Cable Marking Guide](#).

It is never appropriate to support branch-circuit cables by attaching them to mechanical piping such as HVAC line sets. Exposed cables must be installed and protected from physical damage in accordance with NEC 334.15 and secured and supported by the building structure in accordance with NEC 334.30 and 110.12(C). Review these articles before installing Type TC cable for branch-circuits.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* The electrical panel pictured is new and was installed by a property flipper. The wiring below was covered prior to being inspected as shown on the left. Open splices had been concealed within the wall under the panel creating a potential extreme fire hazard. Further inspection found hazardous wiring throughout the house including more concealed wiring splices and open single conductors supplying receptacles.

Answer to Question of the Month: $1/40^{\text{th}}$ or 0.025 of a second. In a properly operating circuit, the electrical current going to and returning from an electrical device is equal. If it is not equal, current is flowing back to the source on a return path that it should not be, possibly through a person. A GFCI will sense this unbalance and disconnect power from the circuit. A difference of current as small as four milliamperes (mA) will cause a GFCI to trip in as little as $1/40^{\text{th}}$ of a second.



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(TDD/TTY users, please call 360-902-5797.) Labor & Industries is an Equal Opportunity employer.

Question of the Month – Should you renew your electrical license or certificate online or by mail. Why? *See correct answer on Page 2*

Rule Making Updates

WAC 296-46B-995 Electrical Board – Appeal Rights and Hearings - On December 1, 2020, L&I filed a CR-101 to begin the rule making process for amending [WAC 296-46B-995](#) in response to a petition for rule making. The petition seeks to clarify, simplify, and make the procedures for appeals to the board easier to understand and navigate, as well as to help reduce confusion for those that appeal decisions to the board.

Safety Tip of the Month

We are all facing many challenges during the COVID-19 pandemic. Knowing what is required and following guidelines will help keep everyone safe. Visit L&I's [COVID-19 \(Coronavirus\) webpage](#) for more information.

Electrical Program is Considering a Proposed Increase to Electrical Fees – The department is considering increasing fees by 5.79% for the Electrical Program to support increased expenses associated with inspections and licensing. This is the Office of Financial Management's (OFM) maximum allowable fiscal growth rate for fiscal year (FY) 2022. Each November, OFM's Expenditure Limit Committee adjusts the limit for the previous and current fiscal year for fiscal growth factors, and projects a limit for the following two years. The fiscal growth factor of 5.79% is based upon OFM's projections and is subject to revision.

The last fiscal growth factor increase took effect on January 1, 2017. A fee increase enables the program to continue providing quality and timely services to assure safe electrical installations and inspection in homes, businesses, industry and institutions to protect people and property from electrical hazards.

Watch for more information about this rule making in the coming months. You can find more information about these and other rule making activities on the Rule Development tab of our [Electrical Laws, Rules, and Policies](#) web page.

Schedule a Virtual Electrical Inspection Today

The [Virtual Electrical Inspection](#) (VEI) program has been very successful and is growing in popularity among electrical contractors and their electricians. During the last six months, the VEI program has averaged over 800 inspections per month. During a virtual inspection, an electrician on the jobsite with a mobile device (phone, tablet, etc.) interacts with a virtual inspector in real time. Same day appointments for virtual electrical inspections are available until filled. Here are some important points to keep in mind:

- To use VEI, you will need to download the [Skype Application](#) and create a profile.
- Use VEI for any electrical inspections that will take no longer than 15 minutes, *and* that do not involve service or final approvals.
- On the jobsite, make sure you have at least a 4G, LTE, or Wi-Fi connection on your mobile device.

Benefits:

- Get quicker follow-up inspections on corrections to get your jobs approved faster.
- Inspections the same day as requested saves time and money.

Use Google Chrome to [schedule](#) your inspection for the day and time you want. You can learn more about VEI by visiting www.lni.wa.gov and search "Virtual."

Contact us: Call 360-902-5299 or **Email:** VirtualElectricalInspection@Lni.wa.gov

How to Find What You Are Looking For on our Website

About a year ago, L&I went through a major revision to our website – www.Lni.wa.gov. The goal was to make it easier for customers to get the information they are looking for when they visit the site. The electrical program has over 80 separate pages and tabs containing lots of valuable information. Sometimes it can be difficult to locate what you want. We are continually trying to improve our website and we welcome any suggestions you have at ElectricalProgram@Lni.wa.gov.

From the main L&I home page, you can find the electrical program pages by clicking “Licensing & Permits” then “Electrical”.

Probably the best way to narrow down what you are looking for though is to use your web search engine to search for keywords of the specific topic you are looking for. For example, if you want to renew your electrician’s certificate, enter “L&I renew electrician” into your search engine. Once on the electrician page, select the “Renew” tab. Or, if you want to request an electrical inspection, enter “L&I request electrical inspection” in your search engine. Another goal of the website project was to make pages easier to use with a smart phone. Try it out, and let us know if you have ideas to help improve the site.

Updates and Electronic Copies of WAC 296-46B and RCW 19.28 are Available on our Website

Make sure your copies of WAC 296-46B and RCW 19.28 are up-to-date. You can find our web page containing the latest copies of these electrical laws and rules by searching “L&I electrical laws and rules” using your web search engine. You will also find revised pages to insert into your printed copies. From time to time, changes are made to the laws and rules through the rule making process or by the legislature. We announce these changes in this newsletter in articles containing legislative or rule making updates. We also prepare insert pages containing the revisions and post them on our Electrical Laws and Rules web page.

Contractors – Be Sure Customers Know Inspections are Coming

We are finding customers not knowing what they need to know about inspections. Too often, we hear customers who claim, “My electrical contractor never told me I needed an inspection”. Some are reluctant to allow access to an inspector.

If everyone knows that an inspection is required and what to expect, inspectors can focus on getting inspections done, which improves response time and reduces delays. We performed over two-hundred forty thousand electrical inspections last year. Probably more inspections will happen this year. Everybody’s time is important. Inspections are about safety and everybody needs to work together to get them done. Ultimately, it is the contractor’s responsibility to make sure inspectors get access. It is our responsibility to get there in a timely fashion. Together, we can help each other by ensuring customers know access is required and inspection requests include clear access instructions that get inspectors access to inspect. Please also include any safety or health concerns the inspector should watch out for on the jobsite.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* It may take a while, but you sharp electricians will get a chuckle out of this one.

Answer to Question of the Month: Online, of course! Here’s why: It’s easier, cheaper and faster. You can renew your license or certificate by clicking [this link](#). Renewal fees are about 15% higher if you do not renew online, and with L&I offices currently closed, the only other option is snail mail, and that’s slow. Try it! You’ll like it!



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Question of the Month – All examinations for a Washington electrician certificate of competency contain questions about basic electrical theory. What is the definition of electrical theory? *See correct answer on Page 2*

Rule Making Updates

WAC 296-46B-940 Reciprocal Agreements - L&I has adopted changes to rules for reciprocal agreements between Washington and other states in [WAC 296-46B-940](#). Visit the [Journey Level Electrician](#) tab of our Electrical Licensing webpage for more information about reciprocal agreements.

WAC 296-46B-995 Electrical Board – Appeal Rights and Hearings - On December 1, 2020, L&I filed a CR-101 to begin the rule making process for amending [WAC 296-46B-995](#) in response to a petition for rule making. The petition seeks to clarify, simplify, and make the procedures for appeals to the board easier to understand and navigate, as well as to help reduce confusion for those that appeal decisions to the board.

Watch for more information about this rule making in the coming months. More information about these and other rule making activities is available on the Rule Development tab of our [Electrical Laws, Rules, and Policies](#) web page.

Trainees – Do Not Lose Your Work Experience Hours – Submit Affidavits on Time

Please share this important message with all electrical trainees. To receive credit for experience worked in the electrical construction trade, trainees who are not registered apprentices must submit an affidavit of experience in a timely manner. Be aware of your certificate expiration date. Submit affidavits of experience within 30 days of the expiration date of your certificate to avoid a \$53.40 update fee. You must submit affidavits of experience from your employer(s) for the previous two years within 180 days of the expiration date of your certificate, unless you are registered in a department-approved apprenticeship program. This applies even if you cannot renew due to lack of basic classroom education (see article below). Upon request, employers are required to provide the previous period's affidavit of experience to the trainee within 20 days of request in accordance with [WAC 296-46B-942\(12\)](#). Affidavit of Experience forms are available by visiting the [Electrical Trainee](#) page of our website. There is also a handy [training log](#) on this web page to keep track of your experience.

When you renew, you must also have completed 48 hours of [basic classroom instruction](#) during the previous certificate period, or you cannot renew. You must still submit your affidavit of experience as described above though.

Temporary Allowance Extended for Trainees to Work While Completing Classroom Training

The COVID-19 pandemic has reduced availability of required classroom education for electrical trainees. Temporary measures are in place to increase availability of education during recovery. Trainees may lawfully work in the electrical trade without a properly renewed (active) training certificate under certain conditions.

Trainees having certificates with expiration dates on or after March 13, 2020, who have paid a renewal fee to renew them into inactive (“T”) status, may continue working in the trade while completing their classroom education until January 26, 2021.

Safety Tip of the Month

When working or playing outside in cold, wet, and/or windy conditions, remember:

- Dress in warm loose-fitting layers and stay dry. Wet clothing chills the body quickly.
- Excess sweating will cause your body to lose more heat, so remove extra layers of clothing whenever you feel too warm.
- Stay well hydrated. Drinking warm, non-caffeinated beverages helps warm you up and improves circulation to extremities.
- Do not ignore shivering. It is an important sign that your body is losing heat. Constant shivering is a sign that it is time to go inside and warm up.

Trainees expiring on or after October 29, 2020 may continue to work for 90 days after their expiration date in expired status while completing their required classroom training. If not renewed by the expiration date, a late renewal fee is required. This policy will remain until a date to be determined after the Governor declares the state is moving into Phase 4 of the recovery.

If you are a trainee, now is the time to schedule your classroom education. Trainees should not wait until the last minute to complete educational requirements! You can download a list of [approved basic trainee classes](#) at the [Basic Classroom Instruction & Continuing Education](#) page of our website.

Trainees and 01 Contractors – Apprenticeship Requirements are Coming Soon

[Substitute Senate Bill 6126](#) passed by the legislature in 2018 affects those training to become 01 general journey level electricians and those who employ them.

- Effective July 1, 2023, to be eligible for the (01) general journey level electrician examination, applicants must have completed a recognized (01) electrical apprenticeship program approved by the Washington State Apprenticeship Training Council (WSATC) or out-of-state equivalent.
- After June 30, 2023, unless working in a specialty, trainees must be registered apprentices. Apprenticeship programs may credit certain properly documented electrical experience on record with the department such as, 4000 hours required to obtain an electrical specialty certificate, military experience, or completion of a two-year training school program. Students enrolled in a two-year training school program in the electrical construction trade are not required to be registered apprentices while gaining on-the-job training experience during an externship.

Want to Sponsor An Apprenticeship Program? - All sponsors for (01) general journey level electrician apprenticeship programs must adhere to Minimum Guideline Standards approved by the WSATC. You can request a copy by contacting apprentice@lni.wa.gov. Registered apprenticeship programs start with the formation of an apprenticeship committee made up of industry members—both employers and employees.

The best way to get started is by contacting the apprenticeship customer service line at 360-902-5320. They will connect you with an apprenticeship consultant in your area. They are your best resource to help you identify which type of apprenticeship model best suits your company and then provide one-on-one consulting and on-site assistance to get your program up and running.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* An electrical inspector discovered this badly deteriorated service while inspecting another installation on the property. He checked and the exposed terminals were still energized. Look closely at the meter jaws and you can see a jumper wire installed to get some free power. The inspector had the power disconnected and may have saved someone’s life.

Answer to Question of the Month: [WAC 296-46B-970](#) – “Electrical theory” means basic principles of electricity such as: magnetism, ohm’s law, and circuit properties such as voltage, current, power, resistance, inductance, capacitance, reactance, impedance, etc., in series, parallel, and combination AC and DC circuits.

When preparing for an examination, make sure you are familiar with these principles and bring an electrical theory reference book with you for your open-book examination.



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Question of the Month – If originating in service equipment and routed through nonmetallic conduit, how many and what size *aluminum* supply side bonding jumpers are suitable for bonding a metallic CT metering enclosure for a 600 ampere 480-volt service supplied by two parallel runs of 400 kcmil aluminum conductors? See correct answer on Page 2

Safety Tip of the Month

In the coming months, be prepared for deteriorating driving conditions. Rain, fog, ice, and snow are on the way. To help prepare for winter driving, see the [Winter Travel](#) page on the Washington Department of Transportation website.

Announcing Additional 2020 National Electrical Code (NEC) Amendments

To give testing laboratories and manufacturers additional time to deal with incompatibility between equipment manufactured in compliance with existing product safety standards and new NEC requirements, L&I is clarifying implementation of several 2020 NEC requirements:

- Until January 1, 2023, we are delaying enforcement of:
 - GFCI requirements for outdoor outlets in 2020 NEC 210.8(F). There are incompatibility issues with GFCI protection and certain outdoor HVAC units causing the need to allow more time for manufacturers and testing laboratories to revise safety standards and equipment.
 - 2020 NEC 210.8(A)(7) GFCI protection requirements for receptacles rated 30 through 50 amperes within six feet of sinks that are supplied by single-phase branch circuits rated 150 volts to ground or less. This exception is also to allow more time for manufacturers and testing laboratories to revise standards and equipment to ensure all affected equipment is compatible with Class A GFCI protection.
- 2020 NEC 230.71 Maximum Number of Disconnects:
 - Until further notice, requirements in 2020 NEC 230.71 are not applicable to equipment certified according to UL 231 Standard for Power Outlets. Such equipment is commonly used as service equipment for temporary construction power, recreational vehicles, and other applications. If implemented as written in 2020 NEC 230.71, a significant number of temporary services would have to be disposed of due to new requirements.
 - Manufacturers need additional time to produce and distribute metering centers containing two to six service disconnects in the same enclosure in compliance with NEC 230.71. The department will delay the requirements of 2020 NEC 230.71 for metering centers until July 1, 2021.

How Do 2020 NEC 230.85 Emergency Disconnect Requirements Apply to Altered Services?

2020 NEC 230.85 requirements for emergency disconnects for one- and two-family dwellings will apply to all new dwellings having building permits issued on or after October 29, 2020. For service alterations made under electrical permits issued on or after October 29, 2020, a readily accessible outdoor emergency disconnecting means must be installed where services are increased or decreased in size, or where service disconnects, meter bases, overhead service masts, or underground service risers are relocated.

01 General Journey-Level Electricians – Reciprocal Agreement with Oregon

The reciprocal agreement in effect between Oregon and Washington allows eligibility for certification without examination under certain conditions.

Among them, reciprocity applicants must have passed examination in either state after completing formal apprenticeships or hold master or supervising electrician certificates obtained by examination in either state. On-the-job training is not a formal apprenticeship. Before applying, review all conditions to be sure you qualify.

Visit the [Journey Level Electrician](#) tab of our Electrical Licensing webpage for more information.

Rule Making Update: WAC 296-46B-940 Reciprocal Agreements

An emergency rule is in place because of a petition to revise rules for reciprocal agreements between Washington and other states. L&I is in the process of adopting these rules through the permanent rule making process. There will be a telephonic public hearing on this issue November 10, 2020 at 9:00 a.m. You can call 1-866-715-6499 to participate. When prompted enter passcode 9862128073# (pound sign required). More information about this and other rule making activity is available on the Rule Development tab of our [Electrical Laws, Rules, and Policies](#) web page.

Temporary Allowance Extended for Trainees to Work While Completing Classroom Training

The COVID-19 pandemic has reduced availability of required classroom education for electrical trainees. Temporary measures are in place to increase availability of education during recovery. Trainees having certificates that expired on or after March 13, 2020, who have paid a renewal fee to renew them into inactive ("T") status, may continue working in the trade while completing their classroom education until January 26, 2021.

On October 29, 2020 the new [2020 WAC 296-46B](#) takes effect, and with it, trainees cannot renew their certificates if they have not completed their required classroom education. If not renewed by the expiration date, a late renewal fee is required. Trainees expiring on or after October 29, 2020 may continue to work for 90 days after their expiration date while completing their required classroom training. If required training is not completed within the additional time allowed, trainees cannot lawfully work in the electrical trade without a properly renewed (active) training certificate. This policy will remain until a date to be determined after the Governor declares the state is moving into Phase 4 of the recovery.

If you have a training certificate, now is the time to schedule your classroom education. Trainees should not wait until the last minute to complete educational requirements! You can download a list of [approved basic trainee classes](#) at the [Basic Classroom Instruction & Continuing Education](#) page of our website.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* If the phase tape markings are correct, there is a dead short between phases. The installer can be thankful an electrical inspection called it to their attention. Inspection oversight helps prevent damage to equipment or worse yet, injury to the utility workers energizing it.

Answer to Question of the Month: One 1/0 aluminum bonding jumper in each of the parallel service entrance conduits. See NEC 250.102(C)(2). When bonding CT enclosures, check with the serving utility about their service requirements. Among them, some prohibit bonding connections to grounded conductors landed inside the CT enclosure. In that case, you must install a supply-side bonding jumper(s) from the service equipment to bond the CT enclosure.



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Question of the Month – To get credit for experience worked, how long after a trainee’s certificate expiration date must an affidavit of experience be submitted to the department. *See correct answer on Page 2*

Electrical Permit Fees

Permit fees are calculated using fee line items described in Sections (1) through (6) of [WAC 296-46B-906](#).

- Permit fees must support all inspections necessary to complete the inspection process, including all inspections made to verify that code violations are corrected.
- When permit fees do not support completion of the inspection process, progress inspection fees outlined in WAC 296-46B-906(8) (\$46.80 for each half hour) must be assessed in addition to those fees.
- When trip fees are charged in accordance with WAC 296-46B-906(7), those fees apply in addition to permit and progress inspection fees.

Code violations should be rarely found, especially on simple installations. Return trips are expensive for everyone. Before you request an inspection, verify that your installation meets code and ensure inspectors have access so they can approve your work!

You can download a copy of the permit fee schedule with explanatory notes by visiting the [Permit Fees](#) page of our website.

Class B Random Inspection Process Saves Time and Money

If you are a licensed electrical contractor and you are not using the Class B random inspection process for your minor electrical work, you should consider it. The Class B random inspection process is described in [WAC 296-46B-908](#). It is allowed for work that requires minimal electrical circuit modifications and has limited exposure hazards. To use the Class B process the scope of work must be as described in WAC 296-46B-908(10).

Class B labels are sold in books of twenty and currently cost about \$13 each compared to \$62 for a regular permit for added or altered residential circuits. Before beginning the work, the label(s) must be validated online by entering the jobsite information and who will be doing the work. Then, post the label or label number on the job site in accordance with the instructions.

You can purchase a book of Class B labels and have them delivered to you by contacting your [local L&I office](#).

Reciprocity Agreement Signed with Oregon for Journey-Level Electrician Certification

The Oregon Building Codes Division and the Washington State Department of Labor & Industries (L&I) have signed a reciprocal agreement allowing general journey level electricians certified in one state to apply for a certificate in the other state without having to take an examination under certain conditions.

You can get details about the agreement and the application process by visiting the [Journey Level Electrician](#) tab of our Electrical Licensing web page.

Safety Tip of the Month

Never leave energized conductors or equipment parts exposed. A missing cover on an energized electrical panel on a construction site can lead to tragedy. According to recent OSHA statistics, electrocution is the third leading cause of worker fatalities. Do not allow a serious unsafe condition such as exposed electrical wiring to ruin yours or someone else’s life on your jobsite.

2020 NEC 230.71 Maximum Number of Disconnects – Exemption for Listed Power Outlets and Metering Centers

Power outlets such as temporary construction services, recreational vehicle and mobile home services and pedestals, and marina power outlets are certified according to UL 231 Standard for Power Outlets. Electrical contractors have significant numbers of temporary services that will remain serviceable for many years that otherwise would have to be disposed of due to new requirements in 2020 NEC 230.71 for maximum number of disconnects. The department is hereby issuing a policy that will exempt power outlets listed under UL 231, where used as service equipment, from the requirements of 2020 NEC 230.71. This policy will be in place until further notice and give time for requirements in UL 231 to be updated and will give manufacturers time to revise their design and begin production and supply of the revised equipment.

Manufacturers need additional time to produce and distribute metering centers containing two to six service disconnects in the same enclosure in compliance with NEC 230.71. The department will delay the requirements of 2020 NEC 230.71 for metering centers until July 1, 2021.

Temporary Allowance Extended for Trainees to Work While Completing Classroom Training

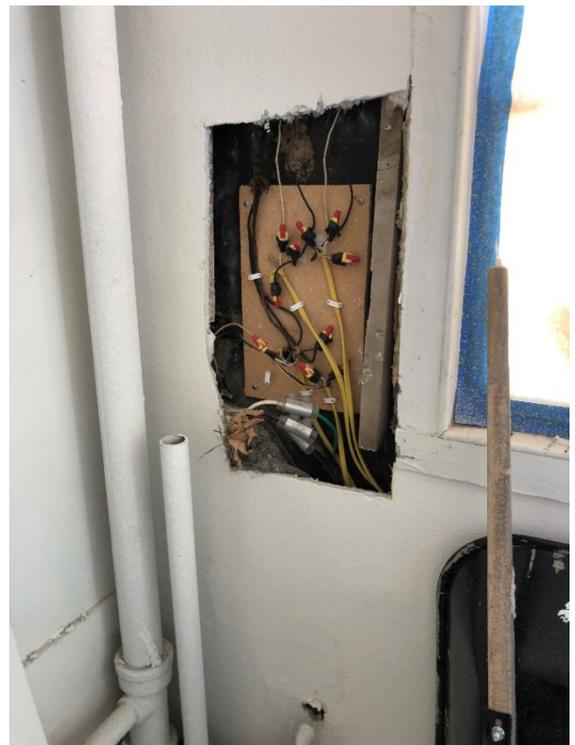
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If you have a training certificate, now is the time to schedule your classroom education. Trainees should not wait until the last minute to complete educational requirements! You can download a list of [approved basic trainee classes](#) at the [Basic Classroom Instruction & Continuing Education](#) page of our website.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* The splices in the picture were concealed behind newly installed sheetrock. An unlicensed electrical contractor performed a panel change working under the homeowner’s permit. The panel was moved to a different location. The observant electrical inspector asked them to remove the sheetrock and discovered this hazardous installation.

Answer to Question of the Month: 180 days. [WAC 296-46B-942](#)(8)(d): Within one-hundred eighty days after the expiration date of an electrical training certificate, the individual, if not enrolled in a department approved apprenticeship program, must submit a completed, signed, and notarized [affidavit](#)(s) of experience for all hours of experience gained since the individual’s last training certificate was effective. Affidavits received more than 30 days after expiration of the certificate will require an additional fee to process. Those received more than 180 days after expiration will be denied. Avoid losing your experience hours. Turn in your affidavits of experience on time.



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Question of the Month – You are installing a 1 horsepower, single-phase, 230-volt irrigation pump using 150 feet of #12 copper branch circuit conductors from the 230-volt service panel to the pump. What is the voltage drop at the pump?
See correct answer on Page 2

Thank You Tracy Prezeau for your Service to the Electrical Board

After many years of excellent service to the [electrical board](#), Tracy Prezeau's term on the board is ending. Governor Gregoire appointed Tracy to the board in 2005. In 2011, her fellow board members elected her to serve as chairperson. Electrical board members serve on a volunteer basis and we greatly appreciate Tracy's valuable contribution to the electrical industry of Washington. We thank her for her years of excellent service and wish her well. We know she will remain active in her support of Washington's electrical program through her position as an international representative of the IBEW Education Department. Congratulations to board member Jason Jenkins, who was elected to serve as the new chairperson at the July meeting.

Safety Tip of the Month

Make sure your temporary power installations are safe. Temporary power installations on construction sites, if not installed properly, can be a source of extreme hazard. Make sure your work is not the cause of a tragedy. Ensure all temporary wiring meets NEC requirements. Make sure service conductors at temporary power poles are not exposed.

Reciprocity Agreement Signed with Oregon for Journey-Level Electrician Certification

The Oregon Building Codes Division and the Washington State Department of Labor & Industries (L&I) have signed a reciprocal agreement allowing general journey level electricians certified in one state to apply for a certificate in the other state without having to take an examination under certain conditions.

Oregon reciprocal licenses are generally available to those who obtained Washington (01) general journey level electrician certificates after completing an 8000-hour apprenticeship and making a passing score on their Washington exams. Anyone having a Washington master (01) general journey level electrician certificate is also eligible. [Get more information about reciprocity and apply.](#)

If you need licensing verification from the state of Washington for an Oregon application, mail (do not email) your Oregon verification document along with a completed [Request for a Letter of Good Standing](#) and fee of \$26.40 to us at the address shown in the top left corner of the good standing form. We will fill out the verification form and mail it back to you along with your letter of good standing.

Washington reciprocal certificates are generally available to those electricians who obtained their Oregon general journeyman electrician (J) licenses after completing an 8000-hour apprenticeship and passing their Oregon exams. Anyone having an Oregon General Supervising Electrician (S) license obtained by Oregon examination is also eligible. Oregon license holders can apply anytime after they receive their Oregon license. To apply, submit an [Application for a Reciprocal 01 General Journey Level Electrician Certificate](#).

You can get details about the agreement and the application process by visiting the [Journey Level Electrician](#) tab of our Electrical Licensing website.

2020 NEC 230.71 Maximum Number of Disconnects – Exemption for Listed Power Outlets

Power outlets such as temporary construction services, recreational vehicle and mobile home services and pedestals, and marina power outlets are certified under UL 231 Standard for Power Outlets. Many electrical contractors have significant numbers of temporary services that will remain serviceable for many years that otherwise would have to be disposed of

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due new requirements in 2020 NEC 230.71 for maximum number of disconnects. The department is hereby issuing a policy that will exempt power outlets listed under UL 231, where used as service equipment, from the requirements of 2020 NEC 230.71. This policy will be in place until further notice and give time for requirements in UL 231 to be updated and will give manufacturers time to revise their design and begin production and supply of the revised equipment.

Temporary Allowance Extended for Trainees to Work While Completing Classroom Training

The COVID-19 pandemic has reduced availability of required classroom education for electrical trainees. Temporary measures are in place to increase availability of education during recovery. Trainees having certificates that expired on or after March 13, 2020, who have paid a renewal fee to renew them into inactive (“T”) status, may continue working in the trade while completing their classroom education until January 26, 2021.

On October 29, 2020 the new 2020 WAC 296-46B takes effect, and with it, trainees cannot renew their certificates if they have not completed their required classroom education. Beginning October 29, if not renewed by the expiration date, a late renewal fee is required. Trainees expiring on or after October 29, 2020 may continue to work for 90 days after their expiration date while completing their required classroom training. If required training is not completed within the additional time allowed, trainees cannot lawfully work in the electrical trade without a properly renewed (active) training certificate. This policy will remain until a date to be determined after the Governor declares the state is moving into Phase 4 of the recovery.

If you have a training certificate, now is the time to schedule your classroom education. Trainees should not wait until the last minute to complete educational requirements! You can download a list of [approved basic trainee classes](#) at the [Basic Classroom Instruction & Continuing Education](#) page of our website.

What Questions Are Allowed To Be Answered By Electrical Inspectors

Electrical inspectors often face many different types of electrical installation questions from consumers, contractors, and electricians. [WAC 296-46B-010](#)(2) states: *Electrical inspectors will give information as to the interpretation or application of the standards in this chapter, but will not lay out work or act as consultants for contractors, owners, or users.* There are a couple of reasons for this rule. L&I cannot take on the responsibility of an incorrect installation because an installer misunderstood the information that was provided. In addition, this ensures a level playing field for all competing in the electrical industry by placing limits on the types of questions an inspector may answer. It would not be ethical for one contractor to win a bid over another because of consultation given by a L&I inspector.

Many people call to ask if they “can just run something by” the inspector. Inspectors are not allowed to enter into discussions about project bidding or design or other “what if” scenarios. It is not the inspector’s role to make recommendations between design or installation options for the installer. The installer is responsible for the entire decision making process from bidding, to permit fees, to installation.

An inspector or supervisor can answer a specific question about a code interpretation or corrections you have been issued.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* Notice a problem with this installation? Someone put the stickers on upside down... or did they?

Answer to Question of the Month: 4.7 volts or 2 percent. Voltage Drop = $(2 \times 12.9 \times 8 \times 150) \div 6530$. The formula: **VD = $(2 \times K \times I \times L) \div$ wire circular mils**, where K is the conductor resistivity constant of 12.9 for copper and 21.2 for aluminum; I is load amperes (per Table 430.248); and L is one-way circuit length in feet. You can find wire circular mils in NEC Chapter 9, Table 8.



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Question of the Month – Once you pass an exam and receive your administrator, master, or electrician certificate, will you ever have to retest in order to renew? *See correct answer on Page 2*

Adoption of 2020 NEC and Revised WAC 296-46B Delayed Until October 29, 2020

Due to the impact of COVID-19 on businesses and consumers in Washington, the 2020 National Electrical Code (NEC) and the recently adopted changes to WAC 296-46B do not become effective until October 29, 2020. Watch future editions of this newsletter and the Rule Development tab of our [Electrical Laws and Rules](#) web page for more information.

