Meeting Minutes: Board of Electricity

Date: Oct. 19, 2023 (rescheduled from 10/10/2023)
Time: 9:00 a.m.
Location: **In person/WebEx/Phone**

Members Present

1. Alfreda Daniels Juasemai – WebEx
2. Tom Fletcher
3. Cole Funseth – WebEx
4. Sarah Gudmunson
5. Steve Haiby
6. Mike Hanson
7. Jeff Heimerl
8. Duane Hendricks – Chair
9. Dean Hunter – CO's Designee
10. Travis Thul
11. Trevor Turek – Vice Chair
12. Desiree Weigel – Secretary

Members Absent

None

DLI Staff & Visitors

Jeff Lebowski (Board Counsel)
Lyndy Logan (DLI)
Steve Dudley (DLI)

DLI Staff & Visitors continued…

Todd Green (DLI) – WebEx
Hannah Mardaus (DLI)
John McNamara (DLI)
Josiah Moore (DLI)
Sean O'Neil (DLI)
Jon Boesche (ABC)
Jess Duncan (MNESTA)
Paul Elliott (BIT Sales)
Nick Erickson (Housing First MN)
Dan Ferguson (IBEW 292) – WebEx
Jeff Kunkel (Electrical Association) – WebEx
Rep. Shane Mekeland
Stanley Mlyniec (Volt Server) – WebEx
Brandon Nelson (Statewide LEA JATC)
Andy Snope (IBEW)
Ronald Tellas (Belden) – WebEx
Gary Thaden (NECA)
Charlie Zierke (BIT Sales Group) – WebEx

1. Call to Order

A. **Roll Call:** Chair Hendricks called the meeting to order at 9:02 a.m. Roll call was taken by Secretary Weigel and a quorum was declared resulting in 12 of 12 voting members present in person or via WebEx.

B. **Announcements/Introductions – Chair Hendricks**

- Everyone present in person and remotely are able to hear all discussions.
- All votes will be taken by roll call if any member is attending remotely.
- All handouts discussed and WebEx instructions are posted on the Board's website.

C. WebEx instructions/procedures were explained.

2. Approval of Meeting Agenda

A motion was made by Heimerl, seconded by Fletcher, to approve the agenda as presented. The roll call vote was unanimous with 12 votes in favor of the motion; the motion carried**.**

3. Approval of Previous Meeting Minutes

A motion was made by Heimerl, seconded by Turek, to approve the Jul. 11, 2023, regular meeting minutes with the following change to page 4: *Thul ~~Turek~~ departed the meeting at 10 a.m., resulting in 11 voting members present in person or via WebEx.* The vote was unanimous with 12 votes in favor of the motion; the motion carried.

4. Regular Business

A. **Expense Approval** – Expense reports will be forwarded to Financial Services for payment.

B. **Enforcement & licensing update** – Sean O'Neil – See **Attachment A**.

- Electrical Enforcement Actions can be found on the department's website at: http://www.dli.mn.gov/business/electrical-contractors/electrical-enforcement-actions
- O'Neil said that in 2015 the Department proposed license fee reductions to the legislature which impacted nearly all CCLD individual and business licenses, registrations, and certifications. These fee reductions were not made permanent, rather the approved legislation included an expiration (sunset) on the fee changes, which occurred on Oct. 1, 2023. When the sunset on the licensee fee reductions became effective, the license fees reverted back to the fee structure that was in place in 2015. The sunset will result in a $10 increase individual license fee for journeyworkers, $20 increase for masters, and a $60 increase for business licenses. The fee changes do not impact registered unlicensed individuals, bond filings, registered employers, or certificate of exemption holders. Licensees will see the fee changes when they seek to obtain or renew a license after Oct. 1, 2023.

C. **Inspection update** – Dean Hunter

- Hunter provided an inspection update – see **Attachment B**.
- Hunter said the department currently has two inspectors providing virtual inspections in state inspected areas. Soon, the virtual inspections will be integrated into the department's iMS inspection platform and will be available to electrical contractors under certain criteria. At this time, the virtual program is optional. Hunter suggested that John McNamara, virtual inspection supervisor, give an update at the January board meeting.

5. Special Business

A. Request for Interpretation (RFI) 24-01 – Rep. Mekeland – see **Attachment C**.

- Representative Mekeland addressed the board regarding the question submitted in RFI 24-01: "In July of 2009, the Board of Electricity issued a "final Interpretation" regarding photovoltaic panels and associated parts and components. That initial request determined that all solar panels and associated components were considered electrical equipment and subject to licensing and inspections. With the introduction of building integrated photovoltaic (BIPV) systems (i.e., solar singles), does the Board consider securing, flashing, sealing, and weatherproofing of the solar shingles(s) to the roof surface, electrical work?"
- Mekeland brought in a solar photovoltaic panel and explained the installation process. Hunter also explains this process and Mekeland's RFI in **Attachment D**.
- After further board discussion, Chair Hendricks said the Board needs to make a motion on how to proceed, deciding on which option would best protect people and buildings.
- Hunter reiterated four options for the Board to consider, as shown below (see slide 19 of **Attachment D)**.

  Options:

  1. Allow the solar/roofing contractor to install the shingle(s), after each row, wait for the electrician to put the U-connectors and the final

connector/jumper through the roof, and continue the process for each row. (Electrician does all the electrical work on the roof)

2. Allow the solar/roofing contractor to install the shingle(s), attach the U-connectors to the end of the row, and the electrician put in the final connector and run the cable through the roof. (Electrician is on the roof - sparingly)
3. Allow the solar contractor to install the shingle(s), attach the U-connectors to the end of the row, install the final connector and run the cable through the roof. Electrician is on-site and checks the voltage below the roof deck to verify the proper voltage while the project is being done. (Electrician is not on the roof)
4. Allow the solar contractor to lay down the shingle, attach the U-connectors to the end of the row, install the final connector and run the cable through the roof. Electrician is no ton-site and checks the voltage below the roof deck to verify the proper voltage at a later date.

A motion was made by Heimerl, seconded by Thul, to choose option #1 (see above) provided that roofers install these only when they're integrated building components used for another function to keep them out of the purview of the 2009 decision. The majority vote ruled with 8 in favor, 3 against (Hanson, Fletcher and Hendricks) and one abstention (Hunter); the motion passed.

B. 2026 NEC update – Dean Hunter

- To date, all public inputs for the 2026 NEC edition has been submitted. Currently, task groups are meeting, and the full technical panel meetings will take place in mid-January. The first draft of the 2026 NEC will be available late spring or early summer of 2024.

C. NERA meeting update – Steve Dudley – see **Attachment E.**

D. Class 4 discussion – Dean Hunter – see **Attachment F**.

- Hunter led the Board discussion on Class 4 systems. In Hunter's opinion, the Board needed to decide how Class 4 systems would impact our licensing and inspection requirements. Mr. Hunter position is that Class 4 systems should be considered a technology system and circuit, and also, the direct supervision, 3 to 1 licensing ratio, and electrical inspections should be required. Hunter reasoning for wanting electrical inspections and licensing, is because these systems eventually will be a part of the building automation and future lighting systems, which will be a large part of the premise wiring system.
- Hunter provided the Board with a PowerPoint presentation and explanation addressing the possible impact of Class 4 systems in the electrical statutes. The presentation and discussion focused on:
    - the possible changes to the Technology Circuits and System definition language in 326B.31 Subdivision 29.
    - some potential statutory language changes for the personal licensing requirements related to direct supervision and ratio in 326B.33.

    - possible revisions to the language that would require electrical inspections in 326B.36.
    - some potential fee changes that would be added for inspection costs located in 326B.37.
- Hunter summarized the presentation by asking the Board to decide the following:
    - **Should Class 4 systems be considered a technology system when enforcing our licensing requirements. In the end, should a Class 4 systems be installed by a Technology System Contractor (TSC), or Electrical Contractor (EA)**
- Stanley Mlyniec, Voltserver, addressed the board. Voltserver is the one that invented this fault managed power, Class 4 Power. Mr. Mlyniec has been very involved with the development of the outline of investigation for the 1401 requirements which is specific to the Class 4 equipment. Additionally, he helped create some of that material that was just shown in Hunter's presentation. Mr. Mlyniec provided more information to the Board to further understand Class 4 Power. Mr. Mlyniec commented on how Class 4 Power is a great evolution in safety. It has the capability of delivering hundreds, thousands of watts, but it acts like a limited energy circuit. If somebody touches the conductors or equipment, or if there's a bad connection, fundamentally, it's going to result in safer electrical systems. He thinks Hunter and NEC have done a very good job; however, many people still have questions about the failures to the circuit and asking " What if something goes wrong?" Mr. Mlyniec summarized by saying that by incorporating functional safety requirements, under every failure scenario, the circuit remains a limited energy circuit.
- Jess Duncan, representing Minnesota Electronic Security and Technology Association, said they're essentially the licensed alarm industry in the state of Minnesota. They work in the technology and life safety space. Twenty years ago, they worked with Department of labor to create the technology systems contractor and power limited technician licenses. Since then, our industries have continued to grow and expand as technology itself has continued to grow and expand. Class 4 is the latest example of that. They have reviewed UL's efforts and agree with the assessment that Class 4 circuits should be included within the definition and scope of technology circuits. Further, this approach requires the licensing and inspection that the other technology circuits and systems do, and that licensing protects and safeguards the public. They support the concept of fault managed power systems that are designed to limit within microseconds the amount of electrical energy that can go into fault. This mitigates the two main risks, shock and fire, by creating that demarcation as shown in Hunter's diagram, between the voltage and the Class 4 transformer. So, they join Mr. Hunter in asking the board to consider Class 4 circuits as a technology circuit or system.
- Chair Hendricks said this is certainly a change to what we're used to. It's a change in technology, a change in our industry. Mr. Hansen pointed out earlier that sometimes we have to embrace change because we're in a changing world, and this is certainly a big change, but it's something that we have to try to figure out how it fits into the licensing requirements. He doesn't think there's any question that it belongs as electrical work, but the board needs to decide how to enforce the installation of these Class 4 wiring systems.

