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Question of the Month – You are designing a solar photovoltaic (PV) system to be installed on the roof of a single-family home in Yakima. Each mono crystalline PV module is rated 250 watts and has an open-circuit voltage of 37.8 volts DC. The open-circuit voltage temperature coefficients are not supplied with the instructions for the modules. The lowest expected ambient temperature in Yakima is -18 degrees C. What is the maximum number of modules that may be connected in series to form a DC string of the solar array without exceeding the maximum system voltage? *See correct answer on page 2.*

Unity Electric pays \$171,000 Fine for Improper Supervision of Electrical Trainees

A Shoreline firm recently paid a \$171,000 fine for performing electrical work using inexperienced trainees without proper supervision.

L&I investigated Unity Electric from May to October 2015. Through onsite visits and reviews of project records, state investigators found more than 300 instances of Unity having inexperienced, improperly supervised employees performing electrical work.

The work took place on an eight-story multi-use structure in Seattle and an assisted living retirement community in Ballard, among other buildings. The company underbid other contractors in 2015 for about \$5.4 million worth of electrical projects.

Improper electrical installations can lead to fires and other hazards. State law requires certified electricians to supervise trainees, usually on a one-to-one basis. With Unity, there were up to five trainees working under a single certified electrician. Unity paid the fine earlier this year using a credit card.

Investigators with L&I's Electrical Compliance, Outreach, Regulation and Education (ECORE) team handled the case, which was the largest the team has investigated in terms of number of citations and total fines. The state Legislature created the Ecore team 10 years ago to ensure those doing electrical work are adequately trained and licensed.

To report concerns about improper trainee supervision or other electrical law violations, visit our website at www.lni.wa.gov/Electrical, and click on "Violators". You can also contact an electrical inspector at your local [L&I office](#). To find out whether a contractor is licensed, has an up-to-date workers' comp account, or see if they have any safety violations pending, go to www.lni.wa.gov/Verify.

Now is the Time for Code Update Classes Based on the 2017 National Electrical Code®

We are now accepting Code Update course applications for approval based on the 2017 edition of the National Electrical Code® (NEC®). The National Fire Protection Association has published the 2017 version, and copies will be available shortly. If you have completed an approved Code Update course based on the 2014 NEC®, it will count toward your current renewal. If you have not completed a Code Update course, or if you have and want to know more, you should take a course based on the 2017 NEC®. As we approve courses, we periodically update our website. You can find lists of approved Continuing Education and Basic Trainee Classroom Education through our [Licensing, Exams & Education](#) webpage at: <http://www.lni.wa.gov/TradesLicensing/Electrical/>.

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

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

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Safety Tip of the Month

Why we do what we do:

Faulty electrical wiring causes fires. When you make an electrical installation, your actions can either have great or grave consequences. Thank you to all of the highly skilled, certified professional electricians who install wiring in accordance with all applicable safety codes. Your installation of safe wiring literally saves lives. Unfortunately, not all wiring is installed and maintained safely by skilled craftsmen. Here are links to recent news stories about fires started by improperly installed or maintained electrical wiring:

[Moses Lake residence fire](#)

[Wenatchee house fire](#)

[Aberdeen electrical panel fire](#)

[Spokane Valley recessed lighting fire](#)

[2013 Colockum Tarps Fire – 126 square miles](#)

[Fire started by faulty hot tub wiring](#)

The tentative adoption date for the 2017 NEC® will be in late spring 2017. If you would like to review the 2017 NEC®, a [free read-only version](#) is available on NFPA's website.

Rulemaking to Adopt the 2017 National Electrical Code®

In August, a Special Edition Electrical Currents newsletter was published announcing the rule revision process for adopting the 2017 National Electrical Code®, as well as other changes to update and improve [WAC 296-46B](#). Information is also posted on the [Electrical Rule Development](#) page of our website. During the month of October, the department will accept proposals for revisions from all stakeholders as well as applications to serve on a Technical Advisory Committee. You can find full details in the [August 2016 Special Edition](#) newsletter.

Electrical Fee Increase Proposal and Public Hearing

The Electrical Program is considering amending fees for electrical permits, licenses, and administrative services in WAC 296-46B-[906](#), [909](#), and [911](#). The Electrical Program's budget and projected revenue indicate a fee increase is necessary to cover the program's operating expenses and to maintain the current level of service to our customers. The proposal will seek to increase fees by 4.32%, the Office of Financial Management's maximum allowable [fiscal growth rate factor](#) for fiscal year 2017. The electrical fees were last increased July 2012. The proposed fees will be discussed with the Electrical Board and attending stakeholders at the [Electrical Board meeting](#) on October 27, 2016. A public hearing is scheduled for September 30, 2016 at 9 a.m., Room S119 at the [Tumwater L&I Building](#), 7273 Linderson Way SW, Tumwater, WA. For more information, visit the [Rule Development](#) page of our website.

Make Sure You Use the Most Current Version of Forms

Often, due to law or rule changes, or in an effort to continuously improve processes, electrical program forms are updated. Using outdated forms can cause delays because the information on the form may not be correct. The best source for up-to-date forms is our website. Locating a form on our [Electrical Forms & Publications](#) page is quick and easy, especially if you use the keyword search box. You may also obtain current forms from a [local L&I service location](#). If you have a stock of frequently used forms such as permit applications, or affidavits of experience, please verify that they are current before submitting them to the department.

Ugly Picture: Well, I guess they are not that ugly, just a little tired. Congratulations to L&I Electrical Technical Specialists Rod Mutch and Larry Vance on reaching new heights in electrical safety this year. Here, they are pictured in the summit crater of Mount Rainier at about 6 a.m. on June 28. To reach the summit, they used all appropriate industry standard personal protective equipment (PPE) including eye protection, traction enhancement, avalanche beacons, fall restraint, and fall arrest equipment. By the way, no Washington state resources were expended on this mission.



Answer to Question of the Month: 13: NEC® 690.7(C) Maximum system voltage for one- and two-family dwellings is 600 volts. Table 690.7 correction factor for ambient temperature of -18 degrees C is 1.18.

$37.8 \text{ VDC} \times 1.18 = 44.6 \text{ VDC}$; $600 \div 44.6 = 13.5$; Maximum of 13 modules allowed.

If this installation were in Aberdeen, a maximum of 14 modules would be allowed based on a lowest expected ambient temperature of -4 degrees C. You can find the lowest expected ambient temperature (Extreme Annual Mean Minimum Design Dry Bulb Temperature) for your area [here](#) on the [solarabcs.org](#) website.

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