Safety Tip of the Month

Beat the heat – How to avoid heat related illness:

- Stay hydrated with water and avoid sugary beverages.
- Stay cool by seeking shade or an air-conditioned area.
- Wear lightweight, light colored, loose fitting clothes.

Continuing Education Providers – Say Goodbye to the 2017 NEC

Upon publication of the 2020 NEC in August of last year, we began approving 2020 NEC update continuing education and basic classroom education classes. On October 29, 2020, the 2020 NEC will become effective in Washington. At that time, all classes based on the 2017 NEC will be revoked and may not be offered for instruction. This has no effect on credit earned for those completing a 2017 code update course before October 29, 2020.

Rules in [WAC 296-46B-970\(4\)\(b\)](#) specify the edition of the NEC to be used for code update classes and requires that code update classes must be based on the currently adopted NEC. A new application must be submitted for each 2020 NEC code update class. Applications must be submitted at least thirty calendar days prior to offering or instructing a class. You can find application forms for classes and instructors by visiting the [Basic Classroom Instruction & Continuing Education](#) page of our website.

Rule Petition Seeks to Pave the Way for Reciprocity with Oregon

The L&I electrical program has been in discussion with officials from Oregon regarding Journey Level electrician certificate reciprocity. There are some differences in the rules between the two states, which make things complicated for electricians to qualify for reciprocity. We have received a petition from stakeholders to amend [WAC 296-46B-940](#) to correct these differences. Oregon is undergoing rulemaking to amend their rules as well. Watch for rulemaking information by visiting the Rule Development tab of our [Electrical Laws and Rules](#) webpage. Updates regarding reciprocity with Oregon will be announced in future editions of this newsletter. You can join the electrical email list to receive the Electrical Currents newsletter by visiting the [Email Updates](#) page of our website.

Temporary Allowance for Virtual Basic Trainee Classes

Due to impacts of the COVID-19 pandemic on availability of basic classroom training for electrical trainees, approved classroom training providers may temporarily provide their classes through internet-based instruction platforms under these conditions:

1. Trainees and instructors must continuously interact in real time by live audio and video during the entire period of instruction and by live video during competency examinations; and
2. Providers must:
 - a. Allow department oversight by sending an invitation to ElectricalProgram@lni.wa.gov for every internet trainee class. Invitations must include: a hyperlink and any password needed to join the class, L&I issued course approval number, class agenda (name of class and instructor, date of class, starting time, ending time, breaks, etc.); and

- b. Limit class size to fifteen students or less; and
- c. Verify student identity using government issued photo identification.

This temporary allowance will be in effect until normal classroom education can safely resume in consultation with the Electrical Board and industry stakeholders.

Temporary Allowance Extended for Trainees to Work While Completing Classroom Training

The COVID-19 pandemic has reduced availability of required classroom education for electrical trainees. Temporary measures are in place to increase availability of education during recovery.

Until October 28, 2020, trainees having certificates that expired on or after March 13, 2020, who have paid a renewal fee to renew them into inactive (“T”) status, may continue working in the trade while completing their classroom education.

After October 28, 2020:

1. All trainees in inactive (“T”) status will move to expired status because of rule revisions that become effective on October 29, 2020.
2. Trainees that expired on or after March 13, 2020, who renewed into inactive (“T”) status, may work while in expired status for 90 days after October 28, 2020 while completing their required classroom training.
3. Until a date to be determined after the Governor declares the state is moving into Phase 4, trainees expiring after October 28, 2020 may work while in expired status for 90 days after their expiration date while completing their required classroom training.

If required training is not completed within the additional time allowed, trainees cannot lawfully work in the electrical trade without a properly renewed (active) training certificate.

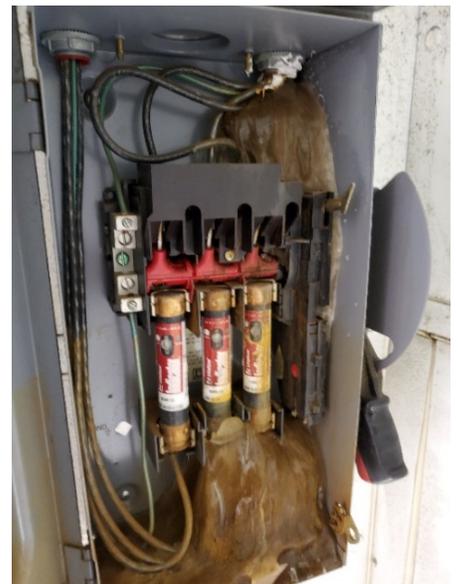
Trainees should not wait until the last minute to complete educational requirements! You can download a list of [approved basic trainee classes](#) at the [Basic Classroom Instruction & Continuing Education](#) page of our website.

Affidavits: Trainees should submit affidavits of experience within 30 days of expiration of their training certificate to avoid a late fee. At the latest, trainees have 180 days after their certificate expires to submit affidavits for hours worked in the previous two years before expiration. Affidavits submitted beyond 180 days of expiration are untimely and not eligible for consideration. Avoid losing your hours by submitting them on time!

L&I Office Closures – Most L&I regional offices remain closed to public visits until further notice. Some offices are taking appointments for visits depending on the county. Most of our services are available online. A great way to find what you want is to search with your browser (e.g., “L&I renew electrical certificate” or “L&I purchase electrical permit”). Local L&I offices can help you by phone from 8 a.m. to 5 p.m. weekdays (except state holidays). Please call your closest [regional office](#), or you can call the Office of Information and Assistance at 360-902-5800.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* The disconnect pictured was supplying refrigeration equipment. Condensation caused the brown ice dam to build up resulting in a mess, and interruption of power. Make sure when you are installing wiring between spaces that differ in temperature, you apply NEC 300.7 and seal the raceway to prevent circulation of warm air to a colder section causing condensation. An explosion proof seal is not required for this purpose.

Answer to Question of the Month: Perhaps. Before every birthday, make sure to check expiration dates on all of your certificates. If you do not renew before an expiration date, you must pay double fees to renew. To renew after 90 days of your expiration date, laws require you to re-take and pass an examination.



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Welcome New Chief Electrical Inspector Wayne Molesworth

Wayne assumes his duties July 1, 2020 replacing Stephen Thornton, who retired on June 30. Wayne's diverse work history, education and experiences have prepared him to perform the responsibilities of this position. He has been a Journey Level Electrician for the past 38 years. During this time, Wayne worked in many facets of the industry from residential to heavy industrial applications. Wayne has been with L&I since 1992, first as an Electrical Inspector for 16 years, then as an Electrical Inspection Supervisor for 2 years for Spokane and Pullman offices. After 5 years as a DOSH Compliance Manager, Wayne served in a variety of roles, including Special Projects Manager, Elevator Program Operations Manager, and interim Elevator Program Chief.

We would also like to take this opportunity to thank Stephen Thornton for his dedication to L&I and the Electrical program. He is looking forward to retirement and is excited to settle into his new home in Wyoming and start enjoying the next chapter in his life with family and friends.

Safety Tip of the Month

Personal Protective Equipment and Knowledge Saves Lives

Whenever you enter a jobsite, you should always ask yourself:

- What am I required to do to protect others and myself from COVID-19 exposure?
- Am I wearing my hardhat, safety glasses, hearing protection, appropriate clothing, and safety shoes or boots?
- Do I know what the potential hazards are and how to recognize them?
- Should I re-assess the potential hazards as I enter different areas or situations on this jobsite?
- Where are the nearest exits, first aid kit, and fire extinguisher?

Adoption of 2020 NEC and Revised WAC 296-46B Delayed Until October 29, 2020

Due to the impact of COVID19 on businesses and consumers in Washington, we are delaying the effective date of the 2020 National Electrical Code (NEC) and the [recently adopted changes to WAC 296-46B](#) until October 29, 2020. During their April meeting, the Electrical Board recommended that any delay follow a common sense approach similar to that used when the Governor delayed adoption of state building codes until November 1, 2020. Watch the Rule Development tab of our [Electrical Laws and Rules](#) web page and future editions of this newsletter for more information.

When Will Exam Questions be Updated to the 2020 NEC?

Candidates will have plenty of notice. We plan to update all open-book exam questions in the coming year and keep everybody informed of what is happening through the [Electrical Currents](#) newsletter and the [PSI website](#).

Until then, candidates should continue to use the 2017 NEC. Typically, basic code requirements and electrical theory fundamentals found in exam questions are general in nature and do not change much when a new version of the NEC is adopted. The same principles apply to the WAC/RCW section of exams. The [recently adopted changes to WAC 296-46B](#) that are delayed until October 29, 2020 do not affect questions on current exams. You can find information about the exams by visiting the [Electrical Examination](#) page of our website.

Temporary Allowance for Virtual Basic Trainee Classes

Due impacts of the COVID-19 pandemic on availability of basic classroom training for electrical trainees, approved classroom training providers may temporarily provide their classes through internet-based instruction platforms under these conditions:

1. Trainees and instructors must continuously interact in real time by live audio and video during the entire period of instruction and by live video during competency examinations; and

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2. Providers must:

- a. Allow department oversight by sending an invitation to ElectricalProgram@lni.wa.gov for every internet trainee class. Invitations must include: a hyperlink and any password needed to join the class, L&I issued course approval number, class agenda (name of class and instructor, date of class, starting time, ending time, breaks, etc.); and
- b. Limit class size to fifteen students or less; and
- c. Verify student identity using government issued photo identification.

This temporary allowance will be in effect until normal classroom education can safely resume in consultation with the Electrical Board and industry stakeholders.

Trainees Working While in Inactive Status - Deadline Extended Until September 1, 2020

The COVID-19 pandemic has reduced availability of required classroom education for electrical trainees. Temporary measures are in place to increase availability of education during recovery. Until September 1, 2020, trainees having certificates that expired on or after March 13, 2020, who have paid a renewal fee to renew them into inactive (“T”) status, may continue working in the trade while completing their classroom education.

Providing an allowance to work while in inactive status until September 1, 2020 is not a holiday for inactive trainees to put off required training. If not completed by the deadline, inactive trainees cannot lawfully work in the electrical trade without a properly renewed (active) training certificate.

Trainees should not wait until the last minute to complete educational requirements! You can download a list of [approved basic trainee classes](#) at the [Basic Classroom Instruction & Continuing Education](#) page of our website.

Affidavits: Trainees should submit affidavits of experience within 30 days of expiration of their training certificate to avoid a late fee. At the latest, trainees have 180 days after their certificate expires to submit affidavits for hours worked in the previous two years before expiration. Affidavits submitted beyond 180 days of expiration are untimely and not eligible for consideration. Avoid losing your hours by submitting them on time!

Trainees – To Renew After October 28, 2020 Trainees Must Complete Classroom Education

One of the changes adopted in the previous WAC 296-46B revisions was a provision eliminating the “inactive” status for electrical trainees who pay their renewal fee but have not completed their required classroom education. Currently, if a trainee does not have all of the required basic classroom education completed, they can pay the renewal fee and renew their certificate into inactive “T” status. Many trainees wait until the last minute to complete their classroom education and sometimes, to avoid paying the double fee, renew their certificates without having completed this step. The provision to eliminate the inactive status for trainees was to be effective July 1, 2020, but due to the delay in the effective date of the revised rules and the 2020 NEC, we are delaying this provision as well.

L&I Office Closures – L&I regional offices remain closed to public visits until further notice. Most of our services are available online. A great way to find what you want is to search with your browser (e.g., “L&I renew electrical certificate” or “L&I purchase electrical permit”). Local L&I offices can help you by phone from 8 a.m. to 5 p.m. weekdays (except state holidays). Please call your closest [regional office](#), or you can call the Office of Information and Assistance at 360-902-5800.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* We thought you might enjoy this snowy pic on one of those blazing hot days we will probably have this month. A tree fell across this service drop and destroyed the meter base due to the less than adequate mast support. Check out [WAC 296-46B-230\(4\)](#) for illustrated mast support requirements.



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SPECIAL EDITION

Significant Changes – 2020 WAC 296-46B – Effective October 29, 2020

In this issue, we review of some of the significant changes in the 2020 [WAC 296-46B](#) electrical rules. The WAC changes and the [2020 National Electrical Code](#) (NEC) will be effective October 29, 2020. This document does not cover all changes. We wrote it to help you become aware of some of the more important changes. We will soon have a complete version of the 2020 WAC 296-46B available at: <https://lni.wa.gov/licensing-permits/electrical/laws-rules-policies>. See the revision to WAC 296-46B-010(1) below to determine when the 2020 NEC and revised WAC rules will apply to your project.

WAC 296-46B-010(1) – Adopted standards – 2020 National Electrical Code (NEC)

The 2020 NEC will be effective October 29, 2020. We delayed the effective date to allow customers to focus on recovery from the effects of COVID-19 and give them more time to prepare for the new code requirements. We made a change regarding when new standards will apply to specific projects. Generally, new codes will apply if the electrical permit is issued on or after the adoption date of new codes with two exceptions: (a) New one- and two-family dwellings or multifamily dwellings where the issue date of building permits for the premises is before the adoption date; or (b) New installations where plan review is required by WAC 296-46B-900 when plans are received and accepted for review before the adoption date.

WAC 296-46B-110(1) Exception – Use of Nonmetallic Electrical Elbows for Other Than Electrical Installations

Generally, listed electrical conduit can only be installed and used in accordance with its listing (i.e., as an electrical raceway for electrical conductors). We added a new exception to accommodate installations such as underground geo-thermal piping systems to allow for ease of installation and maintenance of these piping systems. Listed electrical nonmetallic elbow fittings may be connected to piping other than electrical conduit for the purposes of enclosing mechanical piping systems. The elbows must be distinctively marked to indicate their use as non-electrical fittings prior to installation by painting them to match the color of the piping to which they are connected. This does not allow listed electrical conduit for other than electrical use.

WAC 296-46B-210(8) – Peninsular Countertop Receptacles

We eliminated a rule regarding receptacle placement for peninsular countertop spaces. Receptacles for peninsular and island countertops and work surfaces must comply with 2020 NEC 210.52(C)(2). At least one receptacle outlet must be provided for the first 9 ft² or fraction of countertop work surface, and an additional receptacle outlet must be provided for every additional 18 ft² or fraction thereof. For peninsular countertops, at least one receptacle must be located within 2 ft. of the outer end of the peninsula. Peninsular countertops are measured from the connected perpendicular wall.

WAC 296-46B-334 – Nonmetallic-Sheathed Cable

We amended the rules to keep policy and enforcement regarding use of nonmetallic-sheathed cable in taller buildings the same as current requirements. Revised building code rules allow Type IV mass timber buildings up

to 18 floors. We changed the construction type in our WAC rules from Type IV to Type IV-HT to keep installation allowances for nonmetallic-sheathed cables the same as it has been with previous Type III, IV, or V construction.

WAC 296-46B-553 and 555 – Floating Buildings and Marinas

In the 2020 NEC, requirements for floating buildings, previously in Article 553, were moved to Article 555 Marinas, Boatyards, and Commercial and Noncommercial Docking Facilities. We moved the requirements of WAC 296-46B-553 to WAC 296-46B-555 to correlate with the NEC. We eliminated some of these requirements, as well as some in the previous WAC 296-46B-555 as they are now covered in the NEC. In addition, we clarified that Article 398 open wiring on insulators is not an approved wiring method in or above any portion of a marina or docking facility.

WAC 296-46B-705(2) – Interconnected Electric Power Production Sources – Supply-Side Source Connections

We clarified rules regarding supply-side interconnections of interconnected power production sources. The disconnecting means, even though it is not a service disconnecting means must be installed using wiring methods specified for services in WAC 296-46B-230(7). In addition, the disconnecting means comply with NEC rules for services as specified in NEC 230.82(6) and 250.25 except that it is not required to be grouped with the service disconnecting means for the building or structure.

WAC 296-46B-908(10) – Class B permits

We added two items to the list of installations eligible for the Class B random inspection process. We expanded the replacement of not more than ten receptacles with GFCI or AFCI receptacles to include replacement with dual function AFCI/GFCI receptacles. In addition, we added the like-in-kind replacement of output cables for electric vehicle supply equipment to be eligible for Class B permits.

WAC 296-46B-920(2)(a) – Residential Specialty Scope of Work

We clarified the work scope of the 02 Residential specialty to state that the allowance for wiring of ancillary structures means structures located on the same property and under the same ownership as the dwelling structure(s).

WAC 296-46B-920(2)(f) – HVAC/refrigeration Scope of Work

We modified the scope of work for the HVAC/refrigeration specialties to allow repair, replacement, and maintenance of line voltage flexible supply whips not over six feet in length to include a whip used for a unit being replaced where the new unit has a lower maximum overcurrent protection size. This is due to the prevalence of more efficient HVAC units with lower current ratings. It should be noted that replacement of an HVAC unit with one having a lower maximum overcurrent protection rating must be inspected using a regular permit as it is not like-in-kind or eligible for the Class B random inspection process.

In addition, a change was made to allow the HVAC/refrigeration specialties to install low voltage Class 2 control circuit wiring in other than residential occupancies regardless of the number of stories above grade if the installation is made in a previously occupied and wired space and is restricted to the HVAC/refrigeration system.

WAC 296-46B-920(2)(g) – Nonresidential Maintenance Scope of Work

We modified 07 nonresidential maintenance scope of work to include replacement of overcurrent/overload devices for the purposes of replacement of electrical equipment where the new equipment has a lower ampere rating than the equipment being replaced. Typically, newer equipment is more efficient than older equipment of the same size and may require lower rated overcurrent/overload protection such as a circuit breaker, set of fuses,

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or overload heater. It should be noted that replacement with a lower rated device is not like-in-kind and must be inspected using a regular electrical permit.

WAC 296-46B-925(28) and 940(17) – Submersible Well Pump Installers – Testing With A Temporary Portable Generator

Firms and workers that are not licensed electrical contractors or certified electricians that install submersible well pumps and associated wiring in well casings have always been able to set the pump in the well along with the submersible pump wiring to the pump, but not perform any connection of the pump wiring or raceway to the permanent supply. We amended these sections to include exemptions from electrical contractor licensing and electrician certification requirements to allow testing of the pump by cord and plug connection to a portable generator provided all temporary wiring and equipment must be removed immediately upon completion of testing. This allowance was existing department policy as published in a previous Electrical Currents newsletter.

WAC 296-46B-970 – Continuing Education and Classroom Education – Definition of Electrical Theory

This section describes requirements for continuing education and basic classroom education for electricians and trainees. The minimum amount of electrical classroom education required for trainees to learn the electrical trade and become certified electricians must consist of only basic electrical theory, currently adopted National Electrical Code, and use of the electrical laws or rules. Some course providers not familiar with basic electrical theory have tried to provide classroom instruction for industry related tasks such as troubleshooting, conduit bending, equipment installation methods, or even workplace safety practices as a substitute for basic electrical theory education for trainees. Learning industry related tasks is very valuable, but cannot be substituted for the minimal amount of foundational classroom education required by the electrical laws. All trainees learning to become electricians must have a foundation of the workings of electricity established by knowledge of basic electrical theory. We added a definition to clarify electrical theory means basic principles of electricity such as: magnetism, ohm's law, and circuit properties such as voltage, current, power, resistance, inductance, capacitance, reactance, impedance, etc., in series, parallel, and combination AC and DC circuits.

WAC 296-46B-971(5) – Training Schools – Clarification of Completion Roster

Electrical training schools are different from basic classroom education in that completion of a training school program not only fulfills a portion of the basic classroom education requirements, but it credits the person completing the program with work experience hours. We changed this section to clarify the information a training school provider must send us in a completion roster. We eliminated the requirement to send us an enrollment roster because this information was not useful.

WAC 296-46B-990 – Serious Noncompliance with Electrical Laws or Rules

Our inspectors are tasked with enforcement of all electrical laws and rules for safety to life and property. Occasionally, they encounter folks violating the law who have no regard for electrical safety or those who enforce the laws. They know the law but choose to ignore it. An example would be a person who creates a fake electrician certificate and presents it to an inspector, or someone who is cited for a violation then continues to violate the laws or rules intentionally. We amended this section to clarify that willful or intentional violation is serious noncompliance with the electrical laws and rules and can result in higher penalty amounts and potential suspension or revocation of an electrical contractor's license or electrician's or administrator's certificate.

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Question of the Month – When selecting overcurrent protection for conductors, at what overcurrent protective device ampacity rating is it not permitted to round up to the next higher standard rating? *See correct answer on Page 2.*

Adoption of 2020 NEC and WAC 296-46B Changes Delayed Until October 29, 2020

Due to the impact of COVID19 on businesses and consumers in Washington, we are issuing an emergency rule later this month to delay the effective date of the 2020 National Electrical Code (NEC) and the [recently adopted changes to WAC 296-46B](#). During their April meeting, the Electrical Board recommended that any delay follow a common sense approach similar to that used when the Governor delayed adoption of state building codes until November 1, 2020.

Electrical examinations will continue to be based on the 2017 NEC until further notice sometime next year.

Watch the Rule Development tab of our [Electrical Laws and Rules](#) web page and future editions of this newsletter for more information.

Temporary Allowance for Virtual Basic Trainee Classes

Due to the impact of the COVID-19 pandemic on availability of basic classroom training for electrical trainees, approved classroom training providers may temporarily provide their classes through an internet-based instruction platform under the following conditions:

1. Trainees and instructors must continuously interact in real time by live audio and video during the entire period of instruction and by live video during competency examinations; and
2. Providers must:
 - a. Allow department oversight by sending an invitation to ElectricalProgram@lni.wa.gov for every internet trainee class. Invitations must include: a hyperlink and any password needed to join the class, L&I issued course approval number, class agenda (name of class and instructor, date of class, starting time, ending time, breaks, etc.); and
 - b. Limit class size to fifteen students or less; and
 - c. Verify student identity using government issued photo identification.

This temporary allowance will be in effect until normal classroom education can safely resume in consultation with the Electrical Board and industry stakeholders.

Trainees Working While in Inactive Status - Deadline Extended Until September 1, 2020

The COVID-19 pandemic has reduced availability of required classroom training for electrical trainees. Temporary measures are in place to increase availability of training during recovery. Until September 1, 2020, trainees having certificates that expired on or after March 13, 2020, who have paid a renewal fee to renew them into inactive (“T”) status, may continue working in the trade while completing their classroom training.

Providing an allowance to work while in inactive status until September 1, 2020 is not a holiday for inactive trainees to put off required training. If not completed by the deadline, inactive trainees cannot lawfully work in the electrical trade without a properly renewed (active) training certificate.

Safety Tip of the Month

- Practice excellent hygiene (wash your hands regularly)
- Use proper personal protective equipment
- Maintain personal space (6 ft.)
- Cover minor cuts
- Cover your cough and sneezes
- If you are feeling ill, stay home
- Maintain a positive attitude 😊

Trainees should not wait until the last minute to complete training! A list of [approved basic trainee classes](#) is available on our website at www.lni.wa.gov.

Affidavits: Trainees should submit affidavits of experience within 30 days of expiration of their training certificate to avoid a late fee. At the latest, trainees have 180 days after their certificate expires to submit affidavits for hours worked in the previous two years before expiration. Affidavits submitted beyond 180 days of expiration are untimely and not eligible for consideration. Avoid losing your hours by submitting them on time!

L&I Office Closures – L&I regional offices remain closed to public visits until further notice. Most of our services are available online. A great way to find what you want is to search with your browser (e.g., “L&I renew electrical certificate” or “L&I purchase electrical permit”). Local L&I offices can help you by phone from 8 a.m. to 5 p.m. weekdays (except state holidays). Please call your closest [regional office](#), or you can call the Office of Information and Assistance at 360-902-5800.

Electrical Inspections – L&I is following the Governor’s Directives Regarding Construction

We are performing electrical inspections in accordance with the Governor’s directives based on the restart phase of the county where the project is. Here are direct links to the various documents with guidance on permitted construction and job site safety requirements:

- [Phase 1 Construction Restart COVID-19 Job Site Requirements](#).
- [Implementation of Phase 1 Construction Restart - Addendum](#)
- [Phase 2 Construction COVID- 19 Job Site Requirements](#)

For the latest updates from the Governor’s office visit <https://coronavirus.wa.gov/>. Due to previous restrictions on construction activity, there is a large backlog of inspection requests. Inspectors will be prioritizing their inspections and trying their best to catch up. If you have an urgent request, please indicate that in the comments section of the inspection request. Another option is to request a [Virtual Electrical Inspection](#) (VEI). To use VEI, you will need to download the [Skype Application](#) and create a profile. Use VEI for any electrical inspections that will take no longer than 15 minutes, *and* that do not involve service or final approvals. On the jobsite, make sure you have at least a 4G, LTE, or Wi-Fi connection on your mobile device. Use Google Chrome to [schedule](#) your inspection at least 30 minutes before you need it. You can learn more about VEI by visiting www.lni.wa.gov and search “Virtual.”

HVAC Replacements May Not Be Like-In-Kind or Class B Eligible

[WAC 296-46B-908](#) allows the Class B random inspection process for the like-in-kind replacement of an electric/gas/oil furnace not exceeding 240 volts and 100 amps, or an air conditioning unit, heat pump, or refrigeration unit not exceeding 240 volts, 40 minimum circuit amps. Like-in-kind is defined in [WAC 296-46B-100](#) as “...having the same overcurrent protection requirements...” as the unit being replaced. Often, a new replacement unit is more efficient and the maximum overcurrent protection specified on the nameplate of the new unit is lower than that of the existing circuit. In this case, the replacement is not like-in-kind and is not eligible for the Class B random inspection process.

The overcurrent protection device must be changed, and a regular permit and inspection is required. Replacement of a branch-circuit overcurrent device is not within the scope of the HVAC 06A or 06B specialty. This must be done by an 01 general, 02 residential (if on a residential site) or, when the [recent revisions to WAC 296-46B](#) becomes effective, an 07 nonresidential maintenance electrician.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* An inspector found this junction box hidden in a ceiling. The effectiveness of the equipment grounding connections is questionable.

Answer to Question of the Month: 800 amperes. NEC 240.4(C) Where the rating of the overcurrent device is over 800 amperes, the ampacity of the conductors it protects shall be equal to or greater than the rating of the overcurrent device defined in 240.6.



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Stephen Thornton, Chief Electrical Inspector

Vol. 23 No. 5

May 2020

Question of the Month – What is the best method to communicate important details about an inspection request to your electrical inspector? A) Leave details in the comment field of an online inspection request. B) Email the inspector. C) Leave a voicemail message at the inspector’s desk phone. D) Call the inspector the morning of the inspection. *See correct answer on Page 2.*

COVID-19 Electrical Program Updates

L&I Office Closures – L&I regional offices remain closed to public visits until further notice. Most of our services are available online. A great way to find what you want is to search your browser (e.g., “L&I renew electrical certificate” or “L&I purchase electrical permit”). Local L&I offices can help you by phone from 8 a.m. to 5 p.m. weekdays (except state holidays). Please call your closest [regional office](#), or you can call the Office of Information and Assistance at 360-902-5800.

Electrical Inspections – L&I is following the Governor’s Directives Regarding Construction – We are performing electrical inspections in accordance with the Governor’s April 24 [Phase 1 Construction Restart COVID-19 Job Site Requirements](#). On April 29, the Governor issued additional guidance clarifying what [Authorized Construction](#) includes. For the latest updates from the Governor’s office visit <https://coronavirus.wa.gov/>.

Due to the previous restrictions on construction activity, there is a large backlog of inspection requests. Inspectors will be prioritizing their inspections and trying their best to catch up. If you have an urgent request, please indicate that in the comments section of the inspection request. Another option is to request a [Virtual Electrical Inspection](#) (VEI) on the same day at least 30 minutes in advance of when you need it. To use VEI, you will need to download the [Skype Application](#) and create a profile. Use VEI for any electrical inspections that will take no longer than 15 minutes, *and* that do not involve service or final approvals. On the jobsite, make sure you have at least a 4G, LTE, or Wi-Fi connection on your mobile device. Use Google Chrome to [schedule](#) your inspection for the day and time you want. You can learn more about VEI by visiting www.lni.wa.gov and search “Virtual.”

Renewing a Training Certificate – On March 13, Governor Inslee issued a proclamation prohibiting all public and private universities, colleges, technical schools, apprenticeship programs, and similar schools and programs from conducting in-person classes in all counties of Washington State. Because of this, holders of training certificates with expiration dates on or after March 13 may not be able to complete the basic classroom instruction required to renew their certificates.

The department will allow those trainees who renew their certificates without completing the required classroom instruction to continue working with their certificate in inactive status until 60 days following the allowance by the Governor’s office to resume in-class instruction. This will allow them to complete their required classroom instruction when classes resume. This allowance will apply only to holders of training certificates with expiration dates on or after March 13, 2020 who have renewed and are in inactive (“T”) status due to lack of basic classroom instruction. It does not apply to holders of training certificates in expired, archived, or suspended status. It does not apply to holders

Safety Tip of the Month

Keep an eye out for the safety of your trainees and apprentices. Do not assume a person who is learning the electrical construction trade is familiar with basic electrical safety rules. Trainees and apprentices are eager to please their employers, and it is the electrical contractor’s responsibility to ensure they do not put themselves or others in danger.

of electrician, administrator, or master electrician certificates, as online classes are available for continuing education.