- Weigel said she doesn't know how this can be considered power limited just because there is a potential of a higher voltage and wattage there. Sure, it may be able to fail at a much quicker rate, but things fail, accidents happen. It's like with anything else, something that you would think is safe could potentially be unsafe.
- Chair Hendricks said that he and Trevor visited with Stanley and others from Voltserver. They had concerns it's 480 volts rated cable, and that was a big concern compared to traditional class two and three is 150 volt rated cable. So that would raise a flag to me about that potential voltage in the event that something fails. And the way he understands this is that it fails to an off position. He believes this is what Stanley pointed out, its limited risk, similar to the PLT class two and class three. Hendricks asked Stanley how does it not put a higher voltage to the people that would be working on and around it?
- Mlyniec said there is higher voltage that's on the line. However, what the UL 1400-1 requirements set up is that if there's any contact, if a human touches that line, it shuts that line down in milliseconds or depending on the time curve that exists in that standard, keeping folks safe if they come in contact with it. In terms of the failure question, that's what the functional safety requirements, 615.08 is the standard that is called out in 1401. That is a reliability standard that would be used for many other safety systems. It's been used in machinery, industrial, etc. to ensure that when there's a safety system in play, it is reliable, and it always works. If there is any type of failure, it fails safe. So, any technology that would be listed to the 1400-1 requirements and then being able to be installed as a class four circuit would have to go through that same rigorous functional safety analysis process which ensures the integrity of the safety circuit.
- Fletcher asked if the system sends out this pulse to determine if everything is good and safe on the circuit in order for it to send out the higher voltage, does it have to affirmatively have that pulse come back in order to then trigger the higher voltage?
- Mlyniec said he wants to be very careful when answering this question talking about Voltserver technology versus Class 4 fault managed power. There are other manufacturers coming out with this; therefore, he can only speak to their system and requirements. Voltserver's technology is not the only one out there. So, the systems are designed so that if it is a pulse system and the pulse goes down, it's designed to ensure that there is no fault on the line. There's nobody touching that line. Their system works where it does send kind of a startup set of pulses to ensure that the line is safe and then it shuts down if it's not.

A motion was made by Fletcher, seconded by Hansen, to allow Class 4 systems to be considered a technology system when enforcing DLI's licensing requirements. The majority vote ruled with 11 in favor, 1 against (Weigel); the motion passed.

E. Proposed deletion of "process control circuits or systems" definition discussion (MS 326B.31, subd. 26) – Dean Hunter – **see Attachment G**.

- Hunter presented on the definition of process control circuits or systems found in 326B.31 Subdivision 26. Hunter asked the board to consider deleting the language, because these systems were difficult to identify in the field because the definition is too vague. The only place "process control circuits or systems" is used in statutory language is only in this definition, and the definition of technology systems. Typically, the department regulates and enforces the licensing laws based on the power supply and all the work associated with it. Hunter commented on the way that the definition is written, it's extremely hard to identify, differentiate the types of systems and enforce in the field. In addition, Hunter explained where it is used in 3800. Basically, time can be accumulated toward an electrical license; however, again, it is hard for licensing individuals to determine if the system is truly process control.
- Hunter asked for the Board's position on removing the term "Process Control Circuits or Systems" in 326B.31, subd. 26.

A motion was made by Turek, seconded by Heimerl, to leave the language as is. The majority vote ruled with 10 in favor, 2 against (Haiby and Hanson) and one abstention (Hunter); the motion carried.

6. Committee Reports

Construction Codes Advisory Council (CCAC) met on Jun. 1, 2023 – Hendricks (rep) / Daniels (alt) – Presentation June 1, 2023

7. Complaints and Correspondence

Letter of support, NEC Structure Rev – Dean Hunter – see **Attachment H**.

A motion was made by Thul, seconded by Turek, to support Dean Hunter's letter to the NEC Correlating Committee Chair. The roll call vote was unanimous; the motion carried.

8. Open Forum

None

9. Board Discussion

Lyndy said she would send members instructions on how to re-apply if they had terms expiring Dec. 31, 2023.

10. Announcements

Regularly scheduled meetings occur on the second Tuesday of each quarter at 9:00 a.m., in person at DLI with WebEx/Phone options

- January 9, 2024
- April 9, 2024
- July 9, 2024 (Annual meeting – election of officers)

11. Adjournment

A motion was made by Heimerl, seconded by Turek, to adjourn the meeting at 11:35 a.m. The roll call vote was unanimous with 12 votes in favor of the motion; the motion carried.

Respectfully Submitted,

Desiree Weigel
Desiree Weigel
Secretary

Green meeting practices

The State of Minnesota is committed to minimizing environmental impacts by following green meeting practices. DLI is minimizing the environmental impact of its events by following green meeting practices. DLI encourages you to use electronic copies of handouts or to print them on 100% post-consumer processed chlorine-free paper, double-sided.

Unlicensed contractor fined $25,000

Enforcement actions

- An unlicensed contractor based in Isanti, Minn., was found to have engaged in residential remodeling work. The contractor was ordered to cease and desist from the unlicensed activities and fined $25,000.
- A Missouri contractor was found to have engaged in unlicensed electrical work. The contractor was ordered to cease and desist from unlicensed activity and fined $10,000, of which $7,000 was stayed contingent on future compliance.
- An unlicensed Becker, Minn., contractor was found to have engaged in plumbing work without having the appropriate license. The contractor was ordered to cease and desist from the unlicensed activity and fined $3,500, which was stayed contingent on full future compliance.
- A licensed Edina, Minn., residential building and electrical contractor was found to have engaged in several violations of the contractor licensing law. DLI revoked both business licenses and ordered the contractor to cease and desist from holding itself out as a residential building contractor and from performing or offering to perform electrical work in the state. The stay of a previously imposed $5,000 monetary penalty assessed to the contractor was lifted, and an additional $75,000 fine was assessed, $50,000 of which was stayed contingent on future compliance.
- A licensed Stillwater, Minn., residential building contractor was found to have breached contracts with multiple homeowners by failing to complete projects after receiving payments. DLI revoked the contractor's license and assessed a $20,000 fine, which was stayed contingent on future compliance and full cooperation with homeowners seeking to apply for potential reimbursement to the Contractor Recovery Fund.

More information

View summaries of enforcement actions at dli.mn.gov/workers/homeowners/file-complaint-and-view-enforcement-actions. Contact us at 651-284-5069 or dli.contractor@state.mn.us.

DEPARTMENT OF LABOR AND INDUSTRY

Electrical Permits Issued Summary

Issued from 1/1/2023 to 10/3/2023

ELE Permit Type	New Structure or Existing and/or Other Assoc. Items	Number of Permits Issued	% of Permit Type	% of Total
Multi-Family Dwelling	Existing Building or Other Items	1,494	88.40%	1.53%
	New Building	196	11.60%	0.20%
	Total	**1,690**		1.73%
Non-Dwelling	Total	**22,337**		22.86%
One-Family Dwelling	Existing Dwelling or Other Items	50,160	86.08%	51.35%
	New Dwelling	8,112	13.92%	8.30%
	Total	**58,272**		59.65%
One-Family Home (Homeowner Issued Permit)	Existing Home or Other Items	5,262	80.84%	5.39%
	New Home	1,247	19.16%	1.28%
	Total	**6,509**		6.66%
Technology Systems	Total	**699**		0.72%
Transitory (Carnival, etc.)	Total	**1,369**		1.40%
Two-Family Dwelling	Existing Building or Other Items	346	91.05%	0.35%
	New Building	34	8.95%	0.03%
	Total	**380**		0.39%
Utility Load Management Device	New Device	1,316	20.45%	1.35%
	Replacement Device	5,120	79.55%	5.24%
	Total	**6,436**		6.59%
Total		**97,692**		

DEPARTMENT OF LABOR AND INDUSTRY

Statewide Activity Report

For the Period 01/01/2023 thru 10/3/2023

Total Active	Date Range Activity			Isuued Permits	Aging of Expired Permits			
Current Count	IN Count	OUT Count	Net Change Count	< 12 Months Count	12-18 Months Count	18-36 Month Count	> 36 Months Count	> 12 Months Count
75,375	99,254	103,334	(4,080)	55,962	10,145	7,584	1,090	18,819
	Percentage of Current Active Permits							
	132%	137%	-5%	74%	13%	10%	1%	25%

	# of Inspections Performed	Inspection Reports	AFBs	Refunds	License Checks	Violation Reports
For Date Range:	141,099	16,713	16,974	5,391	409	0
Year to Date Total:	141,099	16,713	16,974	5,391	409	0

"**Total Active**": The total current active permits ("Issued", "Expired" or "Hold" status).

"**Date Range Activity**": The permits that were Issued and permits closed out and the net change for the selected date range.

"**Issued Permits**": Represents the number of permits that are currently less than 12 months old.

"Expired Permits": Permits for installations filed with inspection fees of $250 or less are void 12 months from the original filing date regardless of whether the wiring is completed. Permits filed with inspection fees of $250 or less are not refundable after 12 months from the original filing date. The authority to install electrical wiring associated with a specific permit is void at the time of a final inspection or expiration, whichever occurs first. The authority to inspect wiring covered by a permit continues until the installation is approved at a final inspection.

"**Aging of Expired Permits**": Represents the age of expired permits that are still active. This does not include any permits that have a value over $250.

"**For Date Range:**" Represents the numbers in the respective columns during that date range. Violation reports are yet to be counted by this report.

"**Year to Date Total:**" Represents the numbers for the calendar year beginning January 1st.

"**%**": Represents the precentage compared to "Current".