Training certificate holders must renew their certificates by paying the usual renewal fee. You can do this online. Follow instructions on the renewal notice or visit the [Electrical Trainee](#) page of our website. All other requirements remain in effect such as submitting affidavits of experience, supervision, and visible display of certificates. Electrical contractors and administrators will not be penalized for employing trainees who are inactive in accordance with the above.

Citation Appeals – 20 Day Appeal Window Requirement Revised – On March 23, Governor Inslee issued a [Stay Home - Stay Healthy](#) Proclamation 20-25 prohibiting all commercial activities in all counties of Washington State, except for specific limited activities identified on the essential services list. Companies and individuals issued electrical “Important Notice: A citation has been issued...” letter(s) or a license/certificate renewal denial letter requiring a response to the Department within a 20 day window may not have the ability to timely respond. Because of this, Department mail containing electrical “Important Notice: A citation has been issued...” letter(s) or license/certificate renewal denial letter sent after March 1, 2020 will have the 20-day response window extended to a maximum of 20 days beyond the date the stay home order is rescinded. All responses must meet all other requirements of law and rule.

Remaining Stakeholder Meetings to be Re-Scheduled – In order to comply with the Governor’s emergency proclamation restricting the size of gatherings due to the coronavirus (COVID-19), we are cancelling all remaining stakeholder meetings. We will re-schedule these for a later date. Watch for announcements in this newsletter and on the [Electrical Calendar](#) page of our website.

Possible Delay of Effective Date of 2020 NEC and 2020 WAC 296-46B – The rule revisions mentioned below are on schedule and are set to be adopted as described, but due to the effects of COVID19 on Washington businesses and consumers, the department is considering a delay in the effective date of the revised rules and 2020 NEC. Watch for more details on the [Electrical Laws and Rules](#) webpage and in the June edition of this newsletter.

WAC 296-46B Rulemaking Update

You can find details and rulemaking documents by visiting the Rule Development section of our [Electrical Laws and Rules](#) webpage. The proposed adoption date for the new rules is May 19, 2020 and the proposed effective date is July 1, 2020 unless extended by the department as mentioned above.

For complete details about the process, see the [October 2019 Electrical Currents](#) Newsletter Special Edition. If you need additional information or have any questions about the rulemaking process, you may contact Alicia Curry at 360-902-6244 or Alicia.Curry@lni.wa.gov.

Legislative Update

One bill affecting the electrical program this session has passed the legislature and was signed by the Governor. [Senate Bill 6409](#) – Exempts manufacturers’ authorized engineers or factory-trained service technicians from electrical contractor licensing and worker certification requirements while working within the confines of industrial equipment. This bill becomes effective June 11, 2020.

Answer to Question of the Month: A) Leave details in the (255-character) comment field of an [online inspection request](#). The inspector that takes the inspection job will read the comment and have the information to get the inspection done. Many times, inspectors start their day from the field and download inspection requests remotely. Phone calls require valuable time that reduces their ability to complete more inspections. Help us help you by making inspection arrangements in a way that avoids asking inspectors to make unnecessary phone calls.

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Question of the Month – If a person is not happy with something in the 2020 National Electrical Code (NEC), how would they make a suggestion to change it? See correct answer on Page 2.

COVID-19 Electrical Program Updates

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Electrical Inspections – L&I is following the Governor’s Directive Regarding Construction – We are performing electrical inspections in accordance with the Governor’s March 25 [guidance memo on construction](#). For the latest updates from the Governor’s office visit <https://coronavirus.wa.gov/>. If you have an inspection on an essential facility, or your project meets the guidelines in the latest guidance from the Governor’s office, please indicate this in the comment section of your inspection request. This guidance also applies to virtual electrical inspections (VEI). We will only inspect projects in compliance with the Governor’s guidance in support of efforts to control spread of the virus on construction sites.

Renewing a Training Certificate – On March 13, Governor Inslee issued a proclamation prohibiting all public and private universities, colleges, technical schools, apprenticeship programs, and similar schools and programs from conducting in-person classes in all counties of Washington State. This prohibition will last until April 24, 2020, unless extended to a later date. Because of this, holders of training certificates with expiration dates on or after March 13 may not be able to complete the basic classroom instruction required to renew their certificates.

The department will allow those trainees who renew their certificates without completing the required classroom instruction to continue working with their certificate in inactive status until 60 days following April 24, or later if extended beyond that date. This will allow them to complete their required classroom instruction when classes resume. This allowance will apply only to holders of training certificates with expiration dates on or after March 13, 2020 who have renewed and are in inactive (“T”) status due to lack of basic classroom instruction. It does not apply to holders of training certificates in expired, archived, or suspended status. It does not apply to holders of electrician, administrator, or master electrician certificates, as online classes are available for continuing education.

Training certificate holders must renew their certificates by paying the usual renewal fee. You can do this online. Follow instructions on the renewal notice or visit the [Electrical Trainee](#) page of our website. All other requirements remain in effect such as submitting affidavits of experience, supervision, and visible display of certificates. Electrical contractors and administrators will not be penalized for employing trainees who are inactive in accordance with the above.

Citation Appeals – 20 Day Appeal Window Requirement Revised – On March 23, Governor Inslee issued a [Stay Home - Stay Healthy](#) Proclamation 20-25 prohibiting all commercial and residential activities in all counties of Washington State, except for specific limited activities identified on the essential services list. This prohibition will last until April 8, 2020, unless extended to a later date. Companies and individuals issued electrical “Important Notice: A citation has been issued...” letter(s) or a license/certificate renewal denial letter requiring a response to the Department within a 20 day window may not have the ability to timely respond. Because of this, Department mail containing electrical “Important Notice: A citation has been issued...” letter(s) or license/certificate renewal denial letter sent after March 1, 2020 will have the 20-day response window extended to a maximum of 20 days beyond April 8, 2020, unless extended to a later date. All responses must meet all other requirements of law and rule.

Safety Tip of the Month

During times of isolation, try to stay connected with family and friends. Call them, try FaceTime, Skype, or Zoom. Stay safe, healthy, and positive 😊

April Stakeholder Meetings to be Re-Scheduled – In order to comply with the Governor’s emergency proclamation restricting the size of gatherings due to the coronavirus (COVID-19), we are cancelling all stakeholder meetings scheduled in April. We will re-schedule these for later in the year. Please join me at any of the following meetings in May from 6 – 8 p.m., unless announced otherwise. Watch for future announcements in this newsletter and on the [Electrical Calendar](#) page of our website regarding stakeholder meetings scheduled for May and those that will be re-scheduled.

May 11 – Kennewick – [Benton PUD](#) Auditorium – 2721 West 10th Avenue

May 12 – Spokane – [Spokane Falls Community College](#), 3410 W. Fort George Wright Drive, Bldg. 17, Sub Lounges

May 13 – Colville – [Spokane Community College](#), 985 S Elm St., Classroom 132

May 14 – Pullman – Parks & Recreation, 190 SE Crestview, Room 218

May 20 – Yakima – Perry Technical Institute, 2011 W Washington Avenue

WAC 296-46B Rulemaking Update – Public Hearing to be by Conference Call

The department has filed a continuance of the rule proposal CR-102 to make changes to the public hearing scheduled for April 9, 2020 at 10:00 a.m. The hearing will be conducted by conference call to allow for oral public comments and testimony on the proposal rather than holding an in-person meeting. We are strongly encouraging written comments. In addition, we are extending the written comment period until 5 p.m. on Thursday, April 16, 2020.

You can find details and rulemaking documents by visiting the Rule Development section of our [Electrical Laws and Rules](#) webpage. Review the proposals and submit comments if you desire. Here’s how to submit comments:

- Mail written comments to: Alicia Curry, Department of Labor & Industries, Field Services and Public Safety Division, PO Box 44400, Olympia, WA 98504-4400.
- Email: Alicia.Curry@lni.wa.gov, or Fax: 360-902-5292
- Attend the public hearing by conference call: Call 1-866-715-6499. If you receive a busy signal and cannot connect, an alternate number to call is (719) 325-2776. When prompted for the passcode, enter 9862128073 followed by the pound sign (#). The telephonic hearing starts at 10:00 a.m. and will continue until all oral comments are received.

The proposed adoption date for the new rules is May 19, 2020 and the proposed effective date is July 1, 2020. For complete details about the process, see the [October 2019 Electrical Currents](#) Newsletter Special Edition. If you need additional information or have any questions about the rulemaking process, you may contact Alicia Curry at 360-902-6244 or Alicia.Curry@lni.wa.gov.

Answer to Question of the Month: The 2023 edition of the NEC is now open for public input! Anyone can submit a proposal to make changes to the NEC. The public input closing date is September 10, 2020. To submit a public input using the online submission system, visit the National Fire Protection Association – NFPA 70 page using this [link](#). Once on the NFPA 70 page, select the link "Submit a Public Input" to begin the process. You will be asked to sign-in or create a free online account with NFPA before using this system.

Ugly Picture of the Month: Headlines reported the first U.S. death from coronavirus occurred in Washington on February 29, 2020. Since then, things in our world have changed dramatically. We in the electrical program wish everyone well during this time and are praying for a speedy end to this situation. Until then, please abide by directives, [stay home and stay healthy](#).

Washington state man becomes first U.S. death from coronavirus

The CDC says it's responding to "the first possible outbreak" of the virus at a U.S. long-term care facility in Washington.

Health officials in Washington state said on Saturday a coronavirus patient has died, marking the first death in the U.S. from COVID-19, the illness associated with the virus.

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SPECIAL EDITION

COVID-19 Electrical Program Impacts

This special edition newsletter is dedicated to providing important updates regarding how the COVID-19 response may affect services the electrical program provides to our customers. Of course, developments are changing rapidly, so watch for updates in future editions.

Restricted Access to L&I Front Counters

The need for increased social distancing to slow the spread of coronavirus (COVID-19) has resulted in L&I halting walk-in visits to its regional offices.

Beginning March 18, customers must have a confirmed appointment between 10 a.m. and 2:30 p.m. to be allowed in the offices. Public doors to L&I's regional locations will be locked as part of this temporary policy.

Customers are encouraged to use the option of doing business with L&I over the phone and online during all normal business hours. Business that must be conducted in-person will now require a call to the local office for customers to make an appointment.

People can find phone numbers for all [regional offices](#) on the L&I website. People can also call the L&I Office of Information and Assistance at 360-902-5800.

These changes in front-counter in-person customer service are in effect until further notice.

Electrical Inspection Impacts

Please be patient with us as we all navigate this situation together. Please let us know when requesting an inspection if there are any concerns with COVID-19 at the inspection site such as high-risk, elderly customers, or quarantine situations. Please communicate these concerns in the comments section of the inspection request. As always, our inspectors will prioritize inspections in an effort to support continued progress on construction projects, but there may be delays with some inspections. Be sure to communicate with your [local inspection office](#) if you have an urgent inspection. Some inspectors, program specialists and supervisors will be working from outside the office, but are available by phone.

In addition, you may consider using a virtual electrical inspection. You can schedule a [Virtual Electrical Inspection](#) (VEI) on the same day at least 30 minutes in advance of when you need it. To use VEI, you will need to download the [Skype Application](#) and create a profile. Use Google Chrome to [schedule](#) your inspection for the day and time you want. You can learn more about VEI by visiting www.lni.wa.gov and search "Virtual."

Contact us: Call 360-902-5299 or **Email:** VirtualElectricalInspection@lni.wa.gov

Safety Tip

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Trainees Who Cannot Get Required Classroom Training for Renewal of Certificates

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The department will issue a policy allowing those trainees who renew their certificates without completing the required classroom instruction to continue working with their certificate in inactive status until 60 days following April 24, or later if extended beyond that date. This will allow them to complete their required classroom instruction when classes resume. This allowance will apply only to holders of training certificates with expiration dates on or after March 13, 2020 who have renewed and are in inactive ("T") status due to lack of basic classroom instruction. It does not apply to holders of training certificates in expired, archived, or suspended status. It does not apply to holders of electrician, administrator, or master electrician certificates, as online classes are available for continuing education.

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- Mail written comments to: Alicia Curry, Department of Labor & Industries, Field Services and Public Safety Division, PO Box 44400, Olympia, WA 98504-4400.
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Phyllis Cooper Rides Off Into Retirement

After 37 years of dedicated service to the electrical program, Phyllis Cooper retired last month. Phyllis was the person everyone went to with questions about anything in the L&I electrical program. She led us from a world of paper forms and applications to one where most of our services are available online any time of the day or night. Phyllis was instrumental in shaping our online services for [purchasing permits](#), [requesting inspections](#), and renewing a [license](#) or [certificate](#). Recently, she led the development of our [virtual electrical inspection](#) and electronic [plan review](#) programs. If you had a problem with your [electronic permit account](#) and called us for help, Phyllis was probably the one who helped you. Not to worry though, you are now in the very capable hands of her successor, Teddi Carruth.

As Phyllis was saying goodbye, she had some great words for us all: “be patient”, “be kind”, “the customer should always be our focus”, and “do the right thing for the right reason”.

Best wishes Phyllis! Thank you for a job well done. We will miss you greatly!

Safety Tip of the Month

As you hurry to your next appointment, be alert for motorcyclists, bicyclists, and pedestrians. Give them a brake. One of them could be Phyllis!

Question of the Month – When will the requirements of the 2020 National Electrical Code (NEC) be enforced in Washington? *See correct answer on Page 2.*

WAC 296-46B Rulemaking Update

The process of revising the electrical rules is underway. Watch for updates in future editions of this newsletter and at the Rule Development section of our [Electrical Laws and Rules](#) webpage. For complete details about the process, see the [October 2019 Electrical Currents](#) Newsletter Special Edition.

You can also discuss proposals with the chief electrical inspector by attending a stakeholder meeting near you (see the article below). If you need additional information or have any questions about the rulemaking process, you may contact Alicia Curry at 360-902-6244 or Alicia.Curry@lni.wa.gov.

Legislative Update

If you are part of the electrical industry regulated by L&I, lawmakers have been considering bills that may affect you. Of those bills introduced this session that affect the electrical program, one is still under consideration. This bill is not sponsored by L&I. You can get information about this bill by clicking on the hyperlinked bill number below. Review the bill and comment if you desire. A comment button is located below the bill number on the legislative webpage. You may also contact your legislator to share your opinion about any legislation by visiting the legislative website at: <http://www.leg.wa.gov/LIC/Pages/hotline.aspx>.

[Senate Bill 6409](#) – Exempts manufacturers’ authorized engineers or factory-trained service technicians from electrical contractor licensing and worker certification requirements while working within the confines of industrial equipment.

Electrical Contractors – Schedule a Virtual Electrical Inspection Today

In a new service from L&I, you can now request a [Virtual Electrical Inspection](#) (VEI) on the same day at least 30 minutes in advance of when you need it.

VEI is a dependable inspection process, allowing contractors on the jobsite to interact with inspectors online on a mobile device using Skype. Here are some important points to keep in mind:

- To use VEI, you will need to download the [Skype Application](#) and create a profile.
- Use VEI for any electrical inspections that will take no longer than 15 minutes, *and* that do not involve service or final approvals
- On the jobsite, make sure you have at least a 4G, LTE, or Wi-Fi connection on your mobile device.

Benefits:

- Get quicker follow-up inspections on corrections
- Same day as requested inspections equals time and money saver

Use Google Chrome to [schedule](#) your inspection for the day and time you want. You can learn more about VEI by visiting www.lni.wa.gov and search “Virtual.”

Contact us: Call 360-902-5299 or **Email:** VirtualElectricalInspection@Lni.wa.gov

Invitation to a Stakeholder Meeting Near You

I am holding electrical stakeholder meetings across the state between January and May 2020. These meetings are an opportunity to talk in an informal setting. I want to hear how we can better serve you and help you stay informed of any regulations that might affect you and/or your business. Check the schedule and attend a meeting near you. Meetings are held from 6 to 8 p.m. at the locations listed below.

2020 Stakeholder Meetings 6 – 8 p.m.		
March 3 – Tukwila – L&I Building 12806 Gateway Dr. South, Rm C30	April 8 – Everett – Snohomish County PUD – 2320 California St, Commission Rm	April 9 – Mount Vernon – NW WA Research and Ext Center , 16650 SR 536
April 21 – Pateros – Howard’s on the River Event Center 233 Lakeshore Drive	April 22 – East Wenatchee – Douglas County PUD , 1151 Valley Mall Parkway	April 23 – Moses Lake – L&I Building 3001 West Broadway Avenue
May 11 – Kennewick – Benton PUD Auditorium – 2721 West 10th Avenue	May 12 – Spokane – Spokane Falls Community College , 3410 W. Fort George Wright Drive, Bldg. 17, Sub Lounges	May 13 – Colville – Spokane Community College , 985 S Elm St., Classroom 132
May 14 – Pullman – Parks & Recreation , 190 SE Crestview, Room 218	Late-May – Yakima – exact date and location yet to be determined	

Answer to Question of the Month: We have changed our policy regarding enforcement when new standards are adopted. The 2020 NEC becomes effective in Washington on July 1, 2020. Previously, all jobs where permits were purchased on or after the effective date were inspected in accordance with the requirements of the new code. In general, this is still true, but we have added two exceptions. For new one-, two-, or multi-family dwellings, the inspections will be based on the edition of the code in effect when the building permit is issued. For new installations where plan review is required by [WAC 296-46B-900](#), the date the plans are received and accepted for review will determine the edition of the code enforced. This policy is proposed as a change to WAC 296-46B-010 in the current rulemaking.

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

Look closely at the picture. Which violation(s) pose the greatest hazard?

- 1) Exposed, un-protected, un-supported nonmetallic-sheathed cable
- 2) The rusty tool supporting the luminaire
- 3) Open, exposed wire nut splices
- 4) No evidence of equipment grounding of the metal pole and luminaire
- 5) Hazardous distraction for electricians doing a “double-take” while driving by



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Question of the Month – According to the 2020 National Electrical Code (NEC), ground-fault circuit-interrupter (GFCI) protection is required for: A) 250-volt, 30-ampere dryer receptacles; B) 250-volt, 50-ampere range receptacles within six feet of a sink; C) all 125-volt through 250-volt receptacles in a finished dwelling basement; D) all of the above. See correct answer on Page 2.

WAC 296-46B Rulemaking Update

The process of revising the electrical rules is underway. The electrical board reviewed the [First Draft](#) of WAC 296-46B and provided advice to the department at their meeting on January 30, 2020 in Tumwater. All of the proposals the department will move forward in the process will be compiled shortly in a Second Draft and will be posted on the Rule Development section of our [Electrical Laws and Rules](#) webpage.

The next step will be filing the CR-102 rulemaking proposal, which will open the formal public comment period and announce details for a public hearing. Watch for updates in future editions of this newsletter and at the Rule Development section of our [Electrical Laws and Rules](#) webpage. For complete details about the process, see the [October 2019 Electrical Currents](#) Newsletter Special Edition.

You can also discuss proposals with the chief electrical inspector by attending a stakeholder meeting near you (see article below). If you need additional information or have any questions, you may contact Alicia Curry at 360-902-6244 or Alicia.Curry@lni.wa.gov.

Legislative Update

If you are part of the electrical industry regulated by L&I, lawmakers are considering bills that may affect you. These bills are not sponsored by L&I. You can get information about these bills by clicking on the hyperlinked bill number below. Review the bills and comment if you desire. A comment button is located below the bill number on each webpage. You may also contact your legislator to share your opinion about any legislation by visiting the legislative website at: <http://www.leg.wa.gov/LIC/Pages/hotline.aspx>.

[House Bill 2330](#) – Requires various state agencies including L&I to issue a “recommended guidance statement” in lieu of formal enforcement actions or civil penalties for violations of laws and rules enforced by the agencies.

[Senate Bill 6409](#) – Exempts manufacturers’ authorized engineers or factory-trained service technicians from electrical contractor licensing and worker certification requirements while working within the confines of industrial equipment.

[Senate Bill 6327](#) – Requires the department to issue temporary permits in lieu of certificates of competency if an applicant holds a journey level or specialty electrician certificate from another state.

Electrical Contractors – Virtual Electrical Inspections Are Here

In a new service from L&I, you can now request a [Virtual Electrical Inspection](#) (VEI) on the same day at least 30 minutes in advance of when you need it.

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](#).

VEI is a dependable inspection process, allowing contractors on the jobsite to interact with inspectors online on a mobile device using Skype. Here are some important points to keep in mind:

- To use VEI, you will need to download the [Skype Application](#) and create a profile.
- Use VEI for any electrical inspections that will take no longer than 15 minutes, *and* that do not involve service or final approvals
- On the jobsite, make sure you have at least a 4G, LTE, or Wi-Fi connection on your mobile device.

“VEI benefits customers, who will have some predictability that an inspection will take place at a specific time,” said Steve Thornton, L&I Chief Electrical Inspector. “Besides saving time and money for contractors, virtual inspections will also lead to quicker follow-up inspections on corrections.”

Use Google Chrome to [schedule](#) your inspection for the day and time you want. You can learn more about VEI by visiting www.lni.wa.gov and search “Virtual.”

Invitation to a Stakeholder Meeting Near You

I am holding electrical stakeholder meetings across the state between January and May 2020. These meetings are an opportunity to talk in an informal setting. I want to hear how we can better serve you and help you stay informed of any regulations that might affect you and/or your business. Check the schedule and attend a meeting near you. Meetings are held from 6 to 8 p.m. at the locations listed below.

2020 Stakeholder Meetings 6 – 8 p.m.		
February 4 – Vancouver – L&I Building – 312 E Stonemill Dr. Suite 120, Room C49	February 5 – White Salmon – White Salmon Valley Library – 77 NE Wauna Ave	February 6 – Kelso – L&I Building , 711 Vine St. Room R11
February 25 – Tacoma – L&I Building 950 Broadway, Orcas Room, 5 th floor	February 26 – Silverdale – L&I Building 10049 Kitsap Mall Blvd NW Suite 100	February 27 – Sequim – Clallam County PUD , 104 Hooker Rd, Lake Crescent Rm.
March 3 – Tukwila – L&I Building 12806 Gateway Dr. South, Rm C30	April 8 – Everett – Snohomish County PUD – 2320 California St, Commission Rm	April 9 – Mount Vernon – NW WA Research and Ext Center , 16650 SR 536
April 21 – Pateros – Howard’s on the River Event Center 233 Lakeshore Drive	April 22 – East Wenatchee – Douglas County PUD , 1151 Valley Mall Parkway	April 23 – Moses Lake – L&I Building 3001 West Broadway Avenue
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May 14 – Pullman – Parks & Recreation, 190 SE Crestview, Room 218	Late-May – Yakima – exact date and location yet to be determined	

Answer to Question of the Month: D) All of the above. 2020 NEC 210.8(A) was revised to include GFCI protection for all of the above receptacles. GFCI protection rules were expanded to include all receptacles up to 250-volt in the specified areas.

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

Don’t be like this guy. This dangerous act was performed along one of the busiest streets in town about six blocks from the L&I office. Fortunately for him, an L&I electrical inspector showed up before the guy fell off, and gave him some wise counsel on safe ladder use.



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(TDD/TTY users, please call 360-902-5797.) Labor & Industries is an Equal Opportunity employer.

Question of the Month – According to the 2020 National Electrical Code (NEC) is a main-lug service panelboard consisting of up to six service disconnecting means in the same enclosure permitted? *See correct answer on Page 2.*

WAC 296-46B Rulemaking Update

The process of revising the electrical rules is underway. A Technical Advisory Committee (TAC), made up of a broad cross section of representatives from the electrical industry reviewed the proposals and provided advice to the department at their meeting on December 11, 2019 in Tacoma. We have compiled all of the proposals the department will present to the Electrical Board in a [First Draft](#) of WAC 296-46B. A copy of the First Draft is available by visiting the Rule Development section of our [Electrical Laws and Rules](#) webpage. The department will receive the advice of the Electrical Board regarding the First Draft at their January 30th [meeting](#) in Tumwater.

Before adoption of any rules, there will be formal opportunities to provide written comments or present testimony at a public hearing. Watch for updates in future editions of this newsletter and at the Rule Development section of our [Electrical Laws and Rules](#) webpage. For complete details about the process, see the [October 2019 Electrical Currents](#) Newsletter Special Edition. If you need additional information or have any questions, you may contact Alicia Curry at 360-902-6244 or Alicia.Curry@lni.wa.gov.

No L&I Electrical Inspections on January 8 – Statewide Electrical Inspector Training

Training for all electrical inspectors is happening on January 7 – 9, 2020. To relieve some of the impact, January 8 will be the only day attended by all L&I inspectors, no inspections will be performed that day. On January 7 and 9, inspectors will be available but at reduced capacity. We regret the inconvenience this causes, but we have found that a statewide approach improves consistency and is the most efficient use of our training budget. Please let your customers know and plan for inspections accordingly.

Electrical Contractors – Virtual Electrical Inspections Are Here

You can now request a [Virtual Electrical Inspection](#) (VEI) on the same day at least 30 minutes in advance of when you need it. VEI is a dependable inspection process allowing customers on the jobsite to interact with inspectors online using Skype on a mobile device. You can begin using VEI now for any electrical inspections that will take no longer than 15 minutes, and that do not involve service or final approvals. To use VEI, download the [Skype Application](#) and create a profile. On the jobsite, make sure you have at least a 4G, LTE, or Wi-Fi connection on your mobile device. Use Google Chrome to [schedule](#) your inspection on the day and time you want it. To learn more, search “virtual” at www.lni.wa.gov.

Big Changes Coming for Trainees and 01 Contractors – Apprenticeship Requirement

[Substitute Senate Bill 6126](#) passed by the legislature in 2018 affects those training to become 01 general journey level electricians and those who employ them.

- Effective July 1, 2023, to be eligible for the (01) general journey level electrician examination, applicants must have completed a recognized (01) electrical apprenticeship program approved by the Washington State Apprenticeship Training Council (WSATC) or out-of-state equivalent.
- After June 30, 2023, unless working in a specialty, trainees must be registered apprentices. Apprenticeship programs may credit certain properly documented electrical experience on record with the department such as, 4000 hours

Safety Tip of the Month

Standing water, ice, or snow may conceal hidden hazards. Avoid slips, trips, and falls by wearing proper footwear and proceeding with caution at all times. Trust your instincts and training. If your path is unsafe, find a safe route to get there or do not go!

required to obtain an electrical specialty certificate, military experience or completion of a two-year training school program. Students enrolled in a two-year program in the electrical construction trade are not required to be registered apprentices while gaining on-the-job training experience during an externship.

Want to Sponsor An Apprenticeship Program?

All sponsors for (01) general journey level electrician apprenticeship programs must adhere to Minimum Guideline Standards approved by the WSATC. You can request a copy by contacting apprentice@lni.wa.gov.

Registered apprenticeship programs start with the formation of an apprenticeship committee made up of industry members—both employers and employees.

The best way to get started is by contacting the apprenticeship customer service line at 360-902-5320. They will connect you with an apprenticeship consultant in your area. They are your best resource to help you identify which type of apprenticeship model best suits your company and then provide one-on-one consulting and on-site assistance to get your program up and running.

Invitation to a Stakeholder Meeting Near You

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2020 Stakeholder Meetings 6 – 8 p.m.		
January 28 – Tumwater – L&I Building Auditorium - 7273 Linderson Way SW	January 29 – Aberdeen – L&I Building 415 W Wishkah St, Suite B, Rm 112	February 4 – Vancouver – L&I Building – 312 E Stonemill Dr. Suite 120, Room C49
February 5 – White Salmon – White Salmon Valley Library – 77 NE Wauna Ave	February 6 – Kelso – L&I Building, 711 Vine St. Room R11	February 25 – Tacoma – L&I Building 950 Broadway, Orcas Room, 5th floor
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May 13 – Colville – Spokane Community College, 985 S Elm St., Classroom 132	Mid-May – Pullman – exact date and location yet to be determined	Late-May – Yakima – exact date and location yet to be determined
Late-May – Kennewick – exact date and location yet to be determined		

Answer to Question of the Month: No. No more “main lug” services. 2020 NEC 230.71(B) has been revised to require the two to six service disconnecting means to be in separate enclosures or panelboards with a main service disconnecting means in each enclosure, separate vertical sections of switchboards, or in equipment where each service disconnecting means is located in a separate compartment such as a motor control center.

Ugly Picture of the Month: We receive many questions from folks at our electrical program mailbox, ElectricalProgram@lni.wa.gov about how to become certified electricians. This one raises a few questions. You can find information about becoming an electrician by searching “electrician” at www.lni.wa.gov.

Hi so I've worked in the electrical industry for about the last 10 years although I don't have any actual licensing. I want to get licensed so that my resume looks more attractive and I can get more work. What would I need to do in order to get that license?

Is it possible simply take a test being that I have so much experience?

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Question of the Month – According to the 2020 NEC, is an outdoor heat pump supplied by a 240-volt 30-ampere branch circuit installed at a dwelling required to have ground-fault circuit-interrupter (GFCI) protection? *See correct answer on Page 2.*

WAC 296-46B Rulemaking Update

The process of revising the electrical rules is underway. Rule proposals submitted during the open window – October 10, 2019 through November 15, 2019 are compiled and posted on Rule Development section of our [Laws and Rules](#) webpage.

The primary reason for rulemaking is the July 1, 2020 effective date of the recently published [2020 National Electrical Code \(NEC\)](#). Rulemaking offers everyone an opportunity to propose amendments to the 2020 NEC rules to improve safety or clarity.

A Technical Advisory Committee (TAC), made up of a broad cross section of representatives from the electrical industry reviews the proposals and provides advice to the department. The TAC meets on December 11, 2019 in the Orcas Room of the Tacoma Rhodes Center, 949 Market Street, Tacoma at 9:00 a.m. The meeting is open to the public, but to efficiently consider all proposals, comments will be limited to appointed members of the TAC. After the TAC meeting, the Electrical Board reviews the rule proposals and makes further recommendations at their next regular meeting.

Before adoption of any rules, there are formal opportunities to provide written comments or present testimony at public hearings. See the Rule Development section of our [Laws and Rules](#) webpage for additional information about what happens next and to view the proposals.

For complete details about the process, see the [October 2019 Electrical Currents](#) Newsletter Special Edition.

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

No L&I Electrical Inspections on January 8 – Statewide Electrical Inspector Training

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Safety Tip of the Month

Be safe – be seen! Daylight is very limited this time of year. High visibility is your best bet for safe working or outdoor activities in low light conditions. Always wear reflective clothing or accessories so that others can see you. Wearing reflective clothing reduces the possibility of injury from a motor vehicle or other mobile equipment.

2020 Stakeholder Meetings 6 – 8 p.m.		
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February 27 – Sequim – Clallam County PUD , 104 Hooker Rd, Lake Crescent Room.	February 28 – Silverdale – L&I Building 10049 Kitsap Mall Blvd NW Suite 100	March 3 – Tukwila – L&I Building 12806 Gateway Dr. South, Rm C30
Mid-April – Everett – exact date and location yet to be determined	Mid-April – Mount Vernon – exact date and location yet to be determined	April 21 – Pateros – Howard's on the River Event Center 233 Lakeshore Drive
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Mid-May – Colville – exact date and location yet to be determined	Mid-May – Pullman – exact date and location yet to be determined	Late-May – Yakima – exact date and location yet to be determined
Late-May – Kennewick – exact date and location yet to be determined		

Meeting dates and addresses are also posted on the [Electrical Calendar](#) page of our website. Join the [Electrical Email Bulletin](#) to get the Electrical Currents newsletter and other important updates.

The 2023 National Electrical Code is Open for Public Input

Not happy with something in the 2020 National Electrical Code (NEC)? The 2023 edition is now open for public input! Anyone can submit a proposal to make changes to the NEC to be published in August 2022. The public input closing date is September 10, 2020.

To submit a public input using the online submission system, go directly to the National Fire Protection Association – NFPA 70 page using this [link](#). Once on the NFPA 70 page, select the link "Submit a Public Input" to begin the process. You will be asked to sign-in or create a free online account with NFPA before using this system. If you have any questions when using the system, a chat feature is available, or contact NFPA by email or phone at 1-800-344-3555

Answer to Question of the Month: Yes. 2020 NEC 210.8(F) is a new section that requires all outdoor outlets for dwellings, other than those covered in 210.8(A)(3), Exception to (3), that are supplied by single-phase branch circuits rated 150 volts to ground or less, 50 amperes or less to have ground-fault circuit-interrupter protection for personnel.

By the way, according to the NEC, an outlet is defined as a point on the wiring system at which current is taken to supply utilization equipment.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* A power company lineman, investigating theft of power discovered this very creative and dangerous installation supplying a receptacle.



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Question of the Month – According to 2018 [NFPA 70E](#) Standard for Electrical Safety in the Workplace, what are the 4 conditions where work on energized electrical conductors and circuit parts is permitted? *See correct answer on Page 2.*

Correction to September's QOM Answer

There was a typo in the answer to September's question of the month. The correct answer should have been three instead of two. An island countertop surface of 32 ft² would require three receptacle outlets per 2020 NEC 210.52(C)(2). Remember, a receptacle outlet, according to NEC 100 is defined as an outlet where one or more receptacles are installed.

Safety Tip of the Month

Be safe – be seen. Daylight is getting very limited this time of year. High visibility clothing is your best bet for safe working or outdoor activities in low light conditions. Always wear reflective clothing or accessories so that others can see you. Wearing reflective clothing reduces the possibility of injury from a motor vehicle or other mobile equipment.

You Can Help Write the Electrical Rules – WAC 296-46B Updates

Visit the Electrical Program [Rule Development](#) page of our website for details about how you can be involved in the rulemaking process. You can submit a proposal or apply to serve on the Technical Advisory Committee (TAC).

Until November 15, 2019, we will be accepting rule change proposals and applications for membership on the TAC. Complete details were published in the [October 2019 Special Edition](#) newsletter.

The reason we are opening the rules for revision is because the [2020 National Electrical Code \(NEC\)](#), which will be effective in Washington July 1, 2020, was published in September 2019. Due to changes in the NEC, some sections of the WAC rules must be revised. We are accepting proposals to amend the rules based on new NEC requirements as well as giving interested parties the opportunity to propose any rule changes to improve safety or usability of the rules.

As part of the rulemaking process, L&I filed a preproposal (CR101) with the state Office of the Code Reviser last month. There will be opportunities to provide written comments or present testimony at public hearings. See the Rule Development page of our website for additional information about how to participate in the process, and to download the proposal form for 2020 WAC 296-46B Rule Changes.

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

Make Sure Your Work is Inspected

It is important to make sure your electrical work is inspected. To fulfill our mandate of keeping Washington safe, we ensure that all appropriate inspections are made. An inspection request must be made within three business days of fully completing the job or within one business day after energizing any work – see WAC 296-46B-901(9)(a). A progress inspection must also be made before covering any portion of the installation. We have been finding many expired permits where an inspection request has never been made. The permit purchaser has the responsibility of ensuring the work is properly completed and that an inspection takes place. Failing to request an inspection puts the permit purchaser and consumers at risk. We have been working to ensure that all inspections are requested and made.

If the permit purchaser lets the permit expire without the appropriate inspection, a new permit must be purchased and an inspection requested. In addition, the permit purchaser is likely to receive an electrical citation(s) for failing to request the inspection. Be proactive and avoid these problems by verifying the inspection status of your permits before compliance action is necessary.

Most permits need at least a progress inspection shortly after the permit is purchased. It is the permit purchaser's obligation to ensure inspections are requested.

Inspection history and information is available for every permit by visiting the [Look Up a Permit or Inspection](#) page of our website and looking up your permit information.

Your Permit May Require Additional Progress Inspection Fees

Permit fees are specified in [WAC 296-46B-906](#). According to this rule, the total fee must not be less than the number of progress inspection (one-half hour) units times the progress inspection fee rate from subsection (8) – currently, \$46.80. If more than one inspection is required for your permit, for example, a wall cover or ditch inspection plus a final inspection, and your original permit fee is less than \$46.80 times the number of inspection trips, you may receive a notice of additional fees due.

Example: Installation of residential circuits supplying underground yard lighting and an irrigation pump will usually require two inspection trips (one for ditch cover, and one for inspection of the completed circuits. The residential circuit permit fee is \$62.00, which does not cover the cost of two inspection trips. In this case, an additional fee of \$46.80 will be required. A way to avoid this is to have the installation completed at the time of the ditch inspection. Any permit where the fee is less than \$93.60 (\$46.80 X 2) will only cover one inspection trip, and additional inspection trips will require additional progress inspection fees.

Is That Plastic Cut-in Box Approved to Support Your Luminaire?

Not all round cut-in boxes are intended to support luminaires. According to Underwriter's Laboratories guide information for nonmetallic outlet boxes, a nonmetallic box intended for support of a fixture/luminaire weighing 50 lbs. or less is marked "FOR FIXTURE/LUMINAIRE SUPPORT" on the carton. Nonmetallic boxes and plaster rings have not been investigated for support of a ceiling fixture/luminaire unless marked for use in ceilings, walls, and with the weight of the product to be supported.

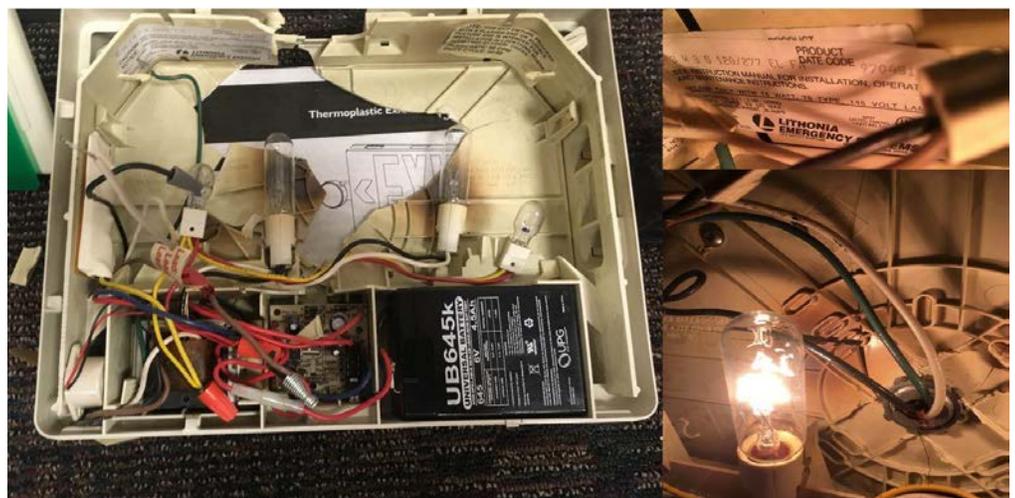
Answer to Question of the Month: [2018 NFPA 70E](#) 130.2(A)(1) through (A)(4) Energized work shall be permitted:

- (1) Where the employer can demonstrate that de-energizing introduces additional hazards or increased risk.
- (2) Where the employer can demonstrate that the task to be performed is infeasible in a de-energized state due to equipment design or operational limitations. (e.g., voltage and ampere testing is not feasible in a de-energized state)
- (3) ...on parts that operate at less than 50 volts where it is determined that there will be no increased exposure to electrical burns or to explosion due to electric arcs.
- (4) Normal operation of electric equipment shall be permitted where a normal operating condition exists.

Ugly Picture of the Month:

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

Here is a safety device that caused a safety hazard. Multiple exit signs had to be replaced due to overheating caused by incorrect lamps. Make sure to check the label on your exit signs and luminaires and use the correct size lamp.



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[Lni.wa.gov/ElectricalCurrents](http://www.ElectricalCurrents)

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SPECIAL EDITION

WAC 296-46B Revisions

● **The Department Is Seeking Stakeholder Input for Proposed Rule Changes**

The department is beginning the process of revising Washington Administrative Code (WAC) [296-46B](#) – Electrical Safety Standards, Administration, and Installation rules to allow stakeholders the opportunity to propose amendments to the 2020 National Electrical Code (NEC) to be effective July 1, 2020. Any stakeholder in the electrical industry may make proposals for additions and/or revisions to WAC 296-46B. Proposals from stakeholders may be submitted from October 10, 2019 through November 15, 2019. Proposal submission guidelines are detailed below.

Rules are developed to aid both stakeholders and the department in clarification or enforcement of the intent of the electrical statute (RCW 19.28). Technical changes require evidence of a specific problem and substantiation that the proposal will provide a solution for that problem.

The department is responsible for development of all rules. The department will act as the correlating body during the rule development process and may at any time promote rule change as necessary to accommodate statutory change or department policies or procedures.

A sample **Proposal Form for 2020 WAC 296-46B Rule Changes** is shown on page four of this edition. All proposals must be submitted using an electronic MS Word version of this form which is available on our Rule Development page at: <http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/RuleDev/default.asp>

Stakeholder proposals **must be received from 12:01 a.m. October 10, 2018 through 11:59 p.m. November 15, 2019. Any proposal received before or after these dates will be rejected. All proposals must be made electronically** using the form supplied by the department.

The submitter must submit a proposal(s) by sending the proposal form(s) as an email attachment to ElectricalWAC@lni.wa.gov during the submittal period shown above.

Proposed revisions should include the relevant existing text and should use legislative format. Use underscore to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~).

Proposals not submitted according to these instructions will be rejected.

● **Apply for the Technical Advisory Committee (TAC)**

The TAC process has proven to be very valuable in past years. The department will again appoint a General TAC made up of experts and interest group representatives from the electrical industry to review and make recommendations on proposals.

Persons interested in becoming TAC members must submit a letter of interest for specific positions to the Chief Electrical Inspector by email to ElectricalWAC@lni.wa.gov **to be received from October 10, 2019 through November 15, 2019**. The letter should state the position applied for (see TAC - Membership section below) and show constituency support for the prospective member. Include an email address and daytime phone number for the applicant. All applications will be evaluated to determine that the applicant meets the requirements for the position.

In order to keep the size of the TAC to an efficient and effective number, the committee will be limited to 35 voting members. The TAC makeup will be based on an equitable distribution relative to proportion of involvement within the electrical industry in Washington. TAC membership provides an opportunity for everyone interested in the Electrical Program’s WAC development to participate in the process.

If necessary, each successful candidate may designate an alternate to attend the TAC meeting. There will be no formal alternate assigned by the department. Any TAC member that is absent must notify the Chief Electrical Inspector of the alternate’s name one week prior to the TAC meeting. Failure to make the required notification will result in the position being vacant during the meeting.

● **The TAC Process**

The TAC will make recommendations on industry proposals and identify proposals that may have an economic impact on other specialties, small businesses, construction costs, or the cost of enforcement. Members who know they will be absent from a TAC meeting should make every effort to send an alternate. The TAC must review and evaluate proposals based on the need:

- o To address a critical life/safety need;
- o To address a specific state policy/statute;
- o To maintain a fair competitive environment;
- o To address a unique character of the State; or
- o To correct errors and omissions.

The TAC will operate on a majority basis. A majority vote of members in attendance in support of a motion will be considered as significant support for the motion made on a specific proposal. The TAC can propose amended language to a proposal. All voting members share an equal vote. The department will consider all TAC recommendations. Public testimony will not be received during the TAC meeting. Opportunity for public comment will be provided at a later date (see below).

● **2020 WAC Revision Process – Proposed Sequence of Events**

- o **On or before October 10, 2019** – File CR 101 – pre-proposal statement of inquiry.
- o **October 10 through November 15, 2019** – Accept proposals from stakeholders to amend or add to the existing WAC 296-46B.
- o **October 10 through November 15, 2019** – Accept applications for TAC.
- o **December 2019** –TAC meeting (exact date and location to be announced).
- o **January 30, 2020** – Electrical Board review and recommendation on proposals.
- o **February 18, 2020** – File CR 102 – rule filing (opens the official required public comment period).
- o **March 2020** – Public hearing(s).
- o **May 19, 2020** – File CR 103 – final rules are expected to be adopted
- o **July 1, 2020** – Revised rule becomes effective.

● **General TAC – Membership**

Chairperson– Chief Electrical Inspector (non-voting)

2	Electrical Board Members (non-voting)	1	WA Manufacturing Business
1	Training School Representative	1	Electrical Engineer
1	Continuing Education Provider	1	Electrical Testing Laboratory
2	Electrical Apprenticeship Representatives	1	Electric Utility Representative
1	Electrical Manufacturer Representative	1	General Public Member
2	L&I Inspection (Supervisor & Inspector)	10	Electricians
2	City Regulator (Supervisor & Inspector)	10	Electrical Contractors
1	Plumber (Contractor or Worker)		

Notes:

- o Contractor positions must be filled by a member of the firm or assigned administrator/master electrician of a licensed electrical/telecommunications contractor or representative of an electrical contractors' association in Washington representing that specialty.
- o Electrician positions must be filled by a certified electrician who is not a member of the firm or assigned administrator/master electrician in an electrical contracting business.
- o The AD HOC contractor and electrician positions must be filled by a specialty not otherwise represented on the TAC.
- o The plumbing position must be filled by a registered general or plumbing contractor or a representative of a plumber contractor's association in Washington or certified journeyman plumber.

Methodology for Determining the Number of Electrical Contractor and Electrician Members						
Active Licenses & Certificates	# of Contractors	% of All Licenses	# of TAC Members	# of Electricians	% of All Certificates	# of TAC Members
01	2835	56.9%	6	17,858	63.0%	6
02	322	6.5%		2,399	8.5%	
03	111	2.2%		314	1.1%	
03A	42	0.8%		106	0.4%	
04	81	1.6%		257	0.9%	
06	547	11.0%	1	3,096	10.9%	1
06A	512	10.3%	1	2,564	9.1%	
06B	12	0.2%		124	0.4%	
07	88	1.8%		979	3.5%	
07A	13	0.3%		73	0.3%	
07B	50	1.0%		217	0.8%	
07C	1	0.0%		23	0.1%	
07D	41	0.8%		185	0.7%	
07E	6	0.1%		74	0.3%	
09	296	5.9%		N/A	N/A	
10	25	0.5%		58	0.2%	
Ad Hoc Group	1,088	22.2%	2	7,373	26.0%	3
Total	4982		10	28,327		10
Notes:	<10% of Licenses/Certificates joins the Ad Hoc group					
	The Ad Hoc group will be filled on an equitable basis with an emphasis on representation closely following the % of licenses.					
	Unfilled positions will remain vacant.					

● Keep Informed

There will not be a specific mailing list for this WAC revision process. Special WAC update postings will be maintained using the Electrical Program's [Electrical Email List, Rule Development](#) page of our website, and [Electrical Currents](#) newsletter.

The best way to stay informed of the WAC process and other electrical issues is to join the *Electrical Email List* at: <http://www.lni.wa.gov/main/listservs/default.asp?List=40>

PROPOSAL FORM for 2020 WAC 296-46B Rule Changes

Email to: ElectricalWAC@lni.wa.gov
as an attachment

FOR L&I USE ONLY

Specific Rule #:

Date Received:

Comment:

NOTES:

1. All proposals must be **received from 12 a.m. October 10 through 11:59 p.m. November 15, 2019.**
2. Limit each proposal to a single rule section. Use a separate copy for each proposal.
3. **ENTER TEXT ONLY IN THE UN-SHADED SPACES ON THIS DOCUMENT – SAVE AS A NEW FILENAME BEFORE RETURNING**

Date submitted:

Name:

Representing:

Telephone:

Email Address:

1. Proposal: Include new or revised wording, or identification of wording to be deleted. Proposed text should be in legislative format. Use underscore to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~).

2. Statement of Problem & Substantiation for Proposal: Note: State the problem that will be resolved by your proposal and substantiation for your proposal.

3. Check one:

This proposal is original material

This proposal is not original material

(END OF PROPOSAL)

Question of the Month – According to the 2020 National Electrical Code (NEC), how many receptacle outlets are required for the countertop surface of an island measuring 4 feet by 8 feet? *See correct answer on Page 2.*

Attention Trainees – Beginning July 1, 2020, You Must Complete Classroom Training to Renew your Certificate.

The recent [WAC 296-46B](#) revisions contain an important change regarding renewal of electrical training certificates. We have found the current practice of allowing trainees to renew without completing their classroom training is in violation of the electrical laws – [RCW 19.28.161](#)(2), which requires holders of training certificates to renew every two years. At the time of renewal, the law requires trainees to provide proof of [approved classroom training](#) covering RCW/WAC, national electrical code, or electrical theory. Rules regarding renewal of training certificates are specified in [WAC 296-46B-942](#)(6) – (14). The current practice of allowing trainees to renew without having completed the required classroom training and placing their certificate into inactive status will continue until July 1, 2020, at which time renewal candidates must show proof of classroom training to renew.

Another change to align department rules with the law has to do with submission of affidavits of experience at the time of renewal of a training certificate. We published this change several times beginning in the [October 2018](#) Electrical Currents newsletter. Within one-hundred eighty days after the expiration date of an electrical training certificate, the individual, if not enrolled in a department approved apprenticeship program, must submit a completed, signed, and notarized affidavit(s) of experience for all hours of experience gained since the individual's last training certificate was effective.

2020 National Electrical Code (NEC) is published – Effective in Washington July 1, 2020

The National Fire Protection Association (NFPA) has published the 2020 NEC. Copies are available for purchase on the [Buy NFPA 70, National Electrical Code \(NEC\)](#) page of NFPA's website. You can also view the 2020 NEC by selecting the free access button on the [NFPA 70](#) page.

Washington has adopted the 2020 NEC with an effective date of July 1, 2020. Installations covered by all permits purchased beginning on that date must comply with the 2020 edition as modified by WAC 296-46B.

We have delayed the effective date until next July to give the department and electrical program stakeholders a chance to review the 2020 NEC. The department may be open to consideration of amendments. Now would be the time to do a thorough review of the 2020 NEC and think about any proposals that you may wish to submit should that happen. Watch future editions of this newsletter for further information about whether additional changes will be considered to WAC 296-46B regarding the 2020 NEC.

Ground-Fault Protection in Marinas

[WAC 296-46B-555](#) gives requirements for ground-fault protection in marinas, which modifies the 2017 NEC requirements in Article 555. Beginning September 1, 2019, ground-fault protection for marinas, boatyards, and commercial and noncommercial docking facilities are as published in the 2020 NEC. Article 555 has changed significantly in the 2020 edition. Ground-fault protection requirements are now found in NEC 555.35. Because the 2020 NEC is not effective until July 1, 2020, only the ground-fault protection requirements in 2020 NEC 555.35 will be effective now. Here is a summary of the new requirements:

Safety Tip of the Month

Back-to-school season is here again! Be on the lookout for children not only in school zones, but also in residential areas, playgrounds, and parks. Children are unpredictable and often take risks, ignore hazards, and fail to look both ways before crossing the street.

Give them a brake.

- Receptacles Providing Shore Power. Receptacles shall have individual ground-fault protection of equipment (GFPE) set to open at currents not exceeding 30 milliamperes.
- GFCI Protection for Personnel. All 125-volt, single-phase, 15- and 20-ampere receptacles for other than shore power shall have ground-fault circuit interrupter (GFCI) protection in accordance with NEC 210.8.
- Feeder and Branch-Circuit Conductors with GFPE. Feeder and branch-circuit conductors that are installed on docking facilities shall be provided with GFPE set to open at currents not exceeding 100 milliamperes. Coordination with down-stream GFPE shall be permitted at the feeder overcurrent protective device.

Notice the 2020 NEC 555.35(B) will require a leakage current measurement device to be available for use where more than three receptacles supply shore power to boats. This will allow users to determine when an individual boat has defective wiring or other problems contributing to hazardous voltage and current.

While a properly installed and maintained ground-fault protection system may reduce the likelihood of hazardous stray currents in the water in a marina, swimming in and around a marina where electricity is present should never be permitted.

Assisting a Householder with Electrical Wiring

Generally, electrical wiring must be performed by persons that are qualified to make safe installations and businesses that are licensed and bonded. The law provides for some exceptions, which allows property owners and their employees to perform work on property they own. Another exemption allows anyone to assist a “householder” with wiring on a single-family residence provided the householder is present while the person is assisting them and the person assisting does not receive money or other forms of compensation for their assistance. This exemption is found in [WAC 296-46B-925](#)(14) and is based on [RCW 19.28.261](#)(6). Often, this exemption is abused when a person who is being paid by the property owner performs electrical wiring and claims they are “assisting” the owner using the owner’s electrical permit. A person or company may be on-site performing a related construction project for which they are being paid and, in addition, they choose to or are asked by the customer to perform electrical wiring for the customer. It is not likely in this scenario that they are assisting the householder. They are being paid to perform the entire project. Anyone performing electrical wiring on a project where they are being paid is in the business of performing electrical installations. In this case, they must be a certified electrician working for a licensed electrical contractor under that electrical contractor’s permit.

Normal Electrical Inspection of Equipment and Machinery

[RCW 19.28.010](#)(1) requires all materials, devices, appliances, and equipment used in electrical installations to be of a type that conforms to applicable standards or be indicated as acceptable by the established standards of any electrical product testing laboratory which is accredited by the department. The National Electrical Code is the primary standard used by electrical inspectors to evaluate installation of electrical materials and devices. It is generally not applicable to evaluate electrical appliances or equipment due to the various methods and materials used.

There is a provision in [WAC 296-46B-903](#)(5)-(6) that allows normal department inspection for industrial control panels and utilization equipment. Successful “normal department inspection” of the electrical system of unlisted equipment or machinery requires all the equipment’s electrical system components and materials to be listed and labeled and installed in conformance with the NEC. The electrical system of unlisted equipment is usually not constructed to the NEC and must be field evaluated by an [approved testing laboratory](#) or, for industrial control panels and industrial utilization equipment only, [engineering evaluated](#).

When an electrical contractor connects a piece of unlisted equipment so it can be energized, the contractor’s actions create a potential safety hazard. Until the equipment is proven safe through field or engineering evaluation, the contractor shares responsibility with the equipment owner to correct the potential hazard.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* Yes, those are plumbing “Y” fittings, and no, this is not acceptable. Creative though!

Answer to Question of the Month: Two. 2020 NEC 210.52(C)(2) – At least one receptacle outlet shall be provided for the first 9 ft², or fraction thereof, of the countertop or work surface. A receptacle outlet shall be provided for every additional 18 ft², or fraction thereof, of the countertop or work surface.



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SPECIAL EDITION

Significant Changes – 2019 WAC 296-46B

In this issue, we will review of some of the significant changes in the 2019 [WAC 296-46B](#) electrical rules. The changes will be effective August 23, 2019. Installations made using electrical permits purchased on or after that date must comply with the revised requirements. We are also adopting the 2020 National Electrical Code (NEC) but it will not become effective until July 1, 2020. None of the current exam questions are affected by these changes.

This document does not cover all changes. We wrote it to help you become aware of some of the more important changes. A complete version of the 2019 WAC 296-46B will soon be available at:

<http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/LawsRules/default.asp>.

- **WAC 296-46B-010(1) – Adopted standards – 2020 National Electrical Code (NEC)**

We are adopting the 2020 NEC with an effective date of July 1, 2020. The 2020 NEC will apply to installations for all permits purchased on or after that date. We will consider rule proposals after publication of the 2020 NEC in September.

- **WAC 296-46B-100 – General definitions**

- “New building” – For the purposes of [RCW 19.28.261](#), includes the setting of a manufactured, mobile, or modular building. This clarifies that property owners or leaseholders cannot install wiring for a mobile or manufactured home then offer it for sale or lease without electrical contractor licensing and worker certification. We made the same change to WAC 296-46B-925(13).
- We removed four definitions specific to electrical services because the NEC definitions now accomplish what the rule did.

- **WAC 296-46B-210(3) – Other than dwelling units – GFCI requirements.**

A new rule clarifies that receptacles used for recreational vehicle supply equipment or for attachment of a mobile home supply cord do not require GFCI protection. It does not apply to 125-volt, single phase, 15- or 20-amp receptacles.

- **WAC 296-46B-215(1) – Feeders – Minimum rating and size**

This new rule for feeders is similar to one already required for services. If the feeder conductors have a lesser ampacity than the rating of the equipment they terminate in or on, you must install an identification plate that states the ampacity of feeder conductors. It does not apply to one- or two-family dwelling feeders rated up to 400 amperes.

- **WAC 296-46B-225 – Outside branch circuits and feeders – Clearances from roofs**

This rule adds an exception to NEC 225.19(A). It allows a reduction in clearance to 3 feet where feeder conductors that do not exceed 300 volts pass over a guarded or isolated roof. NEC 230.24(A) contains this exception for overhead service conductors and this rule now applies to feeder conductors as well. This change allows us to eliminate WAC 296-46B-230(4)(c) regarding residential patio covers.