"AFBs": Additional Fees for Billings (invoices for inspection fee shortages)

DEPARTMENT OF LABOR AND INDUSTRY

Electrical Permit and Inspection History

State Inspection Areas

CALENDAR YEAR	Permit Information			Inspection Information		
	Total Permits Issued	Permits Completed	Permits Closed but Not Finaled	Final "Final" Insp.*	All other Insp.**	Total Inspections
2020	126,124	124,448	6,390	107,375	55,448	162,823
2021	130,552	125,554	7,121	117,486	60,861	178,347
2022	138,228	115,674	5,259	121,939	61,188	183,127
2023	99,546	53,690	1,857	95,214	45,825	141,039

The "**Permit Information**" and the "**Inspection Information**" do not necessarily represent the same permits. The "Permit Information" represents permits issued that Calendar Year. The "Inspection Information" represents the inspections performed that calendar year. The inspections may be for permits that were issued in previous calendar years.

"Total Permits Issued" means the permits Issued in the calendar year indicated. Includes permits in status (milestone) 'Abandon', 'Closed', 'Expired', 'Finaled', 'Issued', or 'Hold'. Does not include any other milestone such as "Out of state Inspected Area", "Refunded", etc.

"Permits Completed" means the "Total Permits Issued" for the calendar year, this is the number of permits placed into 'Closed', 'Expired', 'Abandon', or 'Finaled' status .

"Permits Closed but Not Finaled" means of the "Permits Completed" for the year, this is the number of those permits placed by procedural policy into 'Closed', 'Expired', or 'Abandon' status .

"Final "Final" Insp." represents the number of inspections completed that calendar year that caused the permits to be placed into "Finaled" status or milestone. The permits were not necessarily issued that year.

"All other Insp." represents the number of inspections completed that calendar year that did not result in a ""Finaled" status or milestone. The permits were not necessarily issued that year.

"Total Inspections" represents the total (Finals and Others) number of inspections completed that calendar year. The permits were not necessarily issued that year.

DEPARTMENT OF LABOR AND INDUSTRY

Issued Electrical Solar Permits Summary

Issued from 1/1/2023 to 10/3/2023

Permit Type Type of Dwelling or Non-Dwelling	Permit Variant Dwelling New or Existing	Solar Systems Grouped by Size	No of permits	Percentage of Group
Multi-Family Dwelling			16	0.61% Of Total
	Existing Building or Other Items		12	75.00% of Type
		10K or <	2	16.67% of Variant
		10K to 40K	7	58.33% of Variant
		Unknown	3	25.00% of Variant
	New Building		4	25.00% of Type
		10K to 40K	1	25.00% of Variant
		40K to 1 meg	3	75.00% of Variant
Non-Dwelling			351	13.45% Of Total
	Non-Dwelling		351	100.00% of Type
		1 Meg to 5 Meg	2	0.57% of Variant
		10K or <	68	19.37% of Variant
		10K to 40K	194	55.27% of Variant
		40K to 1 meg	61	17.38% of Variant
		Unknown	26	7.41% of Variant
One-Family Dwelling			2,155	82.60% Of Total
	Existing Dwelling or Other Items		2,053	95.27% of Type
		10K or <	1,417	69.02% of Variant
		10K to 40K	474	23.09% of Variant
		40K to 1 meg	20	0.97% of Variant
		Not Given	3	0.15% of Variant
		Unknown	139	6.77% of Variant
	New Dwelling		102	4.73% of Type
		10K or <	43	42.16% of Variant
		10K to 40K	56	54.90% of Variant
		Unknown	3	2.94% of Variant
One-Family Home (Permit Issued to Homeowners)			86	3.30% Of Total
	Existing Home or Other Items		74	86.05% of Type
		10K or <	37	50.00% of Variant
		10K to 40K	18	24.32% of Variant
		40K to 1 meg	1	1.35% of Variant
		Unknown	18	24.32% of Variant

Solar Systems Grouped by Size	No of permits	% of Total
1 Meg to 5 Meg	2	0.08%
10K or <	1,578	60.48%
10K to 40K	751	28.78%
40K to 1 meg	85	3.26%
Not Given	3	0.11%
Unknown	190	7.28%
Total	2,609.00	

Solar Systems Grouped by Size	Watts	% of Total
1 Meg to 5 Meg	11,365,000	15.87%
10K or <	8,511,129	11.88%
10K to 40K	15,376,715	21.47%
40K to 1 meg	36,372,249	50.78%
Not Given		0.00%
Unknown	Unknown	
Total	71,625,093	
Average	29,646	

DEPARTMENT OF LABOR AND INDUSTRY

Issued Electrical Solar Permits Summary

Issued from 1/1/2023 to 10/3/2023

One-Family Home (Permit Issued to Homeowners)	New Home		12	13.95% of Type
		10K or <	10	83.33% of Variant
		10K to 40K	1	8.33% of Variant
		Unknown	1	8.33% of Variant
Two-Family Dwelling			1	0.04% Of Total
	Existing Building or Other Items		1	100.00% of Type
		10K or <	1	100.00% of Variant
Total			2,609	

Board of Electricity
c/o Department of Labor and Industry
443 Lafayette Road North
St. Paul, MN 55155-4344
www.dli.mn.gov

Board of Electricity
Request for Interpretation

Name of submitter	Date	Rule(s) to be interpreted (e.g., Mn Rule Part 3801.XXXX, subpt. XX):
Shane Mekeland	18August, 2023	July 8, 2009 Final Interpretation (Solar Photovoltaic Systems)
Company Name	**Phone number**	**Email address**
Minnesota House of Representatives	651-296-2451	rep.shane.mekeland@house.mn.gov

Mailing address	City or Township	State	Zip
215 State Office Building 100 Rev Dr. Martin Luther King Jr Blvd	St. Paul	MN	55155-1298

The National Electrical Code (NEC) is available at https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=70

Has a request for interpretation been submitted to Minnesota Department of Labor and Industry (DLI) staff, either as a verbal request or a written request? ☒ Yes ☐ No

- If "No," contact DLI staff at 651-284-5820. DLI staff are responsible for administration and initial interpretation of the National Electrical Code. All requests must first be processed by DLI and provided with a staff interpretation before being referred to the Board of Electricity. This form is intended to be used to request an interpretation from the Board of Electricity only as a resolution of dispute with DLI interpretation.

Code Section(s) to be interpreted (e.g., *20XX NEC, Ch XX, § XXX.XX*):	Date interpretation was first requested:	Name of DLI staff member who provided interpretation:
2020 MNRC, Ch 09, Section 905.17	21July, 2023	Sean O'Neil and Dean Hunter

Provide a copy of the DLI interpretation with this request (a copy must be provided as reference).

Is there a dispute with a local Inspector of other official?	If Yes, provide the name and type of official:
☐ Yes ☒ No	

Describe the circumstances underlying the initial dispute:

Not a dispute but does concern the 2009 Final Interpretation issued by the Board.

Explain why you disagree with the interpretation given to you by DLI staff:

No disagreement. Clarification requested.

Provide and explain your interpretation of the relevant Code section or Rule part's language:

I agree with the 2009 issued Final Interpretation. And with the rise of new technology, more clarification is needed.

Provide any additional information you would like the Board to consider:

Please see attached letter.

Information regarding submitting this form:

- Submit this form and any supporting documentation to be considered electronically to DLI.CCLDBOARDS@state.mn.us or mail to Board of Electricity, c/o CCLD, Department of Labor and Industry, 443 Lafayette Road North, St. Paul, MN 55155.
- Once your Request for Interpretation form has been received, it will be assigned a file number. Please reference this file number on any subsequent correspondence and supplemental submissions.

Information for presentation to the Board:

- You will be notified with the date of the Board Meeting in which your Request for Interpretation will be heard.
- Please limit presentations to 10 minutes or less.
- Be prepared to answer questions regarding the Code Section/Rule Part at issue and the circumstances that led to the dispute.

What you can do if you disagree with the Board's determination:

- You may appeal the Board's final determination pursuant to Minnesota Statutes §326B.127, subd. 5 (2020).

Office Use Only			
RFI File No. 24-01	Date Received by DLI August 18, 2023	Dated Received by Board 10/3/2023	Date of Board Meeting 10/10/2023
Title of RFI RFI 24-01 Rep. Mekeland	By:		

For assistance or questions on completing this form, please call 651-284-5820.

This material can be made available in different forms, such as large print, Braille, or on a tape. To request, call 1-800-342-5354.

DEPARTMENT OF LABOR AND INDUSTRY

August 8, 2023

Representative Shane Mekeland
215 State Office Building
100 Rev. Martin Luther King Jr. Blvd.
St. Paul, Minnesota 55155-1298

RE: July 21, 2023 Request for Information

Dear Representative Mekeland:

This correspondence is in response to your request for information dated July 21, 2023, relative to the advertising requirements of licensed contractors, offers to sell electrical products, and the license requirements associated with the installation of solar shingles. The questions you posed to the Department, and the accompanying responses, are outlined below:

What specifically can a licensed contractor advertise on its company website?

Relative to advertising, licensed residential building contractors, remodelers, and roofers are required to display their license number on their company website, pursuant to Minn. Stat. 326B.87, subd. 2 (2022). Further, no person shall offer to perform services for which a license issued by the Commissioner is required unless the person holds an active license to perform those services. Nothing in this subdivision prohibits an offer to sell, repair, or perform services provided those services are performed by a licensed person, pursuant to Minn. Stat. 326B.084, subd. 2 (2022).

Can a licensed residential building contractor, remodeler, or roofer advertise that their business sells solar shingles, and can they offer to sell solar shingles?

Yes.

Can a licensed residential building contractor, remodeler, or roofer offer to sell solar shingles on their website even though they subcontract their electricians?

Yes, however, the electrical work must be performed by a Minnesota licensed electrical contractor/their employees, the electrical contractor must obtain the required electrical permit prior to commencing work, and must also call for final inspection of the work upon completion. Effective July 1, 2023, a company seeking to contract directly with a homeowner to install a rooftop solar PV system needs to be licensed as a residential building contractor or remodeler. Therefore, licensed residential roofers could not contract for such installations.

Can a licensed residential building contractor, remodeler, or roofer offer to sell solar shingles without a disclaimer?

Yes.