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- **WAC 296-46B-408 – Switchboards, switchgear, and panelboards**
We moved this rule from WAC 296-46B-230(10). It prohibits installation of service equipment, subpanels, and similar electrical equipment in clothes closets, toilet rooms, and shower rooms. We moved it here because the rule also applies to panels for other than services.
- **WAC 296-46B-410(3) – Luminaires – Protection of conductors and insulation**
This new rule clarifies that requirements of NEC 410.56(E) for stranded conductors do not apply to branch-circuit conductors.
- **WAC 296-46B-430 – Marking on motors**
We amended this rule that requires motors to comply with National Electrical Manufacturer’s Association (NEMA) standards. Now it allows approval of motors built according to International Electrotechnical Commission (IEC) standards.
- **WAC 296-46B-440 – Air conditioning and refrigerating equipment – Split system indoor disconnecting means**
We amended this rule, which does not require a disconnecting means for the indoor unit of a split system in one- and two-family dwelling units under certain conditions. The change requires the outdoor unit to have a label identifying the location of all indoor units. This is an existing department policy published in the [November 2013](#) Electrical Currents newsletter.
- **WAC 296-46B-501(8) – Sewage disposal systems**
This new rule coordinates with Department of Health rules. It requires on-site sewage disposal systems using pumps to have audible and visual alarms designed to alert the resident of a malfunction. A circuit independent of the pump circuit must supply the alarm.
- **WAC 296-46B-514(7) – Motor fuel dispensing facilities – Maintenance disconnecting means**
This new rule clarifies the NEC 514.3 requirement for a maintenance and service disconnect for fuel dispensing equipment. It must be capable of isolating each dispenser individually from all external voltage sources including the grounded conductor, while all other dispensers remain operational.
- **WAC 296-46B-555 – Marinas – Ground-Fault protection**
Beginning September 1, 2019, ground-fault protection for marinas will be as published in the 2020 NEC. This provision was effective July 1, 2018.
- **WAC 296-46B-620 – Elevators – Disconnecting means**
This new rule coordinates L&I electrical and elevator program requirements. It specifies the location of elevator disconnects in elevator machine rooms.
- **WAC 296-46B-705(2) – Interconnected electric power production sources – Supply side disconnect**
We amended this rule to clarify the wiring methods, grounding, and bonding requirements for a supply side interconnection disconnect. It requires the same rules as if it were an additional service.
- **WAC 296-46B-908(10)(b)(iii) – Class B scope of work – Like-in-kind furnace replacement**
We amended the Class B random inspection process scope for low voltage HVAC control wiring. The change allows low voltage wiring for an existing and/or new thermostat, heat pump, or air conditioner using the same Class B label as the replacement of a furnace.
- **WAC 296-46B-915 – Civil penalty schedule**
We increased the penalty for unlicensed electrical contracting to \$1000 for a first offense with a maximum penalty of \$10,000. The penalties have not increased for over thirty years. The Technical Advisory Committee and the Electrical Board overwhelmingly supported this provision.

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- **WAC 296-46B-920(2)(f)(iv)(A) – Scope of work – HVAC/refrigeration systems specialty**
 We amended the HVAC/R specialty scope of work to allow, if HVAC/R equipment is being replaced, the specialty may remove and replace a disconnecting means enclosure mounted on the surface of the HVAC/R equipment with a like-in-kind disconnecting means enclosure rated not more than 20 amperes and 120 volts using the existing wiring method.
- **WAC 296-46B-940(3) – Electrician certificate of competency required**
 We amended this rule to consider a supervising electrician to be working in the electrical construction trade while supervising trainees (even if the supervising electrician is not performing electrical work). This requires the supervising electrician to display an electrician’s certificate appropriate for the work performed by the trainee(s).
- **WAC 296-46B-940(17)-(19) – Reciprocal agreements between Washington and other states**
 This new rule specifies requirements for the department to enter into reciprocal agreements for electrician certification with other states as allowed by [RCW 19.28.231](#).
- **WAC 296-46B-942(1) – Training certificates**
 This new rule alerts everyone that beginning July 1, 2023, unless working in a specialty, apprentices and individuals learning the electrical construction trade must have in their possession proof of being registered in an approved journey-level electrical apprenticeship or journey-level electrical training school program.
- **WAC 296-46B-942(8)(d) – Renewal of training certificates – Timely submittal of affidavits of experience**
 We amended the rules for renewal of training certificates to require trainees to submit affidavits of experience for all hours gained since the individual’s last training certificate was effective within one-hundred eighty days after the expiration date of an electrical training certificate unless enrolled in a department approved apprenticeship program. This is in accordance with [RCW 19.28.161\(2\)](#).
- **WAC 296-46B-942(9) – Renewal of training certificates – Basic classroom training required to renew**
 Effective July 1, 2020, an individual may not renew a training certificate until they complete the required hours of basic trainee classroom education. The current rule allowing a trainee to pay the renewal fee without completing their required classroom training violated RCW 19.28.161(2) which has no provision for inactive status for a trainee who has not completed the required basic classroom training.
- **WAC 296-46B-945(4) – Qualifying for the journey level electrician examination – Apprenticeship required**
 This new rule alerts everyone of the coming July 1, 2023 requirement for completion of apprenticeship to qualify for the journey level electrician certificate of competency examination.
- **WAC 296-46B-945(14) – Canadian Red Seal electricians**
 This new rule allows Canadian Red Seal electricians to qualify for the journey level certificate of competency examination if they have possessed a Red Seal endorsement for one year.
- **WAC 296-46B-990(3) – Serious noncompliance**
 We amended the rule defining serious noncompliance, which allows suspension or revocation of an electrical license or certificate to include:

 - Using or allowing a certificate to be used through error or fraud.
 - Refusing to present a government issued photo identification when requested by an electrical inspector while working as an electrician or trainee.
 - Cheating on an electrical certification examination.
- **WAC 296-46B-995(14) – Electrical board appeal rights and hearings**
 This new rule specifies requirements for appealing a decision pursuant to RCW 19.28.010(4) issued through an appellate process of a city or town to the Electrical Board.

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Question of the Month – How many vacant positions are there in the L&I electrical program? *See correct answer on Page 2.*

Electrical Program Specialists and Customer Service Specialists Are Here to Help You

Do you need help with an electrical permit, requesting an inspection, electrical contractor license, electrician or training certificate? Our dedicated team of customer service specialists and electrical program specialists are here to help you.

Electrical Program Specialists report to the electrical inspection supervisors and are a point of contact for all electrical customers. They are accessible throughout the day and are here to help you with more complex electrical program issues. They perform tasks previously handled by inspectors, leads, and supervisors. This allows the inspectors to spend more time performing inspections and supervisors to have more time supervising inspectors. If you receive a survey, please let us know how we are doing.

Customer Service Specialists staff the front counters of every L&I service location. They have the monumental task of helping L&I customers with the wide range of L&I services available to employers and workers. They help customers with a vast array of L&I programs including workplace safety, industrial insurance, filing injury claims, employer services, contractor registration, electrical permits, licensing and certification for electrical contractors, electricians, and plumbers. If you have a question or need help with any of our services, you can call your nearest [service location](#) and, depending on your question, a customer service specialist or electrical program specialist will help you.

Emergency Rule – Temporary Electrician Permits and Reciprocal Agreements

L&I has filed an emergency rule to issue temporary electrician permits in lieu of certificates of competency for electricians coming to work in Washington from another state. It also establishes rules for reciprocal agreements with other states for electrician certification. No reciprocal agreements are in place at this time.

The emergency rule — [WAC 296-46B-939](#) — was adopted July 3 and is in effect for 120 days, ending on October 31, 2019. The agency is responding to our customers' need for electricians as allowed by [RCW 19.28.231](#) while trying not to diminish the safety of electrical installations.

For more information or to apply, contact L&I's Electrical Program at 360-902-5249 or ElectricalProgram@lni.wa.gov.

Here is What We Accomplished in Fiscal Year 2019

Increased demand for permits, inspections, plan review, and licensing reflect Washington's healthy construction economy. Here is what happened in FY19 (July 1, 2018 through June 30, 2019), which demonstrates the amount of work performed by our dedicated staff:

- 161,390 electrical permits were sold, an increase of 9.4% over last year. 94% were purchased online.
- 260,302 electrical inspections were made. 84% were requested online. We are in the pilot stage of a virtual electrical inspection program. 1,200 inspections were made using this process. It allows electrical contractors to obtain an inspection while they are on the jobsite by scheduling a virtual inspection on short notice using their smart phone.
- We drove over 2.3 million miles with only 10 at-fault accidents, mostly minor fender-benders.

Safety Tip of the Month

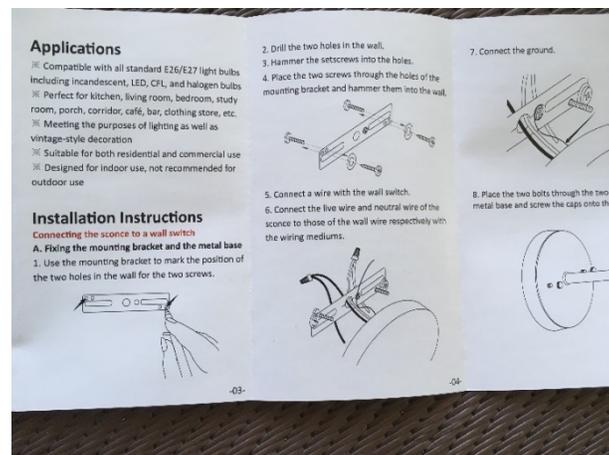
Do not allow yourself or anyone else to swim near a dock or marina where electrical power is present. Unlike a properly wired swimming pool, marinas lack essential safeguards to protect swimmers from electric shock.

If you must enter the water to work on a boat or dock, turn off and lock out all sources of electricity first.

- Electrical inspection reporting improvements now provide near real-time inspection results. Most customers receive an email message with their inspection results immediately after the inspection.
- Inspectors issued 44,422 corrections for serious code violations. These represent about half of total corrections and are violations that could result in disconnection of power if not corrected. By far, property owner permits are most likely to receive serious corrections. Inspectors issued at least one serious correction for 50% of property owner inspections, compared to 15% for electrical contractor inspections.
- Our inspection response times have improved. For FY19, we responded to approximately 84% of inspections within 24 hours of the date requested and 94% within 48 hours. While this is an improvement over last year, this means that 14,737 times, customers had to wait more than 48 hours for inspection. The number of inspectors, workload, and inspections in remote areas of the state affect response times. Filling vacant positions and getting new inspectors trained and working efficiently will be key to improving our response times.
- Speaking of training, since our formal inspector training program was established in 2013, 123 have completed basic inspector training. Almost half of our 128 inspectors and leads have less than 5 years' experience with the department. All new inspectors must complete a two-year training program.
- Our team of dedicated plans examiners reviewed over 6,400 pages of drawings for educational, institutional, or health care facilities. We review plans to ensure the design for these facilities meets the minimum requirements for electrical safety. The average backlog for a set of plans awaiting review in FY19 was 1.8 weeks. We reviewed almost 2200 pages using our new electronic plan review process saving customers and the department from having to print, handle, and ship paper plans for those projects.
- Typically, 20% of contractors receive 80% of corrections. The correction reduction initiative helped contractors identified as having the most corrections per inspection the prior fiscal year realize a 26% decrease in the number of corrections they received. Each month, contractors in this group get a list of their corrections and are encouraged to use the information to help their electricians make safer installations.
- 6,050 citations were issued for the focused underground economy violations of the electrical laws. These violations include failing to obtain electrical permits, unlicensed electrical contractors, uncertified electricians, and failing to properly supervise trainees. This is an increase from the previous year's 5,066 citations. It is mostly due to the E-CORE team finding many non-compliant jobs involving out-of-state unlicensed contractors and electricians performing work at large retail chains. Many of these jobs were taken over and completed by licensed electrical contractors.
- The licensing section processed 29,354 licenses (contractor, electrician, and trainee applications, and renewals). Almost 96% of these were processed the same day they were received.
- Customers submitted over 16.5 million hours of work experience for review to our licensing department to qualify for electrical certification exams. Of those, 3,932,305 electrical trainee and out-of-state electrician hours were flagged for review by our auditors, and of those, 1,137,872 were denied. Reasons for denial include inability to verify out-of-state experience, no active training certificates, lack of proper supervision (sometimes no certified electricians on staff), not able to verify employment (no legal employment records), no electrical permits to verify work performed, and lack of valid contractor licensing.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* Be careful what you order online! The wife of one of our Technical Specialists ordered two luminaires online after receiving advice to make sure they were listed by an accredited testing laboratory. The picture shows the installation instructions that came with the luminaires. No listing mark could be found on them. Following the installation instructions would create a hazard and violation of NEC 300.15. Needless to say, the luminaires are on their way back to China.

Answer to Question of the Month: There are currently eighteen vacant positions in the electrical program. See [last month's newsletter article](#) if you would like to become an electrical inspector.



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Question of the Month

Is the electrical equipment associated with a hydromassage bathtub permitted to be accessible only from the crawlspace beneath the tub? *See correct answer on Page 2.*

Electrical Inspector Positions Available

Do you enjoy a challenge? Have you ever thought about becoming an Electrical Inspector for L&I? Do you have 4 years' experience as a Washington EL01 certified electrician? The time may be right if you enjoy serving customers and interacting with electrical contractors, electricians, and the public. If you want to help ensure electrical safety in Washington and help licensed electrical contractors and certified electricians by enforcing laws related to the underground economy, this could be just what you are looking for. It is a great job with a great benefit package. Inspectors have a challenging workload inspecting a wide variety of interesting and complex electrical installations.

You can get more information and apply for these positions by visiting the [Find a Job at L&I](#) page of our website. Clear the search box, type "electrical inspector", and hit enter. You may see several postings. Some are for specific locations, or you can choose one for "multiple opportunities available". Read the posting and click "Apply". You will need to create a user name and password to access the electronic application system. Get your resume together, as openings will be posted for upcoming positions. Check with your local inspector or supervisor for information about upcoming openings.

Public Hearing – WAC 296-46B Revisions

L&I held a public hearing on the proposed changes to the electrical rules in [WAC 296-46B](#) on June 5 in Tumwater. The purpose of the hearing was to receive public comment on the proposed changes. One person gave public testimony. The comments were in support of the changes. You can review the proposed rules and other rulemaking documents by visiting the [Rule Development](#) page of our website. The proposed rules are scheduled to be effective August 23.

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

Electrical Board Meeting July 25 in Tumwater

The electrical board meets four times per year on the last Thursday of January, April, July, and October. The meetings are open to the public and meeting times and locations as well as minutes of previous meetings are posted on the [Electrical Board](#) page of our website. This month's meeting will be held July 25 at 9 a.m. at the [Tumwater L&I building](#) auditorium, 7273 Linderson Way SW, Tumwater.

Correction Reduction Initiative

At the beginning of each fiscal year (in July), the department identifies contractors who received more than twice the average number of corrections for contractors with at least 24 inspections in the previous year. Then, each month these contractors receive a list of all their corrections from the previous month. This gives them an opportunity to review the items with their electricians to improve the quality of their work.

This initiative has proven to be very successful in helping contractors reduce corrections and save money for themselves and the department. During fiscal year 2019, (July 1, 2018 through June 30, 2019), the contractors in the correction

Safety Tip of the Month

- Keep power cords clear of tools during use.
- Suspend power cords over aisles and work areas to eliminate stumbling, tripping hazards or damage to cords.
- Do not carry electrical tools by the power cord.
- Do not tie power cords in tight knots. Knots can cause short circuits and shocks.

reduction initiative reduced their corrections by an average of 25 percent from the previous year. The result is safer electrical installations at a significant cost savings to the contractor, customers, and the department. Corrections cost everyone by causing return visits to the jobsite. Our studies have shown that 20 percent of contractors receive 80 percent of corrections.

We use this initiative to improve our own performance as inspectors as well. Contractors who believe they have received improper corrections should contact the electrical inspection field supervisor for the issuing office to discuss possible invalid corrections, such as those that are not within the scope of the contractor's work, or those that are not supported by a correct code reference. A contractor should never accept invalid corrections because they fear reprisal from an inspector or supervisor. Our inspectors are required to provide an accurate reference (NEC, WAC) for all corrections issued. Improper corrections will be removed from the contractor's record.

Top Ten Electrical Installation Code Corrections Issued to Electrical Contractors

Corrections issued to licensed electrical contractors are very costly. Below are the top ten installation code corrections issued to electrical contractors last year.

- 1) NEC 110.3(B) Listed and labeled electrical equipment not installed in accordance with the manufacturer's installation instructions included in the listing and labeling.
- 2) NEC 210.8(A) and (B) Ground-fault circuit-interrupter protection requirements.
- 3) NEC 408.4(A) and 110.22(A) Failing to ensure accurate labeling of the panel schedule, circuit directory, or disconnecting means.
- 4) NEC 210.12(A) and (D) Arc-fault circuit-interrupter protection requirements for dwellings.
- 5) NEC 250.104(B) Bonding of metal piping systems including gas piping.
- 6) NEC 250.94 Intersystem bonding termination required for communications systems bonding.
- 7) NEC 110.7 Wiring integrity – completed wiring installations shall be free from short circuits, ground-faults, or any unpermitted connections to ground.
- 8) NEC 110.24(A) Service equipment at other than dwelling units to be marked in the field with the maximum available fault current.
- 9) NEC 250.24(A) System grounding connection requirements for services.
- 10) NEC 314.25 Each box shall have a cover, faceplate, lampholder, or luminaire canopy.

Contractors – Be Sure Customers Know Inspections Need to Happen

We are finding customers are not aware that electrical work requires inspections. Too often, we hear customers who claim, "My electrical contractor never told me I needed an inspection". Some are reluctant to allow access to an inspector. Inform your customers an inspection is required and what to expect. Better communication improves response time and reduces delays. Inspections are about safety and everybody needs to work together to get them done. Ultimately, it is the contractor's responsibility to make sure inspectors get access and have clear directions about what needs inspection.

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

This house was wired in 1998. Two nonmetallic-sheathed cables and a siding nail were occupying the same hole. It became an issue 20 years later when smoke started coming into the garage. [WAC 296-46B-010\(6\)](#) was adopted to help prevent this from happening in the future.

Answer to Question of the Month: No. [WAC 296-46B-680\(12\)](#) – For hydromassage bathtubs, all electrical equipment installed to support the bathtub (e.g., disconnecting means, motor, etc.) must be accessible at the same grade level as the tub or from a landing on the exterior of the building without the use of a ladder or other access device.



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Question of the Month – After validated online, how long is a Class B label good for? See correct answer on Page 2.

Public Hearing – WAC 296-46B Revisions

L&I will hold a public hearing on the proposed changes to the electrical rules in [WAC 296-46B](#). The purpose of the hearing is to receive public comment on the proposed changes. You can review the proposed rules and other rulemaking documents (including how to submit written comments) by visiting the [Rule Development](#) page of our website. Anyone can give the department comments on the proposed rules. Hearing details:

Date: June 5, 2019
Time: 9:00 a.m.
Location: Department of Labor & Industries
7273 Linderson Way SW, Room S119
Tumwater, WA 98501

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

You Can Comment Now on Several Proposed Changes to the 2017 and 2020 NEC

The National Fire Protection Association (NFPA) is considering changes to the National Electrical Code (NEC) through nine Tentative Interim Amendments (TIAs). You can review and comment on these proposals by visiting the [NFPA 70](#) page of their website. The comment period for these proposals closes June 27, 2019. Some of the changes being considered are:

- Limiting the use of nonmetallic-sheathed cable in NEC 334.10 to four stories in multi-family dwellings and other structures of Types III, IV, or V construction. This proposal is due to changes to the International Building Code allowing new categories of type IV buildings (mass timber) to include buildings up to eighteen stories.
- Changing the measurement method for GFCI requirements in NEC 210.8, which would require GFCI protection for receptacles within six feet of a sink even if located behind a cabinet door, such as a receptacle for a garbage disposal in the cabinet under the sink.
- Adding wording to require performance testing of arc energy reduction protection systems in NEC 240.67(C) and 240.87(C) using primary current injection testing or another approved method.
- Restore language in NEC 210.52(C)(2) of the 2020 edition stating a peninsular countertop is measured from the connected perpendicular wall.

Electric Vehicle (EV) Power Charging Equipment with Adjustable Load Ratings

Installers and inspectors have asked how to determine the rating of the service, feeder, or branch circuit supplying EV charging equipment with adjustable current rating settings. A change proposed in the 2020 NEC will help to clarify this question. The language in the proposed 2020 NEC 625.42 permits adjustable settings on fixed-in-place equipment only. Adjustments must be in accordance with the manufacturer's instructions. Electric vehicle supply equipment with restricted access to an ampere adjusting means will be permitted to have ampere ratings that are equal to the adjusted current setting. Sizing the service and feeder to match the adjusted amperage will be permitted. Restricted access can be accomplished by a cover or door that requires the use of a tool to open, locked doors accessible only to qualified personnel or password protected commissioning software accessible only to qualified personnel.

Safety Tip of the Month

♪ School's out for summer ♪

Pay attention! Put the phone down and be alert for children, pedestrians, skateboarders, and cyclists. Summer brings many new safety concerns for drivers and pedestrians.

The department will allow adjustable charging equipment to comply with the above requirements until the 2020 NEC is effective. At that time, requirements will be as published in the 2020 NEC.

Hazardous Conditions at the Inspection Site

Electrical inspectors are required to follow the same workplace safety rules as everyone else. Sometimes, a jobsite contains health or safety hazards that are not obvious. The presence of asbestos, dangerous chemicals, structural damage to the building, fall protection hazards, or even loose pets may catch an inspector unaware and have the potential to delay your inspection. Please help us by making the inspector aware of any potential hazards on your jobsite. You can do this by clearly identifying the hazard(s) at the jobsite, providing a comment about the hazard(s) in the inspection request, or notifying the inspector directly of the hazard(s) before the inspection.

How to Avoid Employing Expired or Inactive Certificate Holders

It is unlawful to employ someone to perform electrical work with an expired or inactive certificate. Often, forgetting or waiting to renew because they have not completed continuing education or basic classroom training is the cause. Checking expiration dates of the certificates your electricians display on their person is one way to keep track of things. Another way is to use the [Verify a Contractor, Tradesperson or Business](#) page of our website. You may want to consider using a calendaring program to set a reminder 90 days prior to everybody's expiration date to alert you when certificates are eligible to be renewed.

Renewal reminders go out 90 days before certificates expire. Applicants can renew at that time if they have fulfilled their educational requirements. If someone is looking for an approved class to fulfill their education requirements, refer them to the [Electrical Workers' Educational Requirements](#) page of our website.

Don't be an Absentee Administrator

"Absentee Administrator" is a term used to describe a person who chooses to assign themselves as the administrator or master electrician for an electrical contractor, but is not actually involved in the day-to-day electrical activities of the company. The electrical laws and rules deal with this kind of violation very seriously. In addition to monetary penalties for contractors who employ absentee administrators, penalties begin at \$1,000 for absentee administrators or master electricians.

[RCW 19.28.061](#) states that the person designated as the master electrician or administrator for an electrical contractor must be a member of the firm or a full-time supervisory employee. He/she must be available during working hours to carry out the duties of an administrator. For further clarification of the terms "member of the firm" and "full time supervisory employee" see [WAC 296-46B-930](#).

The contractor must name all members of the firm on the electrical contractor's license. Partners must be on file with the department of licensing and corporate officers or members of an LLC or INC must be on file with the Secretary of State.

When determining the full-time supervisory employment status of the assigned person, the department will consider whether the individual is on the contractor's full-time payroll; receives a regular salary or wage similar to other supervisory employees; has supervisory responsibility for work performed by the contractor; is available during normal business hours, and carries out the duties shown in RCW 19.28.

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* Human creativity is pretty amazing. When faced with the problem of a wire too small for the provided lug, here is one property owner's noncompliant solution.

Answer to Question of the Month: All Class B work must be completed within fifteen days after the label is validated. If the work is not completed within that time, another Class B may be posted. Except that, in a one-or two-family residential structure, a label is valid for ninety days after the label is validated, so long as all work described on the label is performed by the purchaser.



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Question of the Month – When will the 2020 National Electrical Code (NEC) be published, and when will it be effective in Washington? See correct answer on Page 2.

Invitation to a Stakeholder Meeting Near You

Five meetings in May will complete 19 electrical stakeholder meetings in various locations across the state between January and May 2019. Meetings are an opportunity to talk with the Electrical Program staff in an informal setting. Attend a meeting near you, we want to hear how we can better serve you and help you stay informed of any changes that might affect you and/or your business. Meetings are scheduled from 6 to 8 p.m. at the locations listed below. If you are not on the email list to receive these newsletters, you may join at our [Electrical Email List](#) webpage.

Safety Tip of the Month

Prevent construction falls from roofs, ladders, and scaffolds. Each year in the U.S. more than 310 construction workers are killed and more than 10,350 are seriously injured by falls from heights. For recommendations, reports, and resources, download the [Construction Falls Fact Sheet](#) from the National Institute for Occupational Safety and Health.

2019 Stakeholder Meetings 6 – 8 p.m.		
May 14 – Spokane – Spokane Falls Community College , 3410 W. Fort George Wright Dr, Bldg 17, Sub Lounges	May 15 – Colville – Spokane Community College , 985 S Elm St., Combined Room	May 16 – Pullman – City Parks & Rec , Barley Rm. – 240 SE Dexter St.
May 21 – Kennewick – Benton PUD Auditorium – 2721 West 10th Avenue	May 22 – Moses Lake – L&I Building 3001 West Broadway Avenue	

Rule Update – WAC 296-46B Revisions

A Second Draft of the proposed rules is posted on the [Rule Development](#) page of our website.

A public comment period will open soon so that anyone may submit written comments. In addition, a public hearing will be held at the Tumwater L&I building, exact date and time to be announced. Watch for updates on the Rule Development page and in next month's newsletter.

For more details about the process, or to view or download rulemaking documents including the Second Draft, visit the Rule Development page of our website or see the [August 2018](#) Special Edition Electrical Currents newsletter.

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

Electronic Plan Review Process Reduces Waste of Handling Paper Prints

For some time now, the department has been working on a project that will significantly reduce waste associated with printing, handling, mailing, and processing of paper plans (blueprints) for construction projects that require plan review. While the fully functioning system for processing plans electronically is not complete, the department began accepting electronic plans from customers on a limited basis last year to pilot the new process. This process allows customers, primarily engineering firms who design building projects using computers to send plans to the department for review electronically eliminating the need to print, package, and mail the paper plans to the department. The department receives the electronic plan sets and plans examiners review them on large screen monitors. Electronic stamps and



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notes are applied to the pages of approved plans, which are then returned to the customer electronically. Since we began accepting electronic plans, use of this process has grown quickly. For the first three months of 2019, the department received, reviewed, and processed 716 pages of plans using the electronic process. This represents about 37% of total plan pages reviewed during this period. More features will be added when the system is fully functional. So far, reaction from our customers and the plans examiners has been very positive. We want to thank those customers who have helped us pilot and implement the electronic process. This will allow the department to review plans much more efficiently making it easier for stakeholders to do business with the electrical program.

Electric Vehicle Chargers – GFCI Protection Requirements

Since 2009, with the passage of House Bill [1481](#) electric vehicle (EV) infrastructure has become more available. More EVs are on the road as well. This session, the legislature delivered House Bill [1257](#) to Governor Inslee for signature. This bill requires electric vehicle capability at all new buildings that provide on-site parking.

To minimize shock hazard to users of charging equipment, Article 625 of the 2017 National Electrical Code (NEC) was modified by Tentative Interim Amendment (TIA). Modifications include a new section requiring Ground-Fault Circuit-Interrupter (GFCI) protection for single-phase EV charger receptacles rated 150 volts to ground or less, and 50 amperes or less. In addition to requiring GFCI protection for EV receptacles, TIA 17-2 amends NEC 625.44(A) permitting the use of 240V receptacle outlets for EV charging circuits.

See the complete text of the TIA at: https://www.nfpa.org/assets/files/AboutTheCodes/70/TIA_70_17_2.pdf.

To see all the TIAs and errata, visit the [Current and Prior Editions](#) tab of the NFPA 70 (NEC®) webpage. Always make sure your published version is up to date by checking for errata and TIAs.

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 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.

Recently, we sent a letter to all active trainees and electrical contractors about the exceptions offered for untimely affidavits of experience. If you are one of those, and did not receive a letter, please update your address at:

<https://www.lni.wa.gov/TradesLicensing/LicensingReq/Legal.asp>

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

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* Green Power? Not exactly your garden-variety electrical panel. ☺

Answer to Question of the Month: The 2020 NEC is scheduled to be published August 5, 2019 (a little over three months away)! It will be adopted in Washington with an effective date of July 1, 2020. To learn more about the NEC revision process, visit the [National Electrical Code](#) page of NFPA's website.



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Question of the Month – What is the percentage of journey-level exam candidates that pass on the first attempt? *See correct answer on Page 2.*

Invitation to a Stakeholder Meeting Near You

There are 19 electrical stakeholder meetings in various locations across the state between January and May 2019. Meetings are an opportunity to talk with the Chief Electrical Inspector in an informal setting. Attend a meeting near you, we want to hear how we can better serve you and help you stay informed of any changes that might affect you and/or your business. Meetings are scheduled from 6 to 8 p.m. at the locations listed below. Meeting dates and addresses are posted on our [Electrical Calendar](#) webpage. If you are not on the email list to receive these newsletters, you may join at our [Electrical Email List](#) webpage.

Safety Tip of the Month

Keep an eye out for the safety of your trainees and apprentices. Do not assume a person who is learning the electrical construction trade is familiar with basic electrical safety rules. Trainees and apprentices are eager to please their employers, and it is the electrical contractor's, administrator's, and supervising electrician's responsibility to ensure they do not put themselves or others in danger.

2019 Stakeholder Meetings 6 – 8 p.m.		
April 10 – Everett – Snohomish County PUD – 2320 California St, Commission Rm	April 11 – Mount Vernon – NW WA Research and Ext Center , 16650 SR 536	April 23 – Okanogan – Okanogan PUD Auditorium, 1331 2 nd Ave N.
April 24 – Leavenworth – Chelan County PUD Auditorium, 222 Chumstick Hwy.	April 25 – Yakima – Pacific Power Auditorium, 500 Keys Road	May 14 – Spokane – Spokane Falls Community College , 3410 W. Fort George Wright Dr, Bldg 17, Sub Lounges
May 15 – Colville – Spokane Community College , 985 S Elm St., Combined Room	May 16 – Pullman – City Parks & Rec, Barley Rm. – 240 SE Dexter St.	May 21 – Kennewick – Benton PUD Auditorium – 2721 West 10th Avenue
May 22 – Moses Lake – L&I Building 3001 West Broadway Avenue		

Big Changes Coming for Trainees and Contractors – Apprenticeship Legislation Passed

[Substitute Senate Bill 6126](#) passed by the legislature in 2018 effects those training to become 01 general journey level electricians and those who employ them.

- Effective July 1, 2023, to be eligible for the (01) general journey level electrician examination, applicants must have completed a recognized (01) electrical apprenticeship program approved by the Washington State Apprenticeship Training Council (WSATC) or out-of-state equivalent. This requirement does not apply to those approved for an (01) examination before July 1, 2023 or to any applicants for specialty electrician examinations.
- After June 30, 2023, unless working in a specialty, trainees must be registered apprentices. Apprenticeship programs may credit properly documented electrical experience on record with the department such as, 4000-hour electrical specialty certification, military experience or completion of a two-year training school program. Students enrolled in a two-year program in the electrical construction trade are not required to be registered apprentices while gaining on-the-job training experience during an externship.

Apprenticeship Roles

Electrical Apprentices—electrical trainees registered in approved Washington State Apprenticeship and Training Council (WSATC) programs or equivalent out-of-state apprenticeship programs. Experience is gained while employed by a training agent.

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Training Agents—employers who are registered training agents for one or more apprenticeship programs. They abide by apprenticeship standards while providing on-the-job training to apprentices.

More about apprenticeship terms at <https://www.lni.wa.gov/TradesLicensing/Apprenticeship/About/glossary/default.asp>

Recognized (01) General Journey Level Electrician Apprenticeship Programs

- [Construction Industry Training Council of Washington \(CITC\)](#)
- [Area 1 Inside Electrical JATC](#)
- [Puget Sound Electrical Joint Apprenticeship and Training Committee](#)
- [IBEW 48 NECA-IBEW Electrical JATC](#)
- [Inland Empire Electrical Training Trust](#)
- [Southwest Washington Electrical Joint Apprenticeship and Training Committee](#)
- [LU 112 - NECA Electrical Apprenticeship Committee](#)
- [Northwest Washington Electrical Industry Joint Apprenticeship and Training Committee](#)

Want to Sponsor An Apprenticeship Program?

All sponsors for (01) general journey level electrician apprenticeship programs must adhere to Minimum Guideline Standards previously approved by the WSATC. To download a copy of the Inside Electrician (01) Minimum Guideline Standards Template follow this [link](#).

Registered apprenticeship programs start with the formation of an apprenticeship committee made up of industry members—both employers and employees.

For more information, contact a Labor & Industries Apprenticeship Consultant. Apprenticeship consultants are located all across the state. They will help you identify which type of apprenticeship model best suits your company and then provide one-on-one consulting and on-site assistance to get your program up and running. Contact information for Apprenticeship Consultants can be found at the [L&I Apprenticeship Consultants](#) page of our website.

Rule Update – WAC 296-46B Revisions

A Second Draft of the proposed rules is posted on the [Rule Development](#) page of our website.

A public comment period will open soon so that anyone may submit written comments. In addition, a public hearing will be held at the Tumwater L&I building, exact date and time to be announced. Watch for updates on the Rule Development page and in next month's newsletter.

For more details about the process, or to view or download rulemaking documents including the Second Draft, visit the [Rule Development](#) page of our website or see the [August 2018](#) Special Edition Electrical Currents newsletter.

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

Ugly Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* This creative method of adding service entrance conductors to two additional panels was discovered by one of our inspectors at a marijuana grow operation in need of more circuits and capacity for additional loads. There was a wad of tape on the split bolt when the inspector found it.

Answer to Question of the Month: As reported at the January 31 Electrical Board meeting, for last year about 49% of all journey-level exam candidates passed on the first attempt. Data compiled a couple years back indicates about 30% of those who did not complete an apprenticeship passed on the first attempt compared to almost 70% for those who completed an apprenticeship.



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Question of the Month – When was the first National Electrical Code published? *See correct answer on Page 2.*

100th Anniversary of Washington’s Electrical Licensing Law

House Bill 260 passed the legislature and was signed into law on March 11, 1919. The law created Washington’s first licensing and bonding requirements for electrical contractors. The title of H.B. 260 was: *LICENSING AND BONDING OF ELECTRICIANS. An Act providing for the licensing and bonding of persons, firms or corporations engaged in or carrying on the business of installing wires to convey electric current, or electric apparatus to be operated by such current, prescribing the conditions of bonds and the rights of recovery thereof, and providing penalties for violations of this act.*

You can view the original law on the Washington Legislature website at this [link](#). Here are some of the highlights of the original law:

- Required license and bonding for persons, firms, or corporations that engage in, conduct or carry on the business of installing wires to convey electric current (similar to language in current law).
- License fee was \$15.00 per year (about \$200 in today’s dollars). Current license fee is \$277.60 per two years.
- Liability bond of \$500.00 (about \$7200 today) was required. Current bond amount required is \$4000.00.
- Only applied in cities.
- Did not apply to wiring from the source of supply to the service switch, nor to work in connection with the lighting of streets, alleys, ways, or public parks, areas or squares.
- Did not apply to individuals, firms or corporations working on the premises or property owned by them.
- Failure to comply with this act was a misdemeanor.

The original licensing law did not provide for any installation standards. The next electrical law was 16 years later, in 1935 when [House Bill 413](#) added permits, inspections, inspectors (at \$1.00 per hour), National Electrical Code, and the appeals board.

Special thanks to Tom Baker of Puget Sound Electrical Training for his contribution to this article.

Legislative Update

So far, only one bill has been introduced that may affect the electrical laws of RCW 19.28. This bill is not sponsored by L&I. You can get information about this bill by clicking on the hyperlinked bill number below. Review the bill and comment if you desire. A comment button is located to the right of the bill number on the bill’s webpage.

[House Bill 1594](#) – Provides an allowance for line workers to work on anything in the communications worker safety zone and supply space on utility poles supporting electric utility transmission or distribution lines without licensing, certification, or permits and inspections. Currently, according to L&I Division of Occupational Safety and Health (DOSH) rules, qualified electrical workers (i.e., line workers) must do all work in these spaces.

The bill also allows the installation of electric utility-owned equipment between meter bases and meters.

Rule Update – WAC 296-46B Revisions

Based on advice provided by the Technical Advisory Committee, and Electrical Board during their meeting in Tacoma on January 31, we have produced a Second Draft of the proposed rules and posted them on the [Rule Development](#) page of our website.

This document may contain hyperlinks to internet web pages. To access this PDF document online, go to:
<http://www.ElectricalCurrents.lni.wa.gov>

Safety Tip of the Month

Watch your step when working around the jobsite especially outside in these wintry conditions. Hidden obstacles under snow or construction materials laying around can lead to slips, trips, and falls that could ruin your day.

A public comment period will open soon so that anyone may submit written comments. In addition, a public hearing will be held at the L&I building, 7273 Linderson Way SW, Tumwater, WA. Exact date and time to be announced. Watch for updates on the Rule Development page and in next month's newsletter.

For more details about the process, or to view or download rulemaking documents including the Second Draft, visit the [Rule Development](#) page of our website or see the [August 2018](#) Special Edition Electrical Currents newsletter.

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

Invitation to a Stakeholder Meeting Near You

We are holding 19 electrical stakeholder meetings in various locations across the state between January and May 2019. These meetings are an opportunity to talk with the Chief Electrical Inspector in an informal setting. Check the schedule below and attend a meeting near you. We want to hear how we can better serve you, our customers and help you stay informed of any changes that might affect you and/or your business. Meetings are scheduled from 6 to 8 p.m. at the locations listed below. Meeting dates and addresses are posted on our [Electrical Calendar](#) webpage. If you are not on the email list to receive these newsletters, you may join at our [Electrical Email List](#) webpage.

2019 Stakeholder Meetings 6 – 8 p.m.		
March 6 – Tukwila – L&I Building 12806 Gateway Dr. South, Rm C30	April 10 – Everett – Snohomish County PUD – 2320 California St, Commission Rm	April 11 – Mount Vernon – NW WA Research and Ext Center , 16650 SR 536
April 23 – Okanogan – Okanogan PUD Auditorium, 1331 2 nd Ave N.	April 24 – Leavenworth – Chelan County PUD Auditorium, 222 Chumstick Hwy.	April 25 – Yakima – Pacific Power Auditorium, 500 Keys Road
May 14 – Spokane – Spokane Falls Community College , 3410 W. Fort George Wright Drive, Bldg 17, Sub Lounges	May 15 – Colville – Spokane Community College , 985 S Elm St., Combined Room	May 16 – Pullman – City Parks & Rec, Barley Rm. – 240 SE Dexter St.
May 21 – Kennewick – Benton PUD Auditorium – 2721 West 10th Avenue	May 22 – Moses Lake – L&I Building 3001 West Broadway Avenue	

Picture of the Month: *If viewing this document online, click on the picture to open a larger image.* In the early 1930's Bill Bergstrom and Irving Lassen founded Bergstrom's Sporting Goods store on Fourth Avenue in Olympia, where the Spider Monkey tattoo parlor is now. Here, Bergstrom and Lassen show off a brace of fish caught with tackle from their store. Irving Lassen is the dapper gentleman at the left. He later founded Lassen Electric and, at his death, endowed the Lassen Foundation for the benefit of the people of Thurston County. Lassen Electric holds the distinction as being the longest continuously licensed active electrical contractor in Washington. Originally licensed as Sport & Electric Shop on January 2, 1935, [Lassen Electric](#) was later purchased by Joe and Donna Wiest, and is still owned and operated by the family today.



Answer to Question of the Month: In 1897, the National Board of Fire Underwriters published the first National Electrical Code "For the installation of wiring and apparatus for electric light, heat and power". Many requirements are still very similar to the original. Here's an excerpt from the first page of general suggestions: *"In all wiring special attention must be paid to the mechanical execution of the work. Careful and neat running, connecting, soldering, taping of conductors and securing and attaching of fittings, are specially conducive to security and efficiency, and will be strongly insisted on."*

Photo by Vibert Jeffers, 1938, Susan Parish Collection, Southwest Regional Archives. Text courtesy of Olympia Historical Society and Bigelow House Museum (olympiahistory.org)

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Question of the Month – Calculation of loads in accordance with the National Electrical Code (NEC) requires knowledge of the amount of power consumed by the circuits, feeders, and service. Power is expressed in volt-amperes or watts. How many volt-amperes are drawn by the following (assume 100 percent power factor). *See correct answer on Page 2.*

- 1) A 4.5 kilowatt (kw), 240-volt single-phase water heater.
- 2) A 10 ampere, 120-volt dishwasher.
- 3) A 5 horsepower, 460-volt three-phase air compressor.

Safety Tip of the Month

Listed electrical equipment must be installed and used in accordance with the manufacturer's installation instructions. Always read the instructions and follow them, also, leave a copy on the jobsite for the inspector and the owner.

Legislative Update

If you are part of the electrical or telecommunications industries regulated by L&I, lawmakers are considering bills that may affect you. Bills must be introduced and passed out of committee by February 22 to remain available for consideration.

So far, only one bill has been introduced that may affect the electrical laws of RCW 19.28. This bill is not sponsored by L&I. You can get information about this bill by clicking on the hyperlinked bill number below. Review the bills and comment if you desire. A comment button is located to the right of the bill number on each webpage. You may also contact your legislator to share your opinion about any legislation by visiting the legislative website at: <http://www.leg.wa.gov/LIC/Pages/hotline.aspx>.

House Bill 1594 – Provides an allowance for line workers to work on anything in the communications worker safety zone and supply space on utility poles supporting electric utility transmission or distribution lines without licensing, certification, or permits and inspections. Currently, according to L&I Division of Occupational Safety and Health (DOSH) rules, all work in these spaces must be done by qualified electrical workers (i.e., line workers). The bill also allows the installation of electric utility-owned equipment between meter bases and meters.

Rule Update – WAC 296-46B Revisions

Based on advice provided by the TAC, and Electrical Board during their meeting in Tacoma on January 31, we will produce a Second Draft of the proposed rules and post them on the Rule Development page of our website shortly.

Soon, there will be a public comment period and hearing where everyone will be able to give advice about the rules.

For more details about the process, to view or download rulemaking documents including the Second Draft, visit the [Rule Development](#) page of our website or see the [August 2018](#) Special Edition Electrical Currents newsletter.

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2019 Stakeholder Meetings 6 – 8 p.m.		
February 5 – Vancouver – L&I Building – 312 E Stonemill Dr. Suite 120, Room C49	February 6 – White Salmon – White Salmon Valley Library – 77 NE Wauna Ave	February 7 – Kelso – L&I Building , 711 Vine St. Room R11
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Exceptions Offered for Untimely Affidavits of Experience

Affidavits of experience must be submitted at the time of renewal of a training certificate. We have seen too many affidavits of experience denied because they were turned in later than allowed. 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 the date when their certificate expires. Untimely affidavits will be denied.

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

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

Ugly Picture: *If viewing this document online, click on the picture to open a larger image.* How many electrical hazards can you spot with this property-owner installed service for an RV? Washington allows any property owner to perform electrical work regardless of qualifications. An inspector caught this unsafe installation before it killed someone. For bonus points, if this were energized, would it blow the overcurrent device supplying it? What would the voltage be across the 120-volt receptacles?

Answer to Question of the Month:

- 1) 4500 volt-amperes
(4.5 kW X 1000 W/kW ÷ 1.0 power factor);
- 2) 1200 volt-amperes
(10 amperes X 120 volts);
- 3) 6,311 volt-amperes
(7.6 amperes X 480V X √3) See NEC Table 430.250 for 3-phase motor full-load current. √ (square root) of 3 = 1.73 (3-phase power formula).



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(TDD/TTY users, please call 360-902-5797.) Labor & Industries is an Equal Opportunity employer.

Question of the Month – The total calculated service load for a 12-unit multifamily dwelling building is 137,500 volt-amperes. Each unit will be fed with a 120/208 volt single-phase feeder originating from a three-phase service. Using the standard calculation what is the calculated load in amperes on the service phase conductors? A) 1146 amps, B) 661 amps, C) 382 amps, D) 286 amps. See correct answer on Page 2.

No L&I Electrical Inspections on January 9 – Statewide Electrical Inspector Training

Training for all L&I electrical inspectors is happening on January 8 – 10, 2019. January 9 will be the only day attended by all L&I inspectors, no inspections will be performed that day. On January 8 & 10, inspectors will be available but at reduced capacity. We regret the inconvenience this causes, but we have found that a statewide approach improves consistency and is the most efficient use of our training budget. Please let your customers know and plan for inspections accordingly.

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Safety Tip of the Month

In the coming months, be prepared for deteriorating driving conditions. Rain, fog, ice, and snow are on the way. Slow down and increase your following distance to help compensate for decreased traction and visibility. Make sure your windshield wipers work well and wiper fluid is full. To help prepare for winter driving, see the [Winter Travel](#) page on the Washington Department of Transportation website.

2019 Stakeholder Meetings 6 – 8 p.m.		
January 22 – Tumwater – L&I Building Auditorium - 7273 Linderson Way SW	January 23 – Aberdeen – L&I Building 415 W Wishkah St, Suite B, Rm 112	February 5 – Vancouver – L&I Building – 312 E Stonemill Dr. Suite 120, Room C49
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Rule Update – WAC 296-46B Revisions

The Technical Advisory Committee (TAC) met on December 5 in Tacoma and gave L&I input regarding department and stakeholder rule proposals. Based on advice provided by the TAC on the proposals, we have produced a First Draft of the proposed rules. Additional advice will come from board members during the next regular Electrical Board Meeting on Thursday, January 31 in the Orcas Room of the Rhodes Center, 949 Market St., in Tacoma.

Soon, there will be a public comment period and hearing where everyone will be able to give advice about the rules.

For more details about the process, to view or download rulemaking documents including the First Draft, visit the [Rule Development](#) page of our website or see the [August 2018](#) Special Edition Electrical Currents newsletter.

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

Plug-in Household Appliances

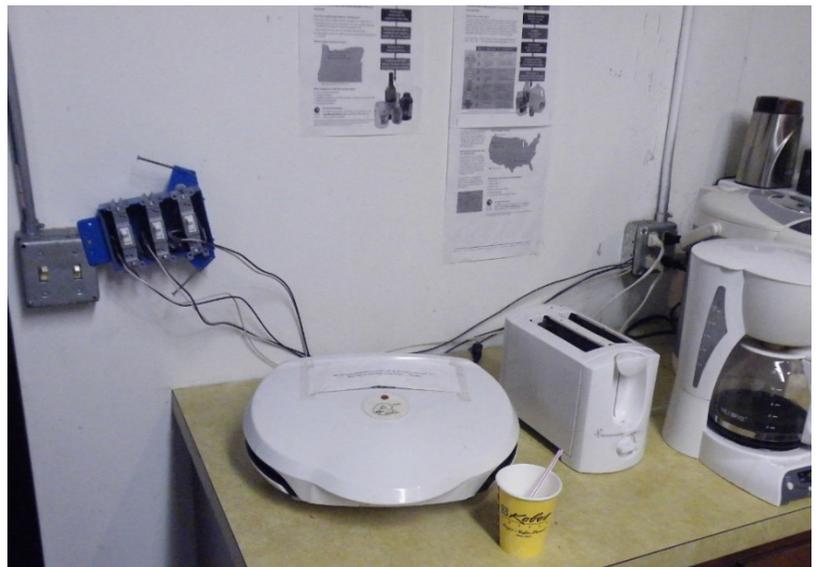
[RCW 19.28.006](#)(9) exempts plug-in appliances from all the requirements of chapter 19.28 RCW (e.g., licensing, certification, permitting, inspection, etc.). For this exemption, appliances are limited, by the definition in WAC [296-46B-100](#) to household appliances. For any other appliance (e.g., hard wired household appliances, and all non-household appliances), all the requirements of chapter 19.28 RCW apply.

There is another exemption in [WAC 296-46B-925](#)(10) from licensing and certification requirements for the installation of plug and cord connected utilization equipment (other than plug-in household appliances which are completely exempt). The plug and cord must be a single listed unit consisting of a molded plug and cord and not exceeding 250 volts 60 amperes single-phase. The plug and cord can be field installed per the manufacturer's instructions and the product listing requirements. The utilization equipment must be a single manufactured unit, including the plug and cord, that does not require any electrical field assembly except for the installation of the plug and cord and is allowed to be plug and cord connected by the NEC. Electrical servicing, maintenance, or repairing of plug-in equipment or appliances, other than plug-in household appliances, are not included in this exemption and must be done by certified electricians and licensed electrical contractors.

For more information, see the [Appliance Installation & Repair](#) page of our website.

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

Pictured is a creative and dangerous way to control appliances. Hot gloves recommended! The sign on top of the grill says to be sure to unplug after use. "Its' been left on overnight a few times". The dangerous wiring has been removed.



Answer to Question of the Month: C) $382 \text{ amps. } 137,500 \text{ VA} \div (208 \text{ V} \times 1.732 \text{ (square root of 3)}) = 382 \text{ A.}$



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Question of the Month – If a dispute arises regarding the interpretation of adopted state electrical standards, rules, or policies, who is responsible for making the final determination? *See correct answer on Page 2.*

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Safety Tip of the Month

According to [OSHA](#), an average of 14 workers are killed on the job every day. Excluding highway collisions, the four leading causes of construction worker fatalities are:

- Falls
- Struck by an object
- Electrocutions
- Caught in or between objects

Please watch for and eliminate these “Fatal Four” hazards in your workplace.

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New – Rapid Shutdown of PV Systems Inside the Array Boundary Effective January 1, 2019

Effective January 1, 2019, requirements in NEC 690.12(B)(2) for rapid shutdown of conductors and/or equipment inside the array boundary will be enforced. If you install or inspect PV systems, review NEC 690.12(B)(2) for three options to comply with the rapid shutdown requirements within the array boundary.

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Rule Update – WAC 296-46B Revisions

The Technical Advisory Committee (TAC) is scheduled to meet December 5 in Tacoma in the Orcas Room of the [Rhodes Center](#), 949 Market St. at 8:30 a.m. The meeting will be open to anyone, but input on proposals is limited to committee members. After considering advice from the TAC and Electrical Board, a public comment period and public hearing will be announced, providing further opportunities for comment on proposed rules.

Visit the Rule Development page of our website to view rule proposals, the TAC member roster, and other information.

Two new laws made rulemaking necessary. The new laws 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.

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.
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 the date when their certificate expires. Untimely affidavits will be denied.

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

Recently, we sent a letter to all active trainees and electrical contractors about the exceptions offered for untimely affidavits of experience. If you are one of those, and did not receive a letter, please update your address at:

<https://www.lni.wa.gov/TradesLicensing/LicensingReg/Legal.asp>

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

Ugly Picture: *If viewing this document online, click on the picture to open a larger image.* A dangerous double-ended male cord was used to provide power to this juice bar across the parking lot from a store. In the lower right picture you can see the crude splice where two cords with male ends were connected together. While a mom was buying a drink, her toddler pulled the cord out and was shocked. Fortunately, the toddler survived, but had severe burns. The electrical inspector disconnected the installation, destroyed the cord and issued the installer, (not an electrician) three citations for the very dangerous installation.

Answer to Question of the Month: RCW 19.28.321 – The chief electrical inspector, subject to the review of the director shall provide the final interpretation of the disputed standard, rule, or policy.



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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.

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- 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](#).

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).



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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.

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, 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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Question of the Month – When codes change and an effective date is set, when do your jobs have to comply with the new requirements? See *correct answer on Page 2*.

You Can Help Write the Electrical Rules - WAC 296-46B Updates

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

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

We are updating the rules because of the passage of two laws affecting electrical stakeholders. 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 a required part of the rulemaking process, L&I will file a preproposal (CR101), with the state Office of the Code Reviser this month. There will be opportunities to provide written comments or present testimony at public hearings. See the [Rule Development](#) page of our website for additional information about how to participate in the process, and to download the proposal form for 2019 WAC 296-46B rule changes.

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

Safety Tip of the Month

Back-to-school season is here again! Be on the lookout for children not only in school zones, but also in residential areas, playgrounds, and parks. Children are unpredictable and often take risks, ignore hazards, and fail to look both ways before crossing the street.

Give them a brake.

No Trespassing Signs? Really? Let us Know We Have Access



This happens too often. Someone requests an electrical inspection and when we arrive, we see something like this. An inspector took these pictures when he arrived at the site to do the inspection. He probably could have issued a trip fee and walked away, but he took the time to make a phone call instead. The customer assured him that a dog was not waiting to attack and there would be no armed response. Please help us serve you better by communicating any special access instructions to us in the comments field of your inspection request.



Here's What We Accomplished in Fiscal Year 2018

Increased demand for permits, inspections, plan review, and licensing reflect Washington's healthy construction economy. Here is what happened in FY18 (July 1, 2017 through June 30, 2018), which demonstrates the amount of work performed by our dedicated staff:

- 147,186 electrical permits sold, 94% were purchased online.
- 246,628 electrical inspection requests were made, 83% were requested online.
- Over 2.4 million miles were driven with 12 at-fault accidents, mostly minor fender-benders.

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- System improvements now provide near real-time inspection results. Most customers received an email message with their inspection results immediately after the inspection.
- Inspectors issued 46,232 corrections for serious code violations. These represent about half of total corrections and are violations that could result in disconnection of power if not corrected. By far, property owner permits are most likely to receive serious corrections. Inspectors issued at least one serious correction for 50% of property owner inspections, compared to 15% for electrical contractor inspections.
- Our inspection response times improved significantly. For FY18, we responded to approximately 82% of inspections within 24 hours of the date requested and 93% within 48 hours. While this is an improvement over last year, this means that 17,508 times, customers had to wait more than 48 hours for inspection. Number of inspectors, workload, and inspections in remote areas of the state affect response times. Filling vacant positions and getting new inspectors trained and working efficiently will be key to improving our response times.
- Speaking of training, since our formal inspector training program was established in 2013, over 100 inspectors have completed basic inspector training. Over half of our 133 inspectors have less than 5 years' experience with the department. All new inspectors must complete a two-year training program.
- Our team of dedicated plans examiners reviewed over 6,300 pages of drawings for educational, institutional, or health care facilities to ensure the design for these facilities meets the minimum requirements for electrical safety. The average backlog for a set of plans awaiting review in FY18 was 2.1 weeks. An electronic plan review system is coming soon.
- Typically, 20% of contractors receive 80% of corrections. The correction reduction initiative helped contractors identified as having the most corrections per inspection the prior fiscal year realize a 29.2% decrease in the number of corrections they received. Each month, contractors in this group get a list of their corrections and are encouraged to use the information to help their electricians make safer installations.
- 5,066 citations were issued for the focused underground economy violations of the electrical laws. These violations include failing to obtain electrical permits, unlicensed electrical contractors, uncertified electricians, and failing to properly supervise trainees. This is an increase from the previous year's 3,557 citations. It is mostly due to the E-CORE team finding many non-compliant jobs involving out-of-state unlicensed contractors and electricians performing work at large retail chains. Many of these jobs were taken over and completed by licensed electrical contractors.
- The licensing section processed 27,939 licenses (contractor, electrician, and trainee applications, and renewals). Almost 100% of these were processed the same day they were received.

Our auditors reviewed 1,753,678 electrical trainee and out-of-state hours to qualify for electrical certification examinations. Of those, 1,137,872 were denied. These numbers are very close to the totals from the last fiscal year. Reasons for denial include not able to verify out-of-state experience, no active training certificates, lack of proper supervision (sometimes no certified electricians on staff), not able to verify employment (no legal employment records), no electrical permits to verify work performed, and lack of valid contractor licensing.

Ugly Picture: *If viewing this document online, click on the picture to open a larger image.* Property owners may perform any electrical work on property they own. This is an example of the many dangerous wiring hazards our inspectors discover on permits purchased by property owners. Sliding a plumbing elbow over service entrance conductors can easily damage them causing the isolated ungrounded metal elbow to be energized, creating a potential shock and fire hazard.



Answer to Question of the Month: The date the permit was purchased determines what code requirements apply. For example, last month's article discussed a new requirement for PV rapid shutdown inside the array boundary, which will be effective January 1, 2019. L&I will enforce this requirement on all jobs where the customer purchases the permit on or after that date.

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SPECIAL EDITION

WAC 296-46B Revisions

● **The Department Is Seeking Stakeholder Input for Proposed Rule Changes**

The department is beginning the process of revising Washington Administrative Code (WAC) [296-46B](#) – Electrical Safety Standards, Administration, and Installation rules to align them with new legislation that passed in the recent legislative session as well as to make housekeeping changes, adopt the 2020 National Electrical Code (NEC) to be effective (tentatively) July 1, 2020, and accept proposals from stakeholders. Any stakeholder in the electrical industry may make proposals for additions and/or revisions to WAC 296-46B. Proposals from stakeholders may be submitted from September 5, 2018 through October 19, 2018. Proposal submission guidelines are detailed below.

Rules are developed to aid both stakeholders and the department in clarification or enforcement of the intent of the electrical statute. Technical changes require evidence of a specific problem and substantiation that the proposal will provide a solution for that problem.

The department is responsible for development of all rules. The department will act as the correlating body during the rule development process and may at any time promote rule change as necessary to accommodate statutory change or department policies or procedures.

A sample **Proposal Form for 2019 WAC 296-46B Rule Changes** is shown on page four of this edition. All proposals must be submitted using an electronic MS Word version of this form which is available on our Rule Development page at: <http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/RuleDev/default.asp>

Stakeholder proposals **must be received from 12:01 a.m. September 5, 2018 through 11:59 p.m. October 19, 2018. Any proposal received before or after these dates will be rejected. All proposals must be made electronically** using the form supplied by the department.

The submitter must submit a proposal(s) by sending the proposal(s) as an email attachment to ElectricalWAC@lni.wa.gov. Please do not attempt to submit early, as this email address will not function until September 5, 2018.

Proposed revisions should include the relevant existing text and should use legislative format. Use underscore to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~).

Proposals not submitted according to these instructions will be rejected.

● **Technical Advisory Committee (TAC)**

The TAC process has proven to be very valuable in past years. The department will again appoint a General TAC made up of experts and interest group representatives from the electrical industry to review and make recommendations on proposals.

Persons interested in becoming TAC members must submit a letter of interest for specific positions to the Chief Electrical Inspector by email to ElectricalWAC@lni.wa.gov **to be received from September 5, 2018 through October 19, 2018**. The letter should state the position applied for and show constituency support for

the prospective member. Include an email address and daytime phone number for the applicant. All applications will be evaluated to determine that the applicant meets the requirements for the position.

In order to keep the size of the TAC to an efficient and effective number, the committee will be limited to 35 voting members. The TAC makeup will be based on an equitable distribution relative to proportion of involvement within the electrical industry in Washington. TAC membership provides an opportunity for everyone interested in the Electrical Program’s WAC development to participate in the process.