Are disclaimers needed when a licensed residential building contractor or remodeler advertises a bathroom remodel or to build a home?

No.

What is the clear line where an electrician and a roofer need to stop and start the work? Does and electrician need to be on the roof and actually screw the solar shingles in place? Can the roofer then flash into the solar shingles or does the electrician need to do that?

In 2009 a request for final interpretation to The Board of Electricity asked: Are Solar Photovoltaic Systems, including photovoltaic panels and their associated components, electrical equipment under the State Electrical Code? Because the Board did determine that these systems were "electrical equipment," the placement/mounting of photovoltaic panels and their associated components are subject to Minnesota's electrical licensing and inspection laws.

As you know, the solar industry and associated technologies have changed drastically in the last decade. Because of these changes, I propose you consider submitting a "Request for Interpretation" to the Board of Electricity regarding the placement of solar shingles and how this relates to the 2009 interpretation. Once a request has been submitted to the Board it would be heard/addressed at the next scheduled Board meeting in early October.

Is there a specific permit needed for the installation of the solar shingles?

In cities/townships/counties that have adopted the State Building Code, a building permit will be required for the roofing work. Additionally, a standard electrical permit is required for the installation of solar shingles, pursuant to Minn. Stat. 326B.36, subd. 4 (2022).

Thank you for taking time to provide your request for clarification on these matters to the Department.

Sincerely,

Sean O'Neil

Sean O'Neil
Assistant Director, Construction Codes and Licensing Division

CC: Kate Perushek, Deputy Commissioner
Scott McLellan, Director, Construction Codes and Licensing Division
Todd Green, Assistant Director, Construction Codes and Licensing Division
Dean Hunter, Chief Electrical Inspector, Construction Codes and Licensing Division

Shane Mekeland
State Representative

District 27A

Minnesota House of Representatives

August 18, 2023

Board of Electricity
c/o Department of Labor and Industry
443 Lafayette Road North
St. Paul, MN 55155-4344

To the Board of Electricity,

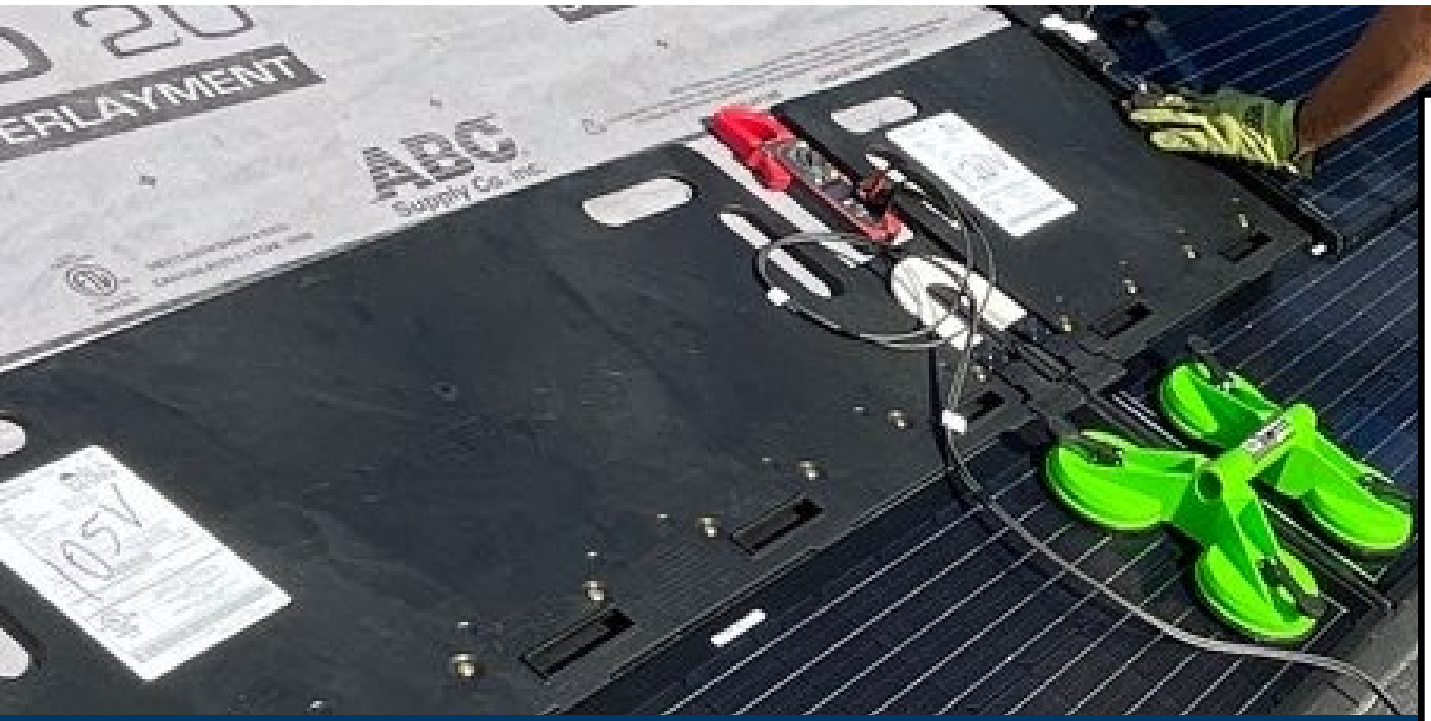
Thank you for taking the time to address the following question. Please note that no immediate action is required, and the Board meeting in October will be sufficient. I would like to submit a Request for Interpretation to have some clarification on what is or is not considered electrical work.

In July of 2009, the Board of Electricity issued a "final Interpretation" regarding photovoltaic panels and associated parts and components. That initial request determined that all solar panels and associated components were considered electrical equipment and subject to licensing and inspections. With the introduction of building integrated photovoltaic (BIPV) systems (i.e., solar singles), does the Board consider securing, flashing, sealing, and weatherproofing of the solar shingles(s) to the roof surface, electrical work?

Sincerely,

Shane Mekeland
State Representative 27A

215 State Office Building, 100 Rev Dr. Martin Luther King Jr Blvd, St. Paul, MN 55155-1298 (651) 296-2451
rep.shane.mekeland@house.mn.gov



Request for Interpretation

Shane Mekeland
State Representative

District 27A

Minnesota House of Representatives

August 18, 2023

Board of Electricity
c/o Department of Labor and Industry
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DEPARTMENT OF LABOR AND INDUSTRY

Representative Mekeland's Request

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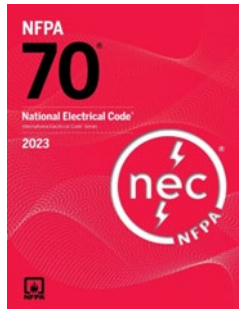
Building Integrated Photovoltaic (BIPV) System



For discussion, we will call these types of shingles BIPV systems which is consistent with the 2020 Minnesota Residential Code based on the 2018 International Residential Code as adopted by reference. Similar language is also in the 2020 Minnesota Building Code.

PHOTOVOLTAIC SHINGLES. A roof covering that resembles shingles and that incorporates photovoltaic modules.

R324.5 Building-integrated photovoltaic systems.

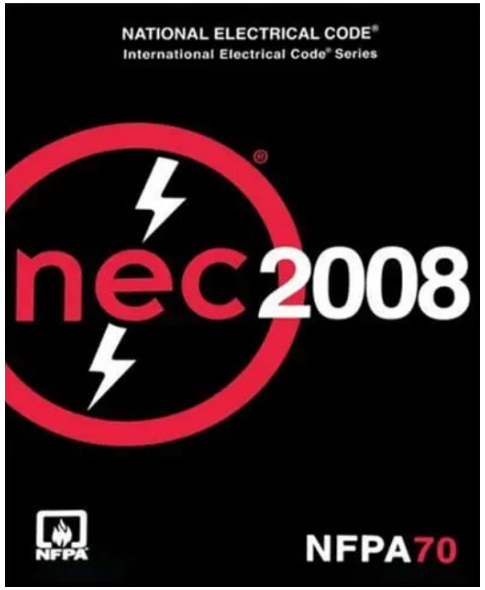
Building-integrated photovoltaic systems that serve as roof coverings shall be designed and installed in accordance with Section R905.

R905.17 Building-integrated Photovoltaic (BIPV) roof panels applied directly to the roof deck.

The installation of BIPV roof panels shall comply with the provisions of this section, Section R324 and NFPA 70.

Review of the 2009 "Final Interpretation"

Questions: Are Solar Photovoltaic Systems, including photovoltaic panels and their associated components, electrical equipment under the State Electrical Code?



Board of Electricity
c/o Department of Labor and Industry
443 Lafayette Road North
Saint Paul, MN 55155-4344
dli.ccldboards@state.mn.us

FINAL INTERPRETATION

Subject:	Solar Photovoltaic Systems
Code Reference:	Minnesota State Electrical Code, Chapter 1315
Submitted by:	Mr. Gary Thaden, National Electrical Contractors Association, 830 Transfer Road, St. Paul, MN 55114; and Mr. John Ploetz, The Minnesota Electrical Association, Inc., 3100 Humboldt Ave. S., Minneapolis, MN 55408-2588; and Mr. Dan McConnell, IBEW Local 292, 312 Central Avenue, Suite 292, Minneapolis, MN 55414
Approved by:	Board of Electricity by Joseph Vespa, Chair
Date Received:	Mr. Thaden's submission: June 10, 2009 Mr. Ploetz's submission: June 12, 2009 Mr. McConnell's submission: June 12, 2009
Issue Date:	July 8, 2009

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Answer: Yes. The State Electrical Code adopts by reference the 2008 edition of the National Electrical Code (NEC). *See* Minn. R. 1315.0200. Solar Photovoltaic Systems fall within the definition of "equipment" in the 2008 NEC. *See* NEC 690.4(D) (2008). Accordingly, Solar Photovoltaic Systems, including photovoltaic panels and their associated components, are electrical equipment under the State Electrical Code.

Commentary: The Board considered these requests for interpretation and made a determination regarding the final interpretation at the July 7, 2009, Board meeting. All persons present who wished to speak were given a full and fair opportunity to speak. The Board also considered written comments that were received before the meeting. As required by Minnesota Statutes, section 326B.127, subd. 5, the Board will consider this Final Interpretation for adoption as part of the Minnesota Electrical Code.

Date: July 8, 2009

Joseph L. Vespa

Joseph Vespa, Chair
Board of Electricity

Review of the 2009 "Final Interpretation"

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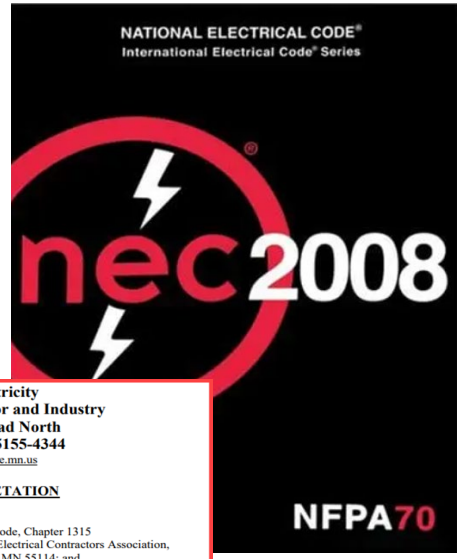

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Date: July 8, 2009

Joseph Vespa, Chair
Board of Electricity

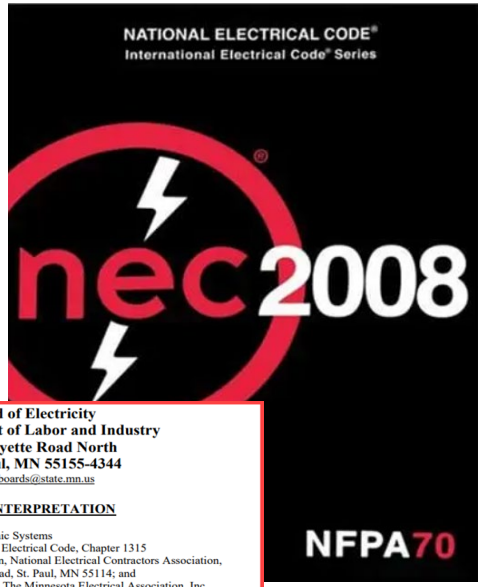
Review of the 2009 "Final Interpretation" (2008 NEC)

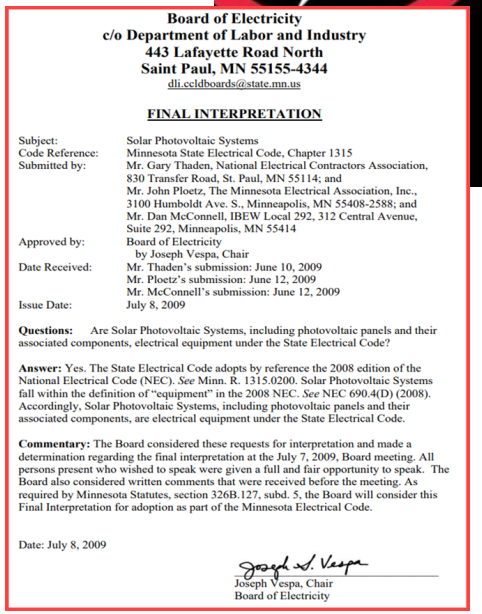
690.4(D) Equipment.

Inverters, motor generators, photovoltaic modules, photovoltaic panels, ac photovoltaic modules, source circuit combiners, and charge controllers intended for use in photovoltaic power systems shall be identified and listed for the application.

Article 100 Definition

Equipment. A general term, including material , fittings, devices, appliances, luminaires, apparatus, machinery, and the like as a part of, or in connection with, an electrical installation.





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Joseph Vespa, Chair
Board of Electricity

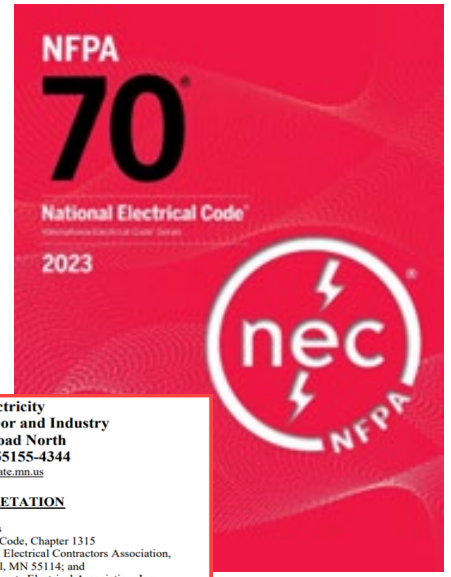
Review of the 2009 "Final Interpretation" (2023 NEC)

690.4(B) Equipment.

Electronic power converters, motor generators, PV modules, ac modules and ac module systems, dc combiners, PV rapid shutdown equipment (PVRSE), PV hazard control equipment (PVHCE), PV hazard control systems (PVHCS), dc circuit controllers, and charge controllers intended for use in PV systems shall be listed or be evaluated for the application and have a field label applied.

Article 100 Definition

Equipment. A general term, including fittings, devices, appliances, luminaires, apparatus, machinery, and the like used as a part of, or in connection with, an electrical installation. (CMP-1)



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Joseph Vespa, Chair
Board of Electricity

POWERHOUSE™ 3.0 Solar Shingles system overview.

What is a POWERHOUSE™ 3.0 solar shingle?

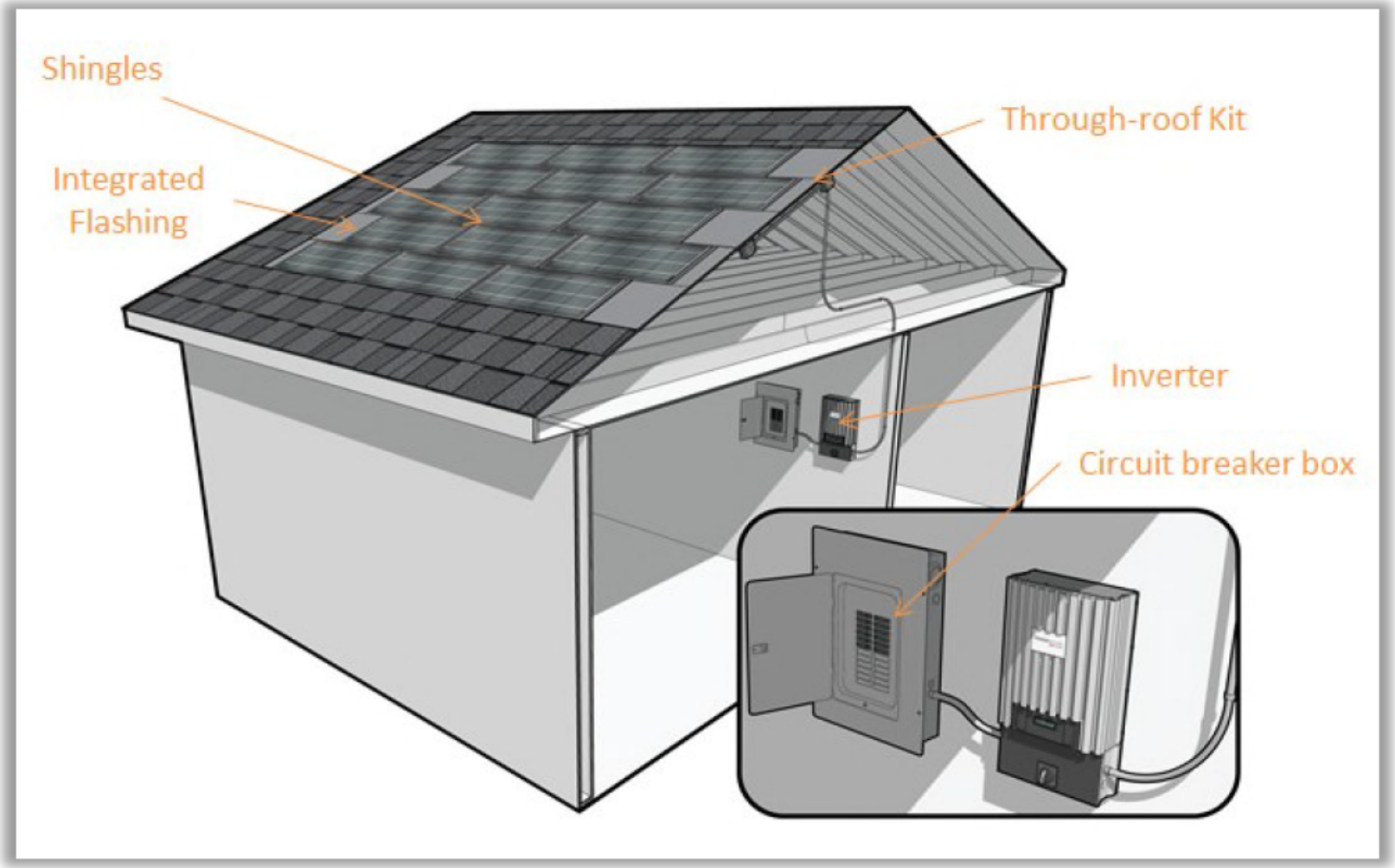
ELECTRICAL CHARACTERISTICS

Model Number	PH - 055	PH - 060
Maximum Power (P_{max})	55 W	60 W
Panel Efficiency*	15.6%	17.1%
Open Circuit Voltage at STC (V_{oc})	15.5 V	15.7 V
Maximum Power Voltage (V_{mpp})	12.5 V	12.7 V
Short Circuit Current (I_{sc})	4.68 A	5.03 A
Maximum Power Current (I_{mpp})	4.40 A	4.73 A
Maximum Series Fuse Rating	8.5 A	8.5 A
Maximum System Voltage	600 V	600 V

The electrical characteristics are within +/- 10% of the indicated values of Isc, Voc, and Pmax under standard test conditions (irradiance of 1000 W/m², AM 1.5 spectrum, and a cell temperature of 25°C (77°F)).
**Panel Efficiency based on exposure area.*

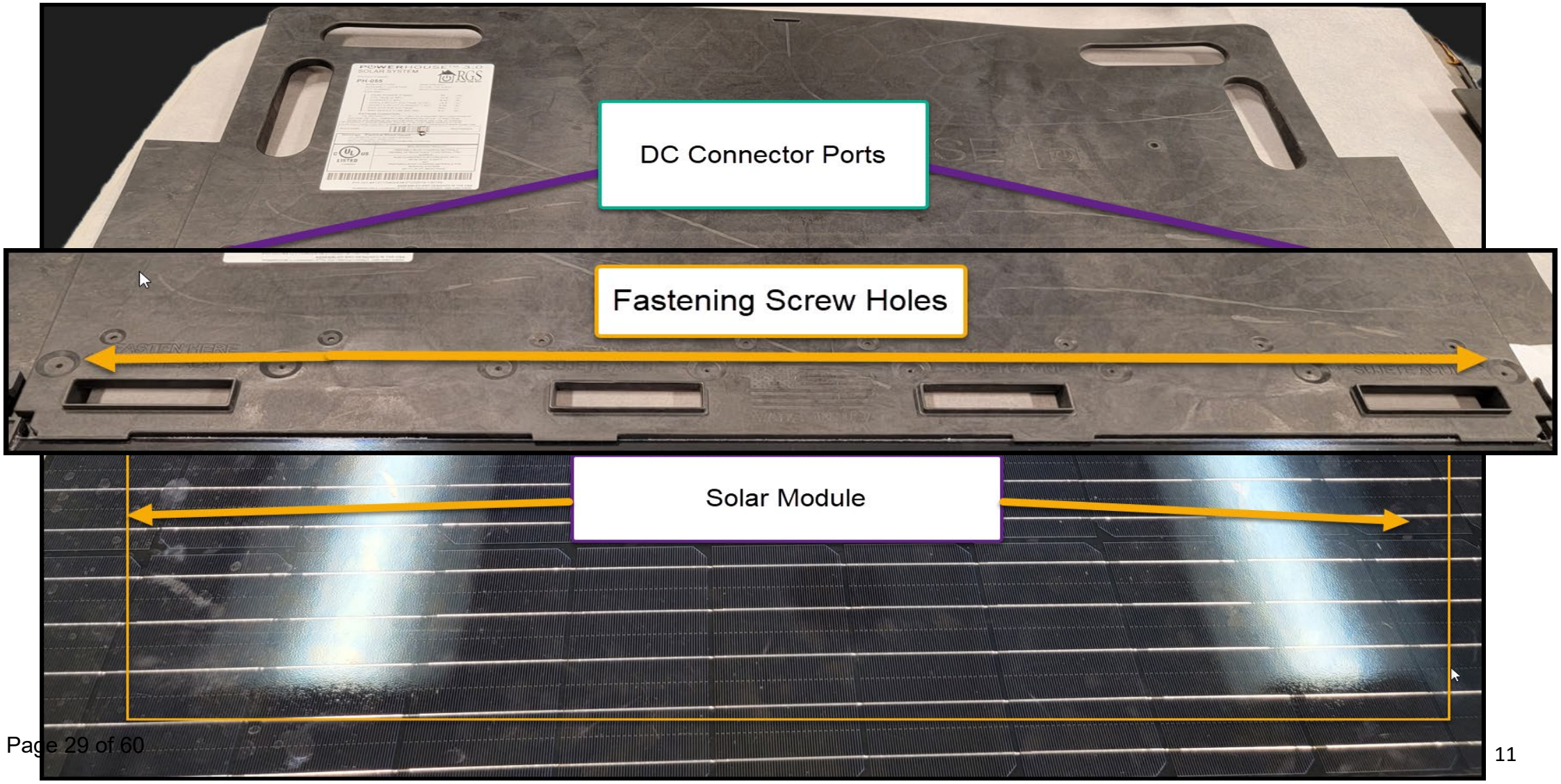
Review of the installation steps

Figure 2-1. Typical POWERHOUSE™ 3.0 Solar Shingle System



Modules	The **POWERHOUSE™ 3.0 Solar Shingle** BIPV modules are the energy generators. In optimal sunlight, full-cut cells are rated at 7.75V, 7.85V (55W, 60W).

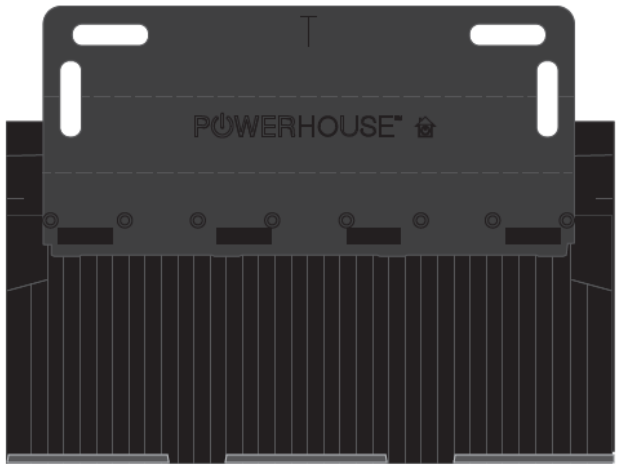
POWERHOUSE™ 3.0 solar shingle



POWERHOUSE™ 3.0 solar shingle

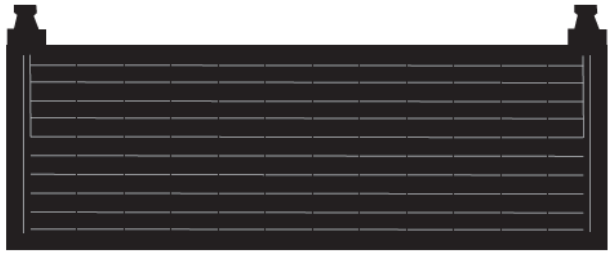
Horseshoe Connector

The environment underneath a BIPV module has it's own temperature, pressure and moisture considerations. Dow engineers solved this by designing an extremely specific connector. This is not just a traditional PV connector put in as an afterthought, but instead a much more rugged and protected connector able to withstand dirt, oils, debris, moisture, high temperatures, expansion, contraction, flexion, vibration, and even light foot traffic.



Base Plate

Horseshoe Connector

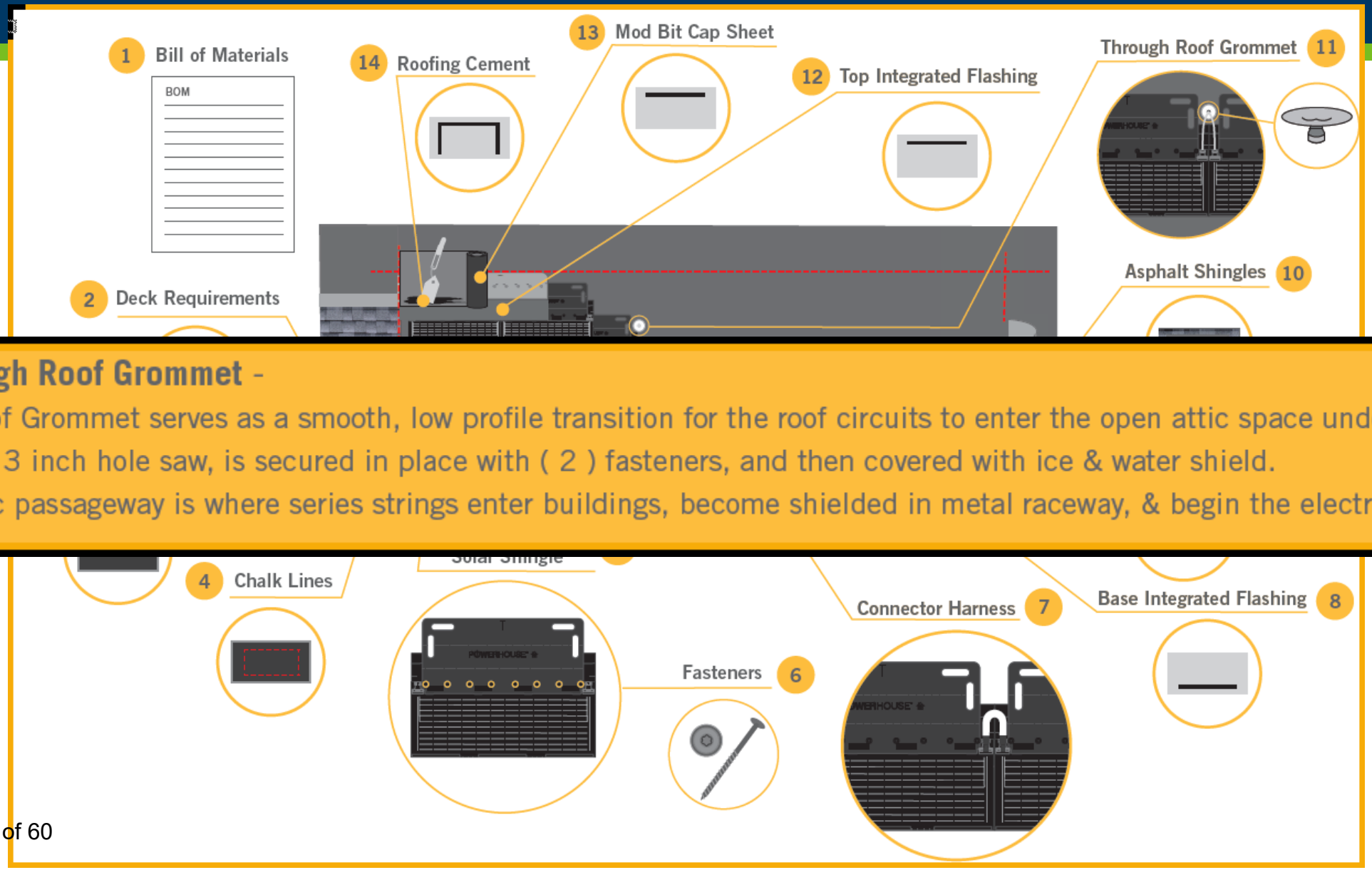


Solar Photovoltaic Insert

Important observations

- The shingles are shipped in a box, shingle with the glass intact/installed
- The jumper wire is touch safe and the string has no power until the last jumper cord is attached that goes through the roof connector. The PV wire has insulation/protection
- The U-connector is only allowed to be attached one way. Once snapped in place, hard to remove
- As the shingles are installed the next row does overlap the U-connectors
- Six screws would need to be removed to take out the solar glass

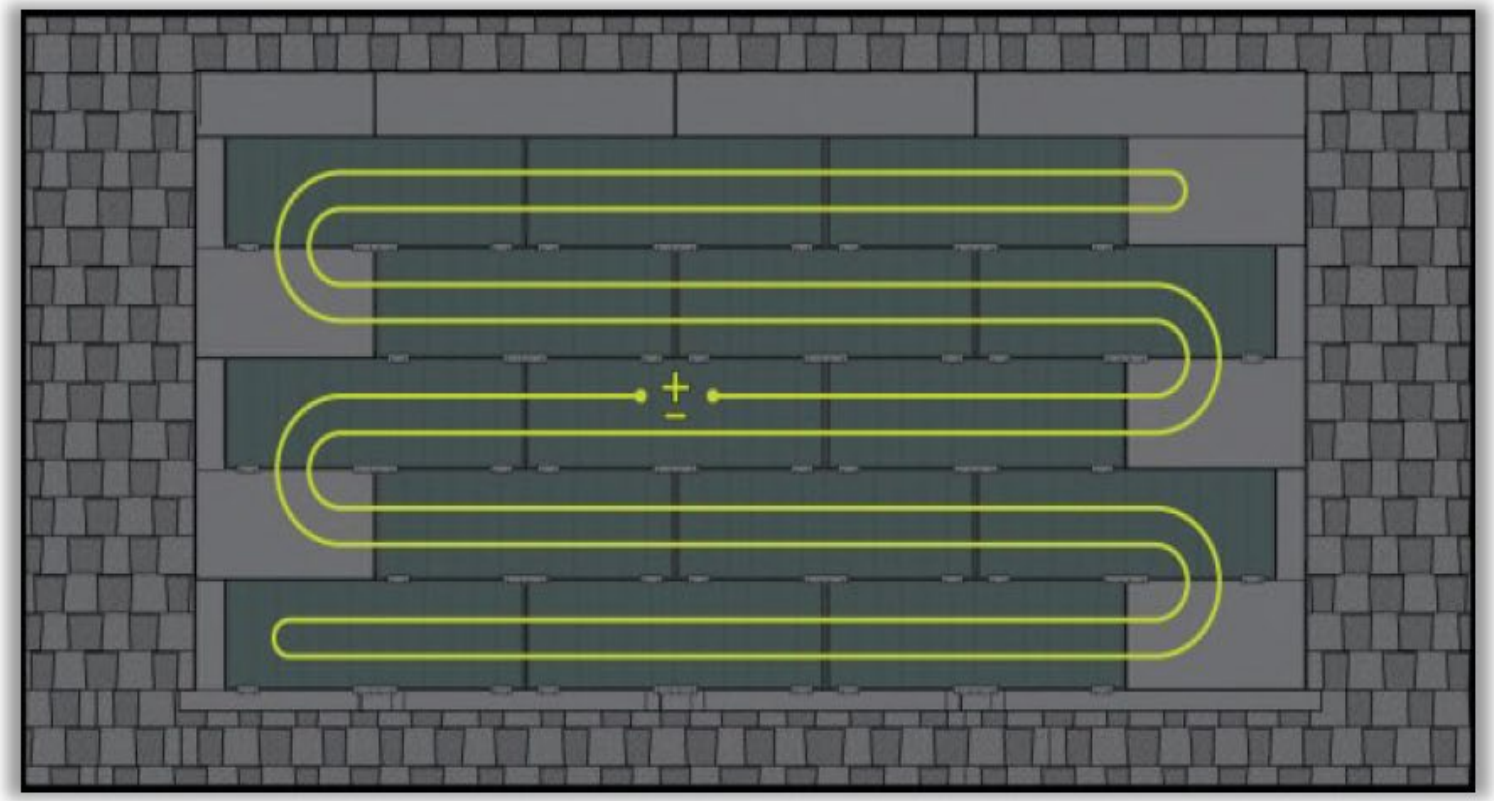
Review of the installation steps



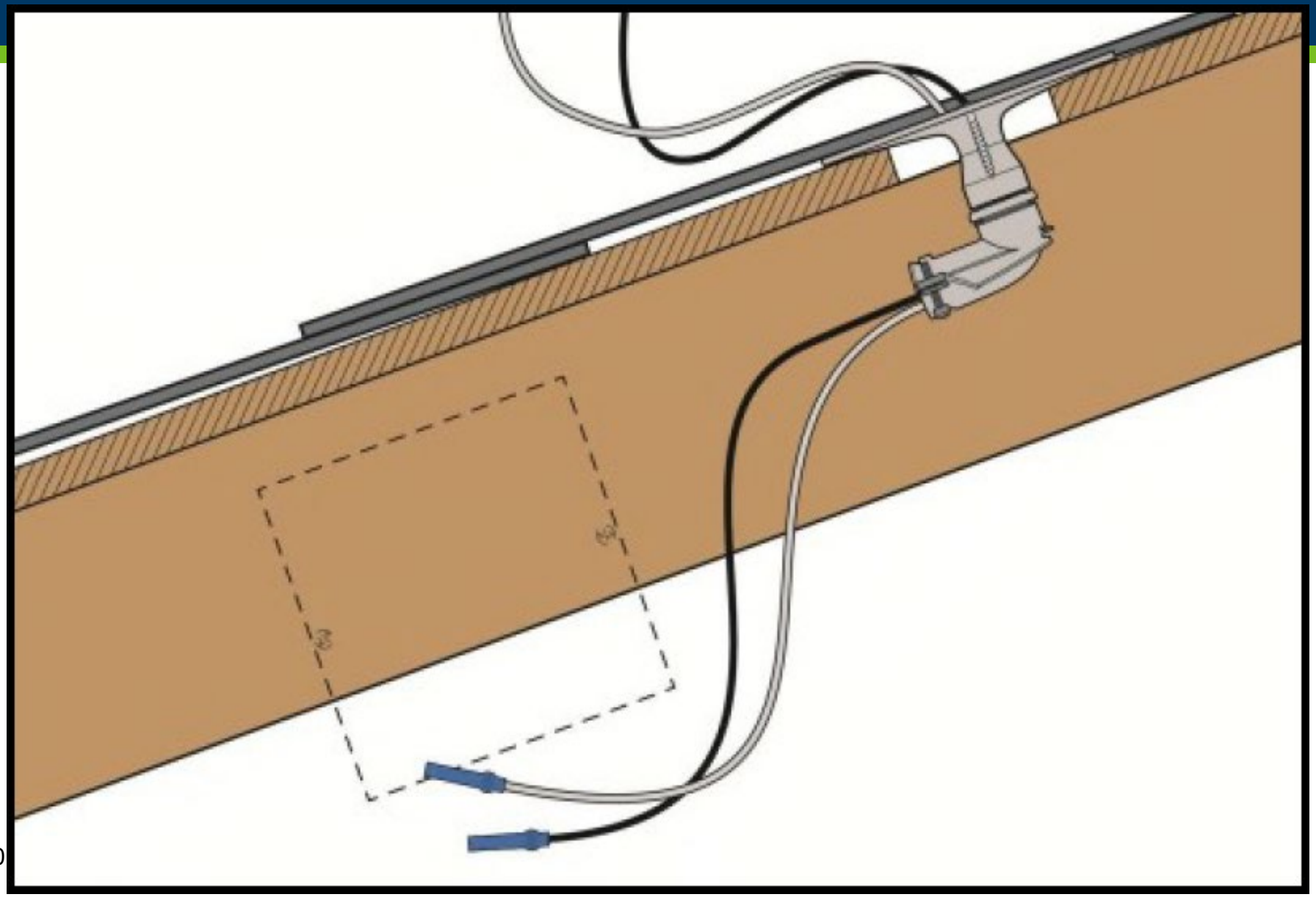
The concept

String	A string is a set of rows of **POWERHOUSE™ 3.0 Solar Shingle** BIPV modules connected in a series through System Pieces. Each string must terminate at a through-roof connection shown on the plan set.

Figure 2-2. String Circuit



Review of the installation steps



Review of the installation steps

Where should we regulate the licensing requirements?

Options:

1. Allow the solar/roofing contractor to install the shingle(s), after each row, wait for the electrician to put the U-connectors and the final connector/jumper through the roof, and continue the process for each row. (Electrician does all the electrical work on the roof)

2. Allow the solar/roofing contractor to install the shingle(s), attach the U-connectors to the end of the row, and the electrician put in the final connector and run the cable through the roof. (Electrician is on the roof - sparingly)

3. Allow the solar contractor to install the shingle(s), attach the U- connectors to the end of the row, install the final connector and run the cable through the roof. Electrician is on-site and checks the voltage below the roof deck to verify the proper voltage while the project is being done. (Electrician is not on the roof)

4. Allow the solar contractor to lay down the shingle, attach the U- connectors to the end of the row, install the final connector and run the cable through the roof. Electrician is not on-site and checks the voltage below the roof deck to verify the proper voltage at a later date.

Discussion

Questions?

2023 NERA Meeting

The National Electrical Reciprocal Alliance (NERA) meeting was hosted by Alaska and held in Anchorage this year. The meeting was on August 22 and 23, with Scott Damerow of Alaska as the Chair. NERA consists of 17 member states with a mission to encourage similar regulations, without lessoning the regulations of each member state, but trying to maintain some level of consistency to promote reciprocal agreements with states that have similar requirements.

There were 8 member states present, with 4 who attended through Teams. To ensure we had a quorum, it was decided prior to this meeting, and for this meeting only, we would allow attendance through Teams due to the difficulties some were having with attending in person.

The States that attended this meeting were:

- Alaska – Scott Damerow** Present
- Arkansas – David Gray** Present
- Iowa – Brian Young** Present
- Minnesota – Steven Dudley** Present
- Nebraska – Craig Thelen** Present
- New Mexico – Mike Padilla** Present
- North Dakota – James Schmidt** Present
- Texas – Jerry Daniels** Present
- Montana – Kelly Welsh** Present Teams
- Oklahoma – Ron Morris** Present Teams
- South Dakota – Pamela Scouten** Present Teams
- Wisconsin – Garry Krause** Present Teams

Topics of discussion:

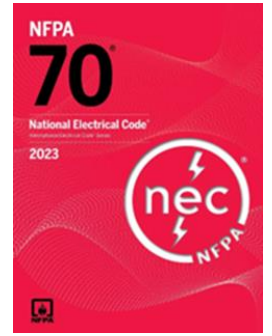
- NERA website
- Options for minor changes to NERA bylaws. A committee was formed which consists of:
    - Texas
    - Montana
    - Alaska
    - Minnesota
    - Nebraska
    - North Dakota
- Creating a NERA Journeyworker exam.
- NEC discussion with Tim McClintock:
    - 2023 changes
    - NFPA Link
    - 2026 with 9 chapters, and reorganization of the NEC to increase to 30 chapters in 2029.
- Utah has requested to rejoin NERA. We are looking into this.
- Nebraska is in the process of creating a power limited license. North Dakota and Minnesota explained their licensing requirements.
- Texas discussed PLT and appliance licensing.
- Journeyworker ratio.
- Discussed the NERA brochure and updating our mission statement.
- Montana to host the 2024 meeting.
- Arkansas to host the 2025 meeting.

Class 4 Systems - Licensing

DEPARTMENT OF LABOR AND INDUSTRY

Electrical Act Review

2023 NEC adoption on July 1st



- Introduction of **Article 726** Fault–Managed Power Systems
- Proposed NEC structure changes

The department is reviewing policy changes that would impact our division.

- Remove references to articles and sections
- Add text to include inspections and the fees associated
- This discussion is mainly to determine department policy regarding the licensing requirements

326B.31 Subdivision 29 - Definitions

Assuming that we add Class 4 systems to the Technology Circuit and System definition.

Subd. 29. **Technology circuits or systems.** "Technology circuits or systems" means class 2, ~~or~~ class 3, or Class 4, circuits or systems for, but not limited to, remote control, signaling, control, alarm, and audio signal, including associated components as covered by the National Electrical Code, ~~articles 640, 645, 650, 725, 760, 770, and 780~~, and which are isolated from circuits or systems other than class 2 or class 3 by a demarcation ~~and are not process control circuits or systems~~; antenna and communication circuits or systems as covered by ~~chapter 8 of~~ the National Electrical Code; and circuitry and equipment for low-voltage lighting, limited to a class 2 or class 3 power supply ~~indoor lighting and outdoor landscape lighting systems that are supplied by the secondary circuit of an isolating power supply operating at 30 volts or less~~ as covered by the National Electrical Code~~, article 411~~. The planning, laying out, installing, altering, and repairing of technology circuits or systems must be performed in accordance with the applicable requirements of the National Electrical Code pursuant to section 326B.35.

326B.33 Subdivision 21(b) - Licensing

Assuming that class 4 systems are considered a Technology Circuit or System, the proposed language would require licensing and direct supervision (3:1).

(1) in other than residential dwellings, class 2 or class 3 remote control circuits that control circuits or systems other than class 2 or class 3, except circuits that interconnect these systems through communication, alarm, and security systems are exempted from this paragraph;

(2) class 2 or class 3 circuits in electrical cabinets, enclosures, or devices containing physically unprotected circuits other than class 2 or class 3; or

(3) class 4 circuits or systems; or

(~~3~~4) ~~-~~technology circuits or systems in hazardous classified locations as covered by ~~chapter 5 of~~ the National Electrical Code.

326B.36 Subdivision 2(b)- Inspections

Assuming that class 4 systems are considered a Technology Circuit or System, the proposed language would require inspections.

(b) The inspection requirements in paragraph (a) apply to:

(1) class 2 or class 3 remote control circuits that control circuits or systems other than class 2 or class 3, except circuits that interconnect these systems exempted by section 326B.33, subdivision 21, paragraph (b), other than fire alarm; class 2 or class 3 circuits in electrical cabinets, enclosures, or devices containing physically unprotected circuits other than class 2 or class 3; or technology circuits and systems in hazardous classified locations as covered by ~~chapter 5 of~~ the National Electrical Code;

~~(1)~~(2) class 4 circuits or systems;

~~(2)~~(3) fire alarm systems, other than in one- or two-family dwellings, as defined in ~~articles 100 and 760 of~~ the National Electrical Code;

~~(3)~~(4) technology circuits and systems contained within critical care areas of health care facilities as defined by the safety standards identified in section 326B.35, including, but not limited to, anesthesia and resuscitative alarm and alerting systems, medical monitoring, and nurse call systems;

~~(4)~~(5) physical security systems within detention facilities; and

326B.37 Subdivision 6(l)- Fees

(h) The fee for all wiring installed on center pivot irrigation booms is $35 plus $5 for each electrical drive unit.

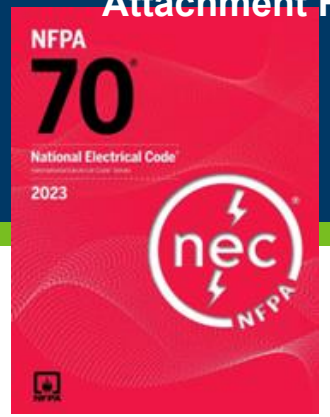
(i) The fee for retrofit modifications to existing lighting fixtures is 25 cents per luminaire.

(j) When a separate inspection of a concrete-encased grounding electrode is performed, the fee is $35.

(k) The fees required by subdivisions 3 and 4 are doubled for installations over 600 volts.

(l) The fee for a class 4 circuit or system transmitter, receiver and utilization equipment is 50 cents for each system device or apparatus.

Fault-Managed Power



Article 100 Definition

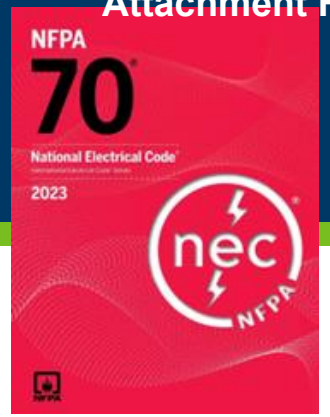
Fault-Managed Power (FMP).

A powering system that monitors for faults and controls current delivered to ensure fault energy is limited. (726) (CMP-3)

Informational Note No. 1: The monitoring and control systems differentiate fault-managed power from electric light and power circuits; therefore, alternative requirements to those of Chapters 1 through 4 are given regarding minimum wire sizes, ampacity adjustment and correction factors, overcurrent protection, insulation requirements, and wiring methods and materials.

Informational Note No. 2: A fault-managed power circuit is also commonly referred to as a Class 4 circuit.

Fault-Managed Power Systems



A Fault-Managed Power System (FMPS) is defined as “a powering system that monitors for faults and controls power current delivered to ensure fault energy is limited.” Class 4 systems leverage Fault-Managed power (FMP) technology. These systems are not power limited and can deliver hundreds or thousands of watts of power. However, these systems intelligently limit the amount of energy that can go into a fault. Limiting the fault energy mitigates the risk of shock or fire and allows the installation of Class 4 circuits using methods like power-limited circuits.

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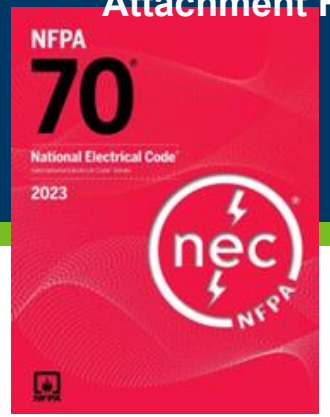
Fault-Managed Power Systems



Shock and Fire Protection

Class 4 circuits may be AC or DC and up to 450V peak. Class 4 circuits are constantly monitored for fault events. Despite the higher voltages, FMPS have a similar risk for fire and shock when compared to power-limited circuits because the FMPS limits the fault energy.

For example, if a person unintentionally comes in contact with the wires they may perceive a shock, but the system will limit the energy into the person to levels that will prevent shock injury and allow them to let go of the circuit. These systems can do this because they are built with electronics that can turn off power to the circuit within milliseconds, faster than a blink of an eye.

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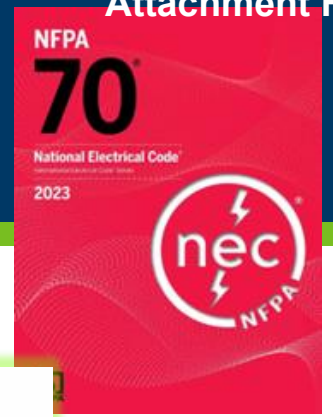
Fault-Managed Power Systems

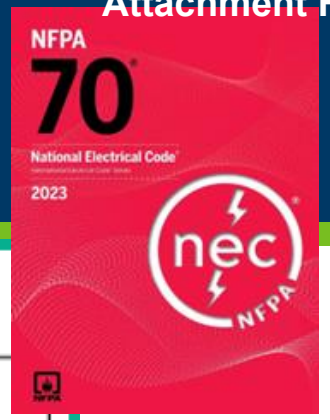


Shock and Fire Protection