If necessary, each successful candidate may designate an alternate to attend the TAC meeting. There will be no formal alternate assigned by the department. Any TAC member that is absent must notify the Chief Electrical Inspector of the alternate’s name one week prior to the TAC meeting. Failure to make the required notification will result in the position being vacant during the meeting.

● **The TAC Process**

The TAC will make recommendations on industry proposals and identify proposals that may have an economic impact on other specialties, small businesses, construction costs, or the cost of enforcement. Members who know they will be absent from a TAC meeting should make every effort to send an alternate. The TAC must review and evaluate proposals based on the need:

- o To address a critical life/safety need;
- o To address a specific state policy/statute;
- o To maintain a fair competitive environment;
- o To address a unique character of the State; or
- o To correct errors and omissions.

The TAC will operate on a majority basis. A majority vote of members in attendance in support of a motion will be considered as significant support for the motion made on a specific proposal. The TAC can propose amended language to a proposal. All voting members share an equal vote. The department will consider all TAC recommendations. Public testimony will not be received during the TAC meeting. Opportunity for public comment will be provided at a later date (see below).

● **2019 WAC Revision Process – Proposed Sequence of Events**

- o **On or before September 4, 2018** – File CR 101 – pre-proposal statement of inquiry.
- o **September 5 through October 19, 2018** – Accept proposals from stakeholders to amend or add to the existing WAC 296-46B.
- o **September 5 through October 19, 2018** – Accept applications for TAC.
- o **Early December** –TAC meeting (exact date and location TBA).
- o **January 2019** – Electrical Board review and recommendation on proposals.
- o **February 2019** – File CR 102 – rule filing (opens the official required public comment period).
- o **March 2019** – Public hearing(s).
- o **June 1, 2019** – Revised rule becomes effective.

● **General TAC – Membership**

Chairperson– Chief Electrical Inspector (non-voting)

2	Electrical Board Members (non-voting)	1	WA Manufacturing Business
1	Training School Representative	1	Electrical Engineer
1	Continuing Education Provider	1	Electrical Testing Laboratory
2	Electrical Apprenticeship Representatives	1	Electric Utility Representative
1	Electrical Manufacturer Representative	1	General Public Member
2	L&I Inspection (Supervisor & Inspector)	10	Electricians
2	City Regulator (Supervisor & Inspector)	10	Electrical Contractors
1	Plumber (Contractor or Worker)		

Notes:

- o Contractor positions must be filled by a member of the firm or assigned administrator/master electrician of a licensed electrical/telecommunications contractor or representative of an electrical contractors' association in Washington representing that specialty.
- o Electrician positions must be filled by a certified electrician who is not a member of the firm or assigned administrator/master electrician in an electrical contracting business.
- o The AD HOC contractor and electrician positions must be filled by a specialty not otherwise represented on the TAC.
- o The plumbing position must be filled by a registered general or plumbing contractor or a representative of a plumber contractor's association in Washington or certified journeyman plumber.

Methodology for Determining the Number of Electrical Contractor and Electrician Members						
Active Licenses & Certificates	# of Contractors	% of All Licenses	# of TAC Members	# of Electricians	% of All Certificates	# of TAC Members
01	2,782	54.4%	5	17,620	61.1%	6
02	320	6.3%		2,225	7.7%	
03	121	2.4%		335	1.2%	
03A	49	1.0%		119	0.4%	
04	84	1.6%		261	0.9%	
06	548	10.7%	1	2,982	10.3%	1
06A	647	12.7%	1	3,435	11.9%	1
06B	13	0.3%		131	0.5%	
07	98	1.9%		1,104	3.8%	
07A	13	0.3%		69	0.2%	
07B	57	1.1%		233	0.8%	
07C	0	0.0%		22	0.1%	
07D	43	0.8%		200	0.7%	
07E	7	0.1%		69	0.2%	
09	298	5.8%		N/A	N/A	
10	30	0.6%		56	0.2%	
Ad Hoc Group	1,133	22.2%	3	4,824	16.7%	2
Total	5,110		10	28,861		10
Notes:	<10% of Licenses/Certificates joins the Ad Hoc group					
	The Ad Hoc group will be filled on an equitable basis with an emphasis on representation closely following the % of licenses.					
	Unfilled positions will remain vacant.					

● Keep Informed

There will not be a specific mailing list for this WAC revision process. Special WAC update postings will be maintained using the Electrical Program's [Electrical Email List, Rule Development](#) page of our website, and [Electrical Currents](#) newsletter.

The best way to stay informed of the WAC process and other electrical issues is to join the *Electrical Email List* at: <http://www.lni.wa.gov/main/listservs/default.asp?List=40>

PROPOSAL FORM for 2019 WAC 296-46B Rule Changes

Email to: ElectricalWAC@lni.wa.gov
as an attachment

FOR L&I USE ONLY

Specific Rule #:

Date Received:

Comment:

NOTES:

1. All proposals must be **received from 12:00 a.m. September 5 through 11:59 p.m. October 19, 2018.**
2. Limit each proposal to a single rule section. Use a separate copy for each proposal.
3. **ENTER TEXT ONLY IN THE UN-SHADED SPACES ON THIS DOCUMENT – SAVE AS A NEW FILENAME BEFORE RETURNING**

Date submitted:

Name:

Representing:

Telephone:

Email Address:

1. Proposal: Include new or revised wording, or identification of wording to be deleted. Proposed text should be in legislative format. Use underscore to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~).

2. Statement of Problem & Substantiation for Proposal: Note: State the problem that will be resolved by your proposal and substantiation for your proposal.

3. Check one:

This proposal is original material

This proposal is not original material

(END OF PROPOSAL)

Stephen Thornton, Chief Electrical Inspector

Vol. 21 No. 8

August 2018

Question of the Month – When are photovoltaic (PV) system output circuit conductors required to be marked to indicate their polarity? See correct answer on Page 2.

Electrical Plan Review for Small Projects and Load Reductions

In L&I jurisdictions, plan review is required for all new or altered electrical projects in educational, institutional, or health care occupancies by [WAC 296-46B-900\(3\)\(b\)](#). However, under certain conditions allowed under WAC 296-46B-900(3)(a), projects that result in an electrical load reduction and modifications to existing installations where the service or feeder load calculations are not increased by more than 5% may be exempted from formal plan review requirements (and associated fees).

For these types of installations to qualify as exempt, the following information must be submitted to the local L&I electrical inspection office and reviewed before the work is initiated:

- A clear and adequate description of the project's scope;
- A load calculation(s);
- What the load changes are, providing both before and after panel schedules, as needed; and
- Provide information showing that the service and feeder(s) supplying the panel(s) where the work is taking place has adequate capacity for any increased load and has code compliant overcurrent protection for that supply.

NICET Certification Required for Fire Alarm System Non-Electrical Tasks Effective July 1, 2018

Local fire and building inspection jurisdictions are the authorities having jurisdiction for enforcement of NICET certification requirements described in [WAC 51-50-907.10.3](#) for fire alarm inspection, testing maintenance not defined as "electrical construction trade" by RCW 19.28.006.

In accordance with [RCW 19.28.211\(4\)](#), a properly certified electrician working within the scope of his certificate cannot be required to have additional certification to work in the electrical construction trade. Local fire and building inspection jurisdictions will enforce NICET certification requirements, which will only apply to tasks that do not require the worker to hold an electrician's certificate of competency under RCW 19.28.

2020 NEC First Draft Report Published – Public Comment Period Now Open

As discussed last month, you may now view the First Draft of the 2020 NEC. This opens the public comment period, which will close on August 30, 2018. You may view the First Draft and submit a public comment for consideration by the code-making panels by visiting the [NFPA 70 Next Edition](#) page of NFPA's website. The code-making panels will consider all public comments, and a Second Draft Report will be posted in April 2019. The 2020 NEC will be published in August 2019 and will probably be adopted in Washington beginning July 1, 2020.

NEW - Rapid Shutdown of PV Systems Inside the Array Boundary Effective January 1, 2019

Since 2014, the NEC has required PV systems installed in or on buildings to have a rapid shutdown function to reduce shock hazard for emergency responders. Effective January 1, 2019, NEC 690.12(B)(2) will require rapid shutdown of

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

Safety Tip of the Month

Do not allow yourself or others to swim near a dock or marina where electrical power is present. Stray leakage current in the water can paralyze or kill.

If you must enter the water to work on a boat or dock, turn off and lock out all sources of electricity first.

No SWIMMING!



WARNING!
Potential Shock Hazard

Electrical currents may be present in the water. These electrical currents can be harmful or lethal.

www.electricschockdrowning.org

conductors and/or equipment inside the array boundary. If you install or inspect PV systems, review NEC 690.12(B)(2) for three options to comply with the rapid shutdown requirements within the array boundary.

Supply Side PV Interconnection Grounding, Bonding, and Wiring Methods

The supply side interconnection described in NEC 705.12(A) is a very popular method of interconnecting an alternate power production source such as PV in parallel with a normal supply system of a building or structure. This connection may be made on the supply side of the service disconnecting means as permitted by 230.82(C). In addition, 230.2(A) permits a building or structure to have an additional service to supply a parallel power production system. When a supply-side interconnection is made, it must be installed using the wiring methods, grounding, and bonding as if it were a separate service. Overcurrent protection for electric power production source conductors must be located within 10 feet of the point where they are connected to the service entrance conductors. The disconnecting means for the alternate power production source is not required to be grouped with the normal building service disconnect(s). [WAC 296-46B-705](#) states that electric power production source conductors connected to the supply side of the service disconnecting means must be installed using wiring methods specified for service conductors in [WAC 296-46B-230\(7\)](#). In addition, the disconnecting means must be treated as an additional service disconnecting means for the purposes of grounding and bonding (i.e., main bonding jumper, grounding electrode conductor connected to the building electrode system, and bonding of services per NEC 250 Part V).

PV Interconnection Rules Apply to Busbars in all Upstream Equipment

When making an interconnection for an electric power production source such as a PV system in parallel with a utility service, rules must be followed to avoid overloading electrical conductors and equipment. NEC 705.12(B) says the output of an interconnected electric power production source may be connected to the load side of the service disconnecting means of the other source(s) at any distribution equipment on the premises. Interconnection of two sources of power in parallel have the potential to overload conductors and equipment if other loads are also being supplied. 705.12(B)(2) gives requirements for bus or conductor ampere ratings for feeders, taps, and busbars. Often, we receive questions about the protection of busbars upstream when the interconnection is made to a feeder or feeder panel downstream of the service panel. The rules for protecting busbars in 705.12(B)(2)(3) must be applied to all busbars in the current path from the point of interconnection upstream to and including the service panel for all busbars that also supply other loads. See the [November](#) and [December](#) 2014 newsletters for more details. The information is still accurate but some NEC article numbers have changed.

Consideration of Fee Increase for Non-Electrical L&I Programs

L&I is considering rule changes to increase fees for its Construction Contractor Registration, Elevator, and Factory Assembled Structures (FAS) programs. A fee increase is sought to cover increased operating expenses for inspections and other program public safety activities.

The rule changes under consideration would increase fees by the fiscal-growth factor rate of 4 percent. For example, a \$60 fee would increase to \$62.40.

As a required part of the rulemaking process, L&I filed a [preproposal \(CR101\)](#), with the state Office of the Code Reviser on July 17, 2018. There will be opportunities to provide written comments or present testimony at public hearings. See the [L&I web site](#) for information about how to participate in the process.

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

Ugly Picture: *If viewing this document online, click on the picture to open a larger image.* Hmmm. I wonder what ill-conceived thought process produced this dangerous installation. Before the inspector took these pics, an electrical contractor discovered this and removed #10 conductors that were feeding a sub-panel from these screws.

Answer to Question of the Month: Where connected to energy storage systems. NEC 690.55



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Question of the Month – You are installing a feeder from a remote service to a house. The calculated load for the house is 140 amperes and the length of the 4/0 aluminum conductors is 260 feet one-way. What is the percentage voltage drop for the 200-amp 120/240 volt feeder conductors? *See answer on Page 2.*

All Electrician Exams are Now Based on 2017 Codes

All exams given after June 30, 2018 will be based on the 2017 NEC, WAC, and RCW even if you are re-taking an exam or portion of an exam that was previously failed using a previous version. For more information about the exams, you can refer to [WAC 296-46B-960](#) or visit the [Electrical Exam Information](#) page of our website.

Safety Tip of the Month

♪ School's out for summer ♪
Pay attention! Put the phone down and be alert for children, pedestrians, skateboarders, and cyclists. Summer brings many new safety concerns for drivers and pedestrians.

Big Changes Coming for Trainees and Contractors – Apprenticeship Legislation Passed

[Substitute Senate Bill 6126](#) passed by the legislature effects those training to become 01 general journey level electricians and those who employ them.

- Effective July 1, 2023, to be eligible for the (01) general journey level electrician examination, applicants must have completed a recognized (01) electrical apprenticeship program approved by the Washington State Apprenticeship Training Council (WSATC) or out-of-state equivalent. This requirement does not apply to those approved for an (01) examination before July 1, 2023 or to specialty electrician examination candidates.
- After June 30, 2023, unless working in a specialty, trainees must be registered apprentices or be enrolled in a two-year program in the electrical construction trade. Apprenticeship programs may credit properly documented electrical experience on record with the department such as, 4000-hour electrical specialty certification, military experience or completion of a two-year training school program.

Apprenticeship Roles

Apprentice—a person registered in an approved Washington State Apprenticeship and Training Council (WSATC) program or out-of-state equivalent. Apprentices must be employed by training agents.

Training Agent—as a training agent, contractors register with an existing apprenticeship program already training (01) general journey level electrician apprentices. The apprentice will continue working for you, receiving on-the-job training (OJT) while the existing apprenticeship program will provide tracking of OJT hours and the related classroom/lab training. This saves you the time and expense of creating your own program, and provides you the flexibility for getting started almost immediately.

Sponsor—creator of an apprenticeship program approved by the Washington State Apprenticeship and Training Council (WSATC) and registered with L&I.

Recognized (01) General Journey Level Electrician Apprenticeship Programs

- [Construction Industry Training Council of Washington \(CITC\).](#)
- [Area 1 Inside Electrical JATC.](#)
- [Puget Sound Electrical Joint Apprenticeship and Training Committee.](#)
- [IBEW 48 NECA-IBEW Electrical JATC.](#)
- [Inland Empire Electrical Training Trust.](#)
- [Southwest Washington Electrical Joint Apprenticeship and Training Committee.](#)
- [LU 112 - NECA Electrical Apprenticeship Committee.](#)
- [Northwest Washington Electrical Industry Joint Apprenticeship and Training Committee.](#)

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Want to Sponsor An Apprenticeship Program?

All sponsors for (01) general journey level electrician apprenticeship programs must adhere to Minimum Guideline Standards previously approved by the WSTAC. Follow this link to the Inside Electrician (01) Minimum Guideline Standards Template:

<https://www.lni.wa.gov/TradesLicensing/Apprenticeship/files/eforms/ApprenticeshipStandardsTemplateApp0005.docx>

Registered apprenticeship programs start with the formation of an apprenticeship committee made up of industry members—both employers and employees.

For more information, contact a Labor & Industries Apprenticeship Consultant. Apprenticeship consultants are located all across the state. They will help you identify which type of apprenticeship model best suits your company and then provide one-on-one consulting and on-site assistance to get your program up and running. Contact information for Apprenticeship Consultants can be found at the following link:

<http://www.lni.wa.gov/TradesLicensing/Apprenticeship/About/AppCoordinators/default.asp>

Trainees Must Submit Affidavits of Experience Within 180 Days of Certificate Expiration

Please share this important message with all electrical trainees. To receive credit for experience worked in the electrical construction trade, trainees must submit an affidavit of experience in a timely manner. Be aware of your certificate expiration date. To continue working, you are required to renew your training certificate before the expiration date. You must submit affidavits of experience from your employer(s) for the previous two years within 180 days of the expiration date of your certificate, unless you are registered in a department-approved apprenticeship program. Upon request, employers are required to provide the previous period's affidavit of experience to the trainee within 20 days of request in accordance with [WAC 296-46B-942](#)(12). There are two affidavit forms depending on the type of experience. They are available at these links:

[Affidavit of Experience for 75% Supervision Specialties](#) (for journey-level and 4000-hour specialty experience)

[Affidavit of Experience for 100% Supervision Specialties](#) (for 2000-hour sub-specialty experience)

When you renew, you must also have completed 48 hours of [basic classroom instruction](#) during the previous certificate period, or your certificate will be inactive until the training is completed.

2020 NEC First Draft Report Published – Public Comment Period Now Open

For a glimpse of what the next National Electrical Code (NEC) may be like, you may now view the First Draft of the 2020 NEC. The National Fire Protection Association (NFPA) published the First Draft on June 25, 2018. This opens the public comment period, which will close on August 30, 2018. You may view the First Draft Report and submit a public comment for consideration by the code-making panels by visiting the [NFPA 70 Next Edition](#) page of NFPA's website. When you select First Draft Report or Submit a Public Comment, you will be taken to a page where you can sign in. If you haven't already, you will need to set up a user name and password. It is free and allows you to submit public inputs and comments, and you can view any of NFPA's codes and standards. The code-making panels will consider all public comments, and a Second Draft Report will be posted in April 2019. The 2020 NEC will be published in August 2019 and will probably be adopted in Washington beginning July 1, 2020.

Ugly Picture: *If viewing this document online, click on the picture to open a larger image.* A property owner requested inspection on this new service (left pic), and was told by the inspector he could not install open service conductors within a wall. Sadly, the pic on the right shows the intended solution using water pipe discovered upon re-inspection. It appears this service could use a main bonding jumper as well.

Answer to Question of the Month: 3 percent. See the [October 2017](#) newsletter article explaining voltage drop calculations. Voltage drop = $(2 \times K \times I \times L) \div \text{wire circular mils}$. $(2 \times 21.2 \times 140 \times 260) \div 211,600 = 7.29$ volts. $7.29 \div 240 = .03$



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Stephen Thornton, Chief Electrical Inspector

Vol. 21 No. 6

June 2018

Question of the Month – What is the penalty for the first-time offense of causing or failing to correct a serious violation? (A serious violation is, among other things, one that creates a hazard of fire or danger to life safety). See *correct answer on Page 2*.

TIA 17-15 Issued by the NFPA - NEC Article 555

To help reduce Electric Shock Drowning (ESD) hazards, the NEC has specified ground-fault protection requirements for marinas in Article 555 since the 2011 edition. Recently, the NFPA added definitions to NEC 555.2 and revised NEC 555.3 through issuance of Tentative Interim Amendment (TIA) [17-15](#). The TIA clarifies application of Article 555 and allows coordination with downstream ground-fault protection at the feeder overcurrent device (i.e., by coordinating trip time settings so the downstream device trips first). The NEC requires all overcurrent devices supplying a docking facility to have ground-fault protection set to open when leakage current to ground (or water) exceeds 30-milliamperes. See [WAC 296-46B-555](#) for amended feeder ground-fault protection levels.

For more information about ESD, visit www.electricschockdrowning.org.

Marina Feeder Ground-Fault Protection Rule Adopted

The department has adopted changes to [WAC 296-46B-555](#) effective July 1, 2018. The revised rule amends the ground-fault protection levels specified in NEC 555.3 to allow 100-milliamperere protection for feeders not supplying primary windings of transformers. On September 1, 2019, the ground-fault protection requirements will be as published in the 2020 NEC. More information about rulemaking and the revised rule language can be found by visiting the [Rule Development](#) page of our website.

Inspector Training Milestone – 100 Inspectors Trained

Anticipating significant turn over in our inspector ranks, succession hiring and training began in 2013. A full-time trainer was established in 2014. Trainer Dennis Straley and a host of others have been busy providing formal training to newer inspectors. 100 inspectors have now completed basic inspector training since 2013.

Training is essential to ensuring statewide consistency. Over half of our 133 inspectors have less than 5 years' experience with the department. Of those, about 40 percent have less than two years' experience. All new inspectors must complete a two-year training program. We appreciate your patience and training assistance during this challenging transition.

We are hiring! If you would like to become an electrical inspector, visit the [Find a Job at L&I](#) page of our website and search "inspector". Applications are taken on a statewide basis to fill vacancies as they occur.

All Exams Based on the 2017 NEC after June 30, 2018

After June 30, 2018, all electrical examinations will be based on the 2017 NEC, [WAC 296-46B](#), and [RCW 19.28](#). The Electrical Board, having responsibility for establishing and administering electrician examinations, endorsed this change.

Like the codes, laws, and rules they are based on, exam questions do not change significantly over time. All examinations are open-book and exam candidates can bring any original copyrighted reference material into the exam with them. Copies of RCW 19.28 and WAC 296-46B may be used. For more information about the exams, you can refer to [WAC 296-46B-960](#) or visit the [Electrical Exam Information](#) page of our website.

Safety Tip of the Month

A fall from a ladder could kill you or disable you permanently.

- Always use the right ladder for the job. A chair is not a ladder!
- Get help with heavy or long ladders.
- Make certain your footing is solid. If outdoors, check for concealed holes left by moles and gophers. Avoid ice, mud, and other slippery conditions.
- Review the OSHA ladder bulletin at: <https://www.osha.gov/Publications/OSHA3625.pdf>

Identification of Emergency System Circuits

[WAC 296-46B-700](#)(4) requires all boxes and enclosures for Article 700 NEC systems larger than 6 inches by 6 inches, including transfer switches, generators, and power panels for emergency systems and circuits to be permanently identified with an identification plate that is substantially orange in color. In existing health care facilities, the existing nameplate identification color scheme can be retained for transfer switches, generators, and power panels for existing emergency systems that are not being replaced or modified. All other device and junction boxes for emergency systems and circuits must be substantially orange in color, both inside and outside.

2017 NEC 700.10(A) expanded the requirements for identification of emergency system wiring to include identification of exposed cable or raceway systems as components of an emergency circuit or system at intervals not to exceed 25 feet where boxes or enclosures are not encountered. It also added a requirement that receptacles supplied from the emergency system shall have a distinctive color or marking on the receptacle cover plates or the receptacles.

For consistency, the department will require all of the above identification means to be substantially orange in color.

Generator Prime Mover (Engine) Shutdown Requirements

Disconnecting requirements for generators were reorganized for the 2017 NEC and requirements for shutdown of the prime mover (typically an engine) were added. The requirement for a disconnecting means to simultaneously open all ungrounded conductors associated with the generator in NEC 445.18(A) is essentially the same as in the 2014 edition.

2017 NEC 445.18(B) requires generators to have provisions to shut down the prime mover (i.e., kill the engine). The means of shutdown must comply with the following:

- (1) Be equipped with provisions to disable all prime mover start control circuits to render the prime mover incapable of starting.
- (2) Initiate a shutdown mechanism that requires a mechanical reset.

The provisions to shut down the prime mover shall be permitted to satisfy the requirements of 445.18(A) where it is capable of being locked in the open position in accordance with 110.25.

Generators rated greater than 15 kW shall be provided with an additional means to shut down the prime mover located outside the equipment room or generator enclosure and shall also meet the requirements of 445.18(B)(1) and (B)(2). The department will require shutdown means not attached to generators to have an identification plate to clearly indicate its purpose in accordance with NEC 110.22(A). See [WAC 296-46B-100](#) definition of "identification plate".

Where a generator is installed in parallel with other generators, the provisions of 445.18(A) shall be capable of isolating the generator output terminals from the paralleling equipment. The disconnecting means shall not be required to be located at the generator.

Ugly Picture: *If viewing this document online, click on the picture to open a larger image.* The open splice in this picture is intended by the installer to be concealed behind sheetrock and the luminaire base is not connected to the equipment grounding conductor. This is a good example of a serious violation, which would carry a substantial penalty and may result in suspension or revocation of the installer's certificate of competency.

Answer to Question of the Month: \$1000 - [WAC 296-46B-915](#)(13) specifies the penalty amounts for this violation. Second offense is \$3000 and the third offense is \$5000. [WAC 296-46B-990](#) defines serious violation, which includes wiring that presents an imminent danger to the public by being installed in such a condition that a fire-hazard or a life-safety hazard is present. Examples include, but are not limited to, installing a shortened rod/pipe grounding electrode, improper splicing of conductors in conduits/raceways or concealed within walls, or installing a fake equipment grounding conductor. An act of serious noncompliance may also result in suspension or revocation of an electrical contractor's license or an electrician's, administrator's, or master electrician's certificate.



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Question of the Month – Is electrical metallic tubing (EMT) an approved wiring method for installation of conductors for a supply-side interconnection of a solar photovoltaic system within a building between the point of interconnection and the overcurrent device protecting the electric power production source conductors? *See correct answer on Page 2.*

Invitation to a Stakeholder Meeting Near You

I have been holding 18 electrical stakeholder meetings in various locations across the state between March and May 2018. These meetings are an opportunity to talk in an informal setting. Check the schedule below and attend a meeting near you. I want to hear how we can better serve you, our customers and help you stay informed of any changes that might affect you and/or your business. All meetings are 6 – 8 p.m.

Safety Tip of the Month

Fatalities caused by falls from elevation continue to be a leading cause of death for construction employees. OSHA is sponsoring a National Safety Stand-Down event May 7-11, 2018 to focus on prevention of falls in construction. If you are an employer, this is a great way to focus your employees' attention on fall hazard awareness. For more information, visit:

www.osha.gov/StopFallsStandDown/

May 9 – Silverdale – L&I Building – 10049 Kitsap Mall Boulevard NW Suite 100	May 10 – Sequim – Clallam PUD #1, 104 Hooker Road, West of Sequim off Hwy 101, Lake Crescent Board Room	May 22 – Everett – Snohomish County PUD Commission Meeting Room 2320 California Street
May 23 – Mount Vernon – Northwestern Washington Research and Extension Center 16650 State Route 536	May 29 – Vancouver – Clark PUD – Electric Center Community Room, 1200 Fort Vancouver Way	May 30 – White Salmon – White Salmon Valley Community Library – 77 NE Wauna Avenue
May 31 – Longview – Lower Columbia College 1600 Maple, Health & Science Building, HSB-101, Laufman Lecture Hall		

Square D Safety Switches Recalled Due to Electrical Shock Hazard

In cooperation with the US Consumer Product Safety Commission, Schneider Electric has recalled approximately 1,079,000 Square D Safety Switches. The recall involves Square D general duty 30 & 60A, 120/240-volt, 2-phase and 3-phase NEMA 3R safety switches. The power can stay on when the safety switch handle is in the “OFF” position, posing an electrical shock or electrocution hazard to consumers. Affected products were manufactured from January 1, 2014 through January 18, 2018 (date codes 1401 through 1803 inclusive). For more information and a list of catalog numbers of switches affected by the recall, visit <http://www.schneider-electric.us/gdss-safetyalert>.



Public Hearing – Marina Ground-Fault Protection Requirements Rule Proposal

The NEC has specified ground-fault protection requirements for marinas in Article 555 since the 2011 edition. Currently, the NEC requires all overcurrent devices supplying the marina to have ground-fault protection set to trip when leakage current to ground (or water) of 30-milliampere (mA) or greater is detected. These requirements were introduced to prevent Electric Shock Drowning (ESD) in and around marinas. For more information about ESD, visit www.electricschockdrowning.org.

The department is accepting written comments and will hold a public hearing regarding proposed changes to [WAC 296-46B-555](#) ground-fault protection for marinas. The current rule, effective until July 1, 2018, amends the ground-fault protection levels specified in NEC 555.3 to allow 100-milliampere (mA) protection for feeders. The proposed rule, requested by the Northwest Marine Trade Association, extends this allowance until September 1, 2019, at which time the ground-fault protection requirements for marinas will be as published in the 2020 NEC.

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A public hearing will be held May 9, 2018 at 9 a.m. at the Department of L&I building, 7273 Linderson Way SW, Tumwater, WA. You may submit written comments to Alicia Curry, Department of Labor & Industries, PO Box 44400, Olympia, WA 98504-4400; by email to Alicia.Curry@lni.wa.gov; or by fax to 360-902-5292. Written comments must be received by 5 p.m. on May 10, 2018. Visit the [Rule Updates](#) page of our website for more information including the proposed rule language and a timeline for rulemaking.

Sign Specialty Contractors and Electricians Cannot Replace Luminaires

The recent rule change to the scope of work for the (04) Sign specialty in [WAC 296-46B-920\(d\)](#) does not allow replacement of existing luminaires. The revised rule language, effective February 23, 2018 states: *This specialty may service, maintain, repair, or install retrofit kits within housings of exterior luminaires that are mounted on a pole or other structure with like-in-kind or retrofit kit components.* The term “retrofit kit” is defined in Article 100 of the NEC.

NEC 514.13 Maintenance Disconnect – Each Dispenser Must Have a Disconnecting Means

Requirements for emergency electrical disconnects for motor fuel dispensing facilities in NEC 514.11 were discussed in the [January 2018](#) edition of this newsletter. In this edition, we will discuss the requirement for provisions for maintenance and service of dispensing equipment. NEC 514.13 states, *Each dispensing device shall be provided with a means to remove all external voltage sources, including power, communications, data, and video circuits and including feedback, during periods of maintenance and service of the dispensing equipment. The location of this means shall be permitted to be other than inside or adjacent to the dispensing device. This means shall be capable of being locked in the open position in accordance with 110.25.* This requires a means to remove all potential electrical ignition sources including sources that may backfeed into the dispenser (such as the grounded conductor) from the dispenser being worked on while the remaining dispensers in the facility remain operational. This is typically accomplished by installation of a low voltage dispenser disconnect (LVDD) for each dispenser, allowing each dispenser to be individually isolated from all power sources during periods of maintenance and service.

Equipment grounding and bonding conductors must not be opened by either the emergency or maintenance disconnecting means. Grounding and bonding in Class I locations shall comply with NEC 501.30. The locknut-bushing and double-locknut methods are not approved for bonding purposes, but bonding jumpers with proper fittings or other approved means of bonding shall be used back to the point of service or separately derived system bonding.

Guest Rooms and Suites of Hotels and Motels - Arc Fault Circuit Interrupter (AFCI) Protection

New in 2017 NEC 210.12(C), is a requirement that all 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets and devices installed in guest rooms and guest suites of hotels and motels shall be provided with AFCI protection as described in 210.12(A)(1) through (A)(6). Previous NEC editions only required AFCI protection in guest rooms and guest suites that are provided with permanent provisions for cooking as specified in 210.18 (210.17 in the 2017 edition). The 2017 NEC became effective July 1, 2017 and this requirement applies to all projects where the permit was purchased on or after that date. Be sure to share this requirement with anyone involved in design, construction, or remodeling of wiring in hotels and motels.

Ugly Picture: *If viewing this document online, click on the picture to open a larger image.* A property owner made this installation and requested an inspection for approval to energize the service. In Washington, a property owner may perform electrical wiring on their own property without limitation and regardless of qualifications. Luckily, this installation was inspected. In addition to the unprotected service conductors inside the building, notice the connection of the grounding electrode conductor and no main bonding jumper.

Answer to Question of the Month: No. WAC [296-46B-705\(2\)](#) states: *In addition to the requirements of NEC 705.31, electric power production source conductors connected to the supply side of the service disconnecting means must be installed using wiring methods specified for service conductors in WAC [296-46B-230\(7\)](#).* This section gives a list of approved wiring methods for installation of service conductors within a building or structure.



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Safety Tip of the Month

Keep an eye out for the safety of your trainees. Do not assume a person who is learning the electrical trade is familiar with basic electrical safety rules. Trainees are eager to please their employers, and it is the electrical contractor's, administrator's, and supervising electrician's responsibility to ensure trainees do not put themselves or others in danger.

Question of the Month – See correct answer on Page 2.

You are installing branch-circuit conductors between a non-fusible disconnect with lugs rated at 75°C, and an HVAC unit with the nameplate shown in the image to the left. There is no auxiliary electric heat installed. A 30-ampere circuit breaker protects the circuit. What are the minimum size THHN copper conductors allowed for this installation?

Invitation to a Stakeholder Meeting Near You

I am holding 18 electrical stakeholder meetings in various locations across the state between March and May 2018. These meetings are an opportunity to talk in an informal setting. Check the schedule below and attend a meeting near you. I want to hear how we can better serve you, our customers and help you stay informed of any changes that might affect you and/or your business. All meetings are 6 – 8 p.m.

April 4 – Tumwater – L&I Auditorium – 7273 Linderson Way SW	April 5 – Aberdeen – L&I Building 415 West Wishkah Street, Suite B	April 11 – Tukwila – L&I Building 12806 Gateway Drive South
April 26 – Tacoma – L&I Building 950 Broadway, Orcas Room, 5 th floor	May 9 – Silverdale – L&I Building – 10049 Kitsap Mall Boulevard NW Suite 100	May 10 – Sequim – Clallam PUD #1, 104 Hooker Road, West of Sequim off Hwy 101, Lake Crescent Board Room
May 22 – Everett – Snohomish County PUD Commission Meeting Room 2320 California Street	May 23 – Mount Vernon – Northwestern Washington Research and Extension Center 16650 State Route 536	May 29 – Vancouver – Clark PUD – Electric Center Community Room, 1200 Fort Vancouver Way
May 30 – White Salmon – White Salmon Valley Community Library – 77 NE Wauna Avenue	May 31 – Longview – Lower Columbia College 1600 Maple, Health & Science Building, HSB-101, Laufman Lecture Hall	

Electrician Examination Questions Update to 2017 Codes Set for July 1, 2018

The department and our examination contractor, [PSI](#) have set a goal of having all electrician examination questions updated to the 2017 National Electrical Code® (NEC®), Washington Administrative Code (WAC), and Revised Code of Washington (RCW) by July 1, 2018. After that date, all exams will be based on the 2017 codes even if a person must retake an exam that was previously failed using the 2014 version. Typically, exam questions do not change significantly with adoption of new versions of the code.

All examinations are open-book and exam candidates are allowed to take any original copyrighted material into the exam with them. Copies are not allowed except copies of RCW 19.28 or WAC 296-46B may be used. For more information about the exams, you can refer to [WAC 296-46B-960](#) or visit the [Electrical Exam Information](#) page of our website.

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Legislative Update

Two bills affecting the electrical program have passed the legislature and are awaiting the Governor's signature. You can get information about each bill by clicking on the hyperlinked bill numbers below.

1. [Engrossed Substitute House Bill 1952](#) – Allows cities that have electrical inspection jurisdictions to enforce licensing and certification provisions of RCW 19.28. Allows cities to establish penalties and adjudicate matters of compliance. Penalties upheld through an appellate process of a city or town may be appealed to the electrical board. The city or town that is party to the matter must reimburse all costs of an appeal payable from the electrical license fund. Does not diminish the department's enforcement authority within cities.
2. [Substitute Senate Bill 6126](#) – Effective July 1, 2023, requires completion of an apprenticeship to qualify for journey-level electrician certificate of competency examination. This means an applicant must complete their current 8000 hour experience requirement along with 96 hours of classroom training, apply for, and be approved for examination by July 1, 2023 to qualify for the journey-level examination. After that date, all journey-level applicants must have completed an approved apprenticeship. The bill does not affect qualification for specialty electrical certificates. For more information about apprenticeships including how to receive credit for previous experience and what this means for employers, visit the [Apprenticeship](#) page of our website.

Correction Reduction Initiative

In June 2006, the electrical program introduced a special project, the "Correction Reduction Initiative". The goal is for selected contractors to reduce their corrections by 15% in one year. At the beginning of each fiscal year, the department identifies contractors who received more than twice the average number of corrections for contractors with at least 24 inspections in the previous year. Each month, the contractors receive a list of all of their corrections from the previous month. This gives them an opportunity to review the items with their electricians to improve the quality of their work.

This initiative has proven to be very successful in helping contractors reduce corrections and save money for themselves and the department. So far this fiscal year (since July 1, 2017), the contractors in the Correction Reduction Initiative have reduced their corrections by an average of 26 percent. The result is safer electrical installations at a significant cost savings to the contractor, customers, and the department. Corrections cost everyone by causing return visits to the jobsite. Our studies have shown that 20 percent of contractors receive 80 percent of corrections.

We use this initiative to improve our own performance as inspectors as well. Contractors who believe they have received improper corrections should contact the electrical inspection field supervisor for the issuing office to discuss possible invalid corrections, such as those that are not within the scope of the contractor's work, or those that are not supported by a correct code reference. A contractor should never accept invalid corrections because they fear reprisal from an inspector or supervisor. Our inspectors are required to provide an accurate reference (NEC, WAC) for all corrections issued. Improper corrections will be removed from the contractor's records.

Rulemaking Updates – Marina Ground-Fault Protection Requirements

The department is considering changes to [WAC 296-46B-555](#) regarding ground-fault protection requirements for Marinas. The current rule, effective July 1, 2017, amends the ground-fault protection levels specified in NEC 555.3 to allow 100 milliamper protection for feeders until July 1, 2018. The department is considering a request from the Northwest Marine Trade Association to extend this allowance beyond July 1, 2018. Watch the Rule Development page of our website for more information including the proposed rule language and a timeline for rulemaking. The NEC has specified ground-fault protection requirements in Article 555 since the 2011 edition. These requirements were introduced to prevent Electric Shock Drowning (ESD) in and around marinas. For more information about ESD, visit www.electricschockdrowning.org.

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

Pictured is an electric wall heater insert that had been operating flawlessly for about 10 years until the property owner noticed fire coming from the grill and called an electrician. Electric wall heaters collect lint and dust that must be cleaned at least every year at the beginning of the heating season. Follow the manufacturer's instructions for regular cleaning or risk disaster.

Answer to Question of the Month: 14 AWG – NEC 240.4(G), 440.35; Table 310.15(B)(16); Nameplate minimum circuit ampacity – 19.4



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Question of the Month – What is the maximum output circuit current rating of an interconnected electric power source(s) connected to a circuit breaker located at the opposite end of a panelboard busbar from the 175 ampere main breaker protecting the busbar. The ampacity rating of the busbar is 200 amperes. The busbar is sized for the loads connected in accordance with NEC Article 220, but the sum of the ampere ratings of the load circuit breakers exceed the rating of the busbar. *See correct answer on Page 2.*

Invitation to a Stakeholder Meeting Near You

I am holding 18 electrical stakeholder meetings in various locations across the state between March and May 2018. These meetings are an opportunity to talk in an informal setting. Check the schedule below and attend a meeting near you. I want to hear how we can better serve you, our customers and help you stay informed of any changes that might affect you and/or your business.

Safety Tip of the Month

- Keep power cords clear of tools during use.
- Suspend power cords over aisles and work areas to eliminate stumbling, tripping hazards or damage to cords.
- Do not carry electrical tools by the power cord.
- Do not tie power cords in tight knots. Knots can cause short circuits and shocks.

2018 Stakeholder Meetings 6 – 8 p.m.		
March 6 – Pullman – Gladish Community and Cultural Center , Oscars Room, 115 NW State St.	March 7 – Spokane – Spokane Falls Community College , 3410 W. Fort George Wright Drive, Bldg 17, Sub Lounges A & B	March 12 – Pateros – Howard's on the River Event Center , 233 Lakeshore Dr.
March 13 – East Wenatchee – Douglas County PUD , 1151 Valley Mall Parkway	March 14 – Ellensburg – Red Lion Hotel & Conference Center – 1700 Canyon Road	March 28 – Kennewick – Benton PUD Auditorium – 2721 West 10th Avenue
March 29 – Moses Lake – L&I Building 3001 West Broadway Avenue	April 4 – Tumwater – L&I Auditorium – 7273 Linderson Way SW	April 5 – Aberdeen – L&I Building 415 West Wishkah Street, Suite B
April 11 – Tukwila – L&I Building 12806 Gateway Drive South	April 26 – Tacoma – L&I Building 950 Broadway, Orcas Room, 5 th floor	May 9 – Silverdale – L&I Building – 10049 Kitsap Mall Boulevard NW Suite 100
May 10 – Sequim – Location yet to be determined	May 22 – Everett – Snohomish County PUD Commission Meeting Room 2320 California Street	May 23 – Mount Vernon – Northwestern Washington Research and Extension Center 16650 State Route 536
May 29 – Vancouver – Clark PUD – Electric Center Community Room, 1200 Fort Vancouver Way	May 30 – White Salmon – White Salmon Valley Community Library – 77 NE Wauna Avenue	May 31 – Longview – Lower Columbia College 1600 Maple, Health & Science Building, HSB-101, Laufman Lecture Hall

Legislative Update

The bills listed below are still under consideration by the legislature. You can get information about each bill by clicking on the hyperlinked bill numbers below. Review the bills and comment if you desire. A comment button is located to the right of the bill number on each webpage. You may also contact your legislator to share your opinion about any legislation by visiting the legislative website at: <http://www.leg.wa.gov/LIC/Pages/hotline.aspx>.

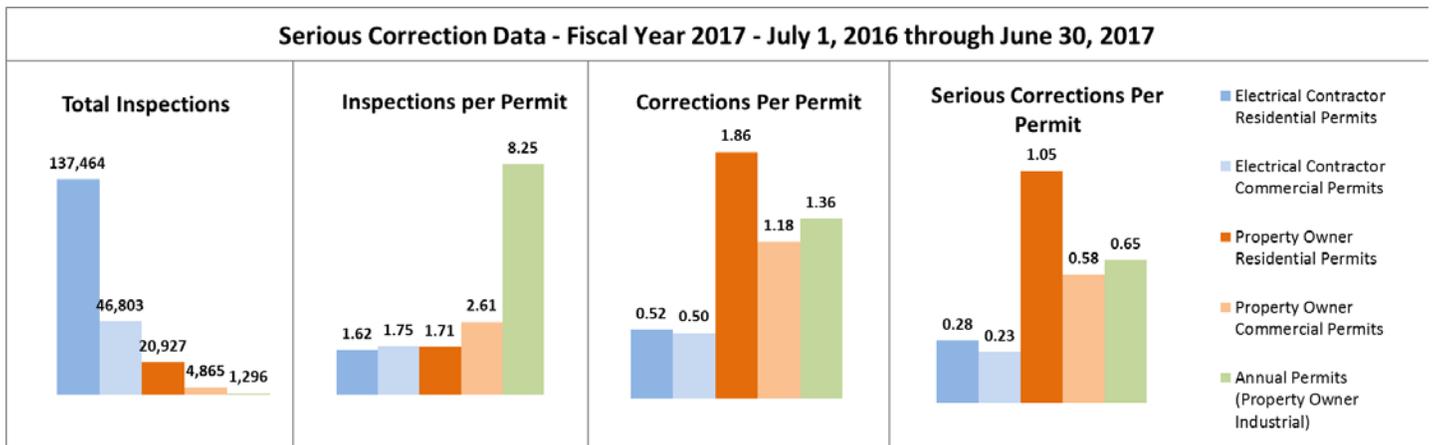
1. [Engrossed Substitute House Bill 1952](#) – Allows cities that have electrical inspection jurisdictions to enforce licensing and certification provisions of RCW 19.28. Changes city seat on the electrical board to a voting position. Allows cities to establish penalties and adjudicate matters of compliance. Does not diminish the department's enforcement authority within cities. Passed the House and is currently on second reading in Senate.

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2. [Substitute Senate Bill 6126](#) – Requires completion of an apprenticeship to receive a journey level electrician certificate of competency. This bill would become effective July 1, 2023. Passed the Senate on January 25.

Serious Electrical Installation Corrections

At the January 25, 2018 meeting of the Electrical Board, the department presented the board with information they requested regarding serious electrical installation corrections issued by the department’s electrical inspectors. The Mobile Inspection Program used by inspectors contains over 5,000 code violations. About half of those are considered serious, and if not corrected would result in compliance action and/or disconnection of power. As you can see in the charts below, the vast majority of inspections are for licensed electrical contractors, but almost four times as many serious corrections per permit are issued to property owners. Having said that, a licensed electrical contractor employing certified electricians should not be receiving any serious electrical code violations. In next month’s edition, I will discuss the correction reduction initiative the department has had in place for many years. This initiative has proven to be very effective and currently, the contractors in the initiative pool have reduced their corrections per inspection by almost 26 percent compared to last year.



Rulemaking Updates

Residential and Sign Specialty Work Scopes – As published in previous editions, changes to [WAC 296-46B-920\(2\)\(a\)](#) and (2)(d) regarding the scopes of work for the residential and sign specialties became effective February 23, 2017. For complete details and to view the rulemaking documents, visit the [Rule Development](#) page of our website.

Marina Ground-Fault Protection Requirements – The department is considering changes to [WAC 296-46B-555](#) regarding ground-fault protection requirements for Marinas. The current rule, adopted July 1, 2017, amends the ground-fault protection levels specified in NEC 555.3 to allow 100 milliamper protection for feeders until July 1, 2018. The department is considering a request from the Northwest Marine Trade Association to extend this allowance beyond July 1, 2018. Watch the Rule Development page of our website for more information including the proposed rule language and a timeline for rulemaking. The NEC has specified ground-fault protection requirements in Article 555 since the 2011 edition. These requirements were introduced to prevent Electric Shock Drowning (ESD) in and around marinas. For more information about ESD, visit www.electricschockdrowning.org.

Ugly Picture: *If viewing this document online, click on the picture to open a larger image.* An electrician experienced in hazardous location wiring methods will immediately see the problem with this installation. This seal-off was poured, which created an additional problem for the installer, or the person who had to re-do the work. Do not throw away the instruction sheet provided with electrical equipment – read it!

Answer to Question of the Month: 52 Amperes. NEC 705.12(B)(2)(3)(b). The sum of 125 percent of the power source(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. 200 ampere busbar X 120% = 240 amperes. 240 – 175 ampere main breaker = 65 amperes. 65 ÷ 125% = 52 amperes.



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Question of the Month – How long after receiving a correction notice from an electrical inspector does a permit holder have to correct a non-compliant installation. *See correct answer on Page 2.*

Invitation to a Stakeholder Meeting Near You

I am holding 18 electrical stakeholder meetings in various locations across the state between March and May, 2018. These meetings are an opportunity to talk in an informal setting. Check the schedule below and attend a meeting near you. I want to hear how we can better serve you, our customers and help you stay informed of any changes that might affect you and/or your business. Meetings are scheduled from 6 to 8 p.m. at the locations listed below. Meeting dates and addresses will also be posted on our [Electrical Calendar](#) webpage and distributed on the program email list. If you are not on the email list, you may join at our [Electrical Email List](#) webpage.

Safety Tip of the Month

Make sure your temporary power installations are safe. Temporary power installations on construction sites, if not installed properly, can be a source of extreme hazard. Make sure your work is not the cause of a tragedy. Ensure all temporary wiring meets NEC requirements. Make sure service conductors at temporary power poles are not exposed.

2018 Stakeholder Meetings 6 – 8 p.m.		
March 6 – Pullman – Gladish Community and Cultural Center , Oscars Room, 115 NW State St.	March 7 – Spokane – Spokane Falls Community College , 3410 W. Fort George Wright Drive, Bldg 17, Sub Lounges A & B	March 12 – Pateros – Howard's on the River Event Center , 233 Lakeshore Dr.
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Legislative Update

If you are a part of the electrical or telecommunications industries regulated by L&I, lawmakers are considering several bills that may affect you. None of this legislation is sponsored by L&I.

The bills listed below are available for consideration by the legislature. To remain available for consideration, bills must pass out of their committees by February 2 and out of their house of origin by February 14. You can get information about each bill by clicking on the hyperlinked bill numbers below. Review the bills and comment if you desire. A comment button is located to the right of the bill number on each webpage. You may also contact your legislator to share your opinion about any legislation by visiting the legislative website at: <http://www.leg.wa.gov/LIC/Pages/hotline.aspx>.

1. [House Bill 1430](#), [Senate Bill 5304](#) – Requires the department of L&I to adopt the non-administrative portion of the electrical rules through a process in which the department, the Washington cities electrical committee, and the technical advisory committee have an equal vote in the adoption of the rules.
2. [Substitute Senate Bill 5211](#) – Removes the ability of the Electrical Board to hear appeals of decisions by the Office of Administrative Hearings. Decisions made by an administrative law judge would be a final order.
3. [House Bill 1855](#) – Requires business name and electrical contractor license number to be marked on vehicles while used in the electrical construction trade.
4. [House Bill 1871](#) – Effective January 1, 2022, requires electrical or plumbing certification for employees of state agencies while performing electrical or plumbing work on the premises of a state agency employer.
5. [Engrossed Substitute House Bill 1952](#) – Allows cities that have electrical inspection jurisdictions to enforce licensing and certification provisions of RCW 19.28. Changes city seat on the electrical board to a voting position. Allows cities to establish penalties and adjudicate matters of compliance. Does not diminish the department's enforcement authority within cities. Passed the House and referred to Senate Committee on Labor & Commerce.
6. [Substitute Senate Bill 6126](#) – Requires completion of an apprenticeship to receive a journey level electrician certificate of competency. This bill would become effective July 1, 2023. Passed the Senate on January 25.
7. [House Bill 2123](#), [Senate Bill 5860](#) – Allows credit toward qualifying for a specialty certificate of competency for work experience not in the electrical construction trade. Also provides a grandfathering opportunity for certain specialty certificates of competency to individuals who can show they were employed in those specialties prior to January 1, 2002.

Department Adopts Rule Amendments for 02 Residential and 04 Sign Specialty Scopes of Work

The Department is adopting modifications to the electrical licensing scopes of work in [WAC 296-46B-920\(2\)\(a\)](#) for the (02) residential specialty and [WAC 296-46B-920\(2\)\(d\)](#) for the (04) Sign specialty. You can find the rulemaking documents on the [Rule Development](#) page of our website.

Effective February 23, 2018, this rule revision will:

- Allow (02) residential specialty electrical contractors and electricians to work in multi-family dwellings of types III, IV, or V construction when there are not more than six stories of multifamily dwellings of types III, IV, or V construction above grade or above types I or II construction. Under current rule, the (02) residential specialty is limited to installation of non-metallic sheathed cable in multifamily dwellings not exceeding three stories above grade. The adopted rule aligns the scope of work for this specialty with building code requirements for the installation of non-metallic sheathed cable. Building codes restrict the building construction types where non-metallic sheathed cable can be used to a maximum of six stories. The building code allows a maximum of six stories to be built above grade or above types of construction where non-metallic sheathed cable is not allowed, commonly referred to as pedestal construction (types III, IV, or V construction above types I or II construction); and
- Allow (04) sign specialty electrical contractors and electricians to retrofit existing luminaires that are mounted on a pole or other structure with energy efficient technology, such as LEDs. Under the existing rule, the (04) sign specialty can service, maintain, or repair these luminaires with like-in-kind components but the current rule prohibits alterations such as LED retrofits. These will now be allowed under the (04) sign specialty.

Ugly Picture: *If viewing this document online, click on the picture to open a larger image.* Steel pipe electrodes shall have the outer surface galvanized or otherwise metal-coated for corrosion. A single pipe electrode shall be supplemented as required by NEC 250.53(A)(2) when an existing electrical service is altered.

Answer to Question of the Month: Fifteen calendar days - RCW 19.28.101, WAC 296-46B-901(15). Outstanding corrections subject the permit holder to monetary penalties and disconnection of power.



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Question of the Month – Thank you to everyone who responded to last month’s question. The code question of the month first appeared in the [September 2000](#) edition of the Electrical Currents, which asked: What is the minimum length that the conductors in a single gang light switch box must extend outside the box opening? Answer: 3 inches per NEC® 300.14. Congratulations to the first five correct responders who were awarded LED headlamps.

This month’s question: Which of the following conductors are subject to the requirements for Rapid Shutdown of Solar Photovoltaic Systems in NEC® 690.12? (Select all that apply) A) Photovoltaic Output Circuit, B) Inverter Input Circuit, C) Inverter Output Circuit, D) Photovoltaic Source Circuit. *See correct answer(s) on Page 2.*

Reminder: Public Hearing on Proposed Rule Amendments

As reported in last month’s newsletter, a public hearing regarding the proposed rule amendments to the scopes of work for the (02) Residential and (04) Sign specialties will be held at the L&I building, 7273 Linderson Way, Tumwater, WA at 9 a.m. on January 3, 2017. Please visit the [Rule Development](#) page of our website for more information and for instructions for sending written comments.

ECORE Team is Busy Keeping Washington Safe and Working

Operating outside the requirements for licensing, certification, and permitting is very tempting to some individuals and contractors working in today’s economy. The underground economy and companies attempting to operate with an unfair competitive advantage take work away from legitimate contractors and electricians who take pride in their work and the electrical industry. Work done by these unlicensed contractors and uncertified individuals usually results in installations that are a hazard to life and property and leave the unprotected consumer with little recourse.

The Electrical Compliance, Outreach, Regulation, and Education (ECORE) team has been busy finding violators and issuing citations to these unlicensed contractors and uncertified electricians. For the first three months of this fiscal year, July through September 2017, the team issued 1,563 citations for the focused underground economy violations of unlicensed electrical contracting, uncertified electricians or failing to supervise trainees, and failing to obtain electrical permits. Many of these citations involve multiple locations statewide at national chain stores using out-of-state unlicensed contractors and workers. These investigations are very time-consuming but usually result in electrical work being taken over by licensed electrical contractors with the installations being permitted and inspected. Penalties issued to two companies in a recent incident involving 130 jobsites statewide totaled over \$500,000 due to the penalties being issued at the 2nd and 3rd offense amounts, which means these companies had been caught and cited previously for the same violations.

If you would like to join us in combatting the underground economy, you can make a big difference by watching for and reporting illegal electrical activity. For more information you can visit our [Report Electrical Law Violations](#) webpage. You may report suspected violations by contacting your nearest [local inspection office](#), or one of the ECORE team members:

- Northwest Washington: [Rand Jones](#), 360-416-3034 (office) or 360-561-0440 (cell).
- North Central Washington: [Rand Jones](#), 360-416-3034 (office) or 360-561-0440 (cell).
- King County: [Sergey Zinakov](#), 206-835-1130 (office) or 206-406-5543 (cell).
- Southwest Washington: [Darin Lyon](#), 253-596-3907 (office) or 360-471-0746 (cell).
- Eastern Washington: [Phil Jordan](#), 509-324-2542 (office) or 360-471-0691 (cell).
- South Central Washington – Yakima/Tri Cities: [Jeffrey Robertson](#), 509-454-3769 (office) or 509-263-3583 (cell).

Safety Tip of the Month

Before removing any fuse from a circuit, be sure the equipment is in an electrically safe work condition.

When removing fuses, use an approved fuse puller and break contact on the line side of the circuit first.

When replacing a fuse, install the fuse into the load side of the fuse clip first, then into the line side.

Electrician Examination Questions Update to 2017 Codes Set for July 1, 2018

The department and our examination contractor, PSI have set a goal of having all electrician examination questions updated to the 2017 National Electrical Code® (NEC®), Washington Administrative Code (WAC), and Revised Code of Washington (RCW) by July 1, 2018. After that date, all exams will be based on the 2017 codes even if a person must retake an exam that was previously failed using the previous 2014 version. Typically, exam questions do not change significantly with adoption of new versions of the code.

All examinations are open-book and exam candidates are allowed to take any original copyrighted material into the exam with them. Copies are not allowed except copies of RCW 19.28 or WAC 296-46B may be used. For more information about the exams, you can refer to [WAC 296-46B-960](#) or visit the [Electrical Exam Information](#) page of our website.

NEC® 514.11 Motor Fuel Dispenser Emergency Electrical Disconnects

2017 NEC® 514.11 was revised to align with requirements in [NFPA 30A](#) (*Code for Motor Fuel Dispensing Facilities and Repair Garages*) and to clarify what is required for emergency shutoff devices or electrical disconnects at all motor fuel dispensing facilities including attended and unattended self-service fuel dispensing facilities. Motor fuel dispensing systems must be provided with one or more clearly identified emergency shutoff devices or electrical disconnects installed in approved locations not less than 20 feet or more than 100 feet from the fuel dispensing devices they serve. These measurements now apply to all fuel dispensing systems including both attended and unattended self-service fuel dispensing facilities. [WAC 296-46B-514](#)(6) requires the emergency shutoff to be labeled as such with an identification plate (see [WAC 296-46B-100](#) definition of “identification plate”) that is substantially red in color with letters at least 1 inch high.

The emergency shutoff device(s) must disconnect power to all dispensing devices; to all remote pumps serving the dispensing devices; to all associated power, control, and signal circuits; and to all other electrical equipment in the hazardous (classified) locations surrounding the fuel dispensing devices. The requirement to disconnect all associated power, communications, data, and video circuits was added in the 2011 NEC®. Prior to that, only the nominal voltage circuit was required to be disconnected. Also, WAC 296-46B-514(3) requires the simultaneous disconnection of the grounded conductor(s). In a large fueling facility such as a truck stop, design of the dispensers and the distance limitations may require multiple emergency shutoff devices. When more than one emergency shutoff device is provided, all devices must be interconnected. Resetting from an emergency shutoff condition cannot be automatic, but must require manual intervention. Intrinsically safe electrical equipment (See NEC® 504 Intrinsically Safe Systems) need not meet the requirement for emergency shutoff.

For attended self-service facilities, NEC® 514.11(B) and WAC 296-46B-514(6)(b) requires the emergency shutoff to be readily accessible to the attendant and be located outdoors and within sight of the pump or dispensing equipment it controls. For unattended self-service facilities, NEC® 514.11(C) and WAC 296-46B-514(6)(c) requires the emergency shutoff to be readily accessible to the patron and within sight of the pump or dispensing equipment it controls.

Ugly Picture: *If viewing this document online, click on the picture to open a larger image.* One of our inspectors was at a residence inspecting a new air conditioner unit. When he asked to see the electrical panel where the circuit originated, the homeowner got very nervous and the inspector discovered this very dangerous installation to a generator transfer panel. The inspector followed up using the department’s process to ensure a permit was purchased and repairs were made.

Answer to Question of the Month: A), B), C), and D).

NEC® 690.12. Rapid Shutdown requirements for controlled conductors outside the array boundary on or in buildings apply to all PV circuits supplied by the PV system per 690.12(A). “PV circuits” include all DC and AC circuit conductors supplied by the PV system. Beginning January 1, 2019, rapid shutdown requirements will be expanded to include controlled conductors located inside the array boundary. Rapid Shutdown requirements were put in place to protect fire fighters from shock hazard when fighting fires on or in buildings having PV systems.



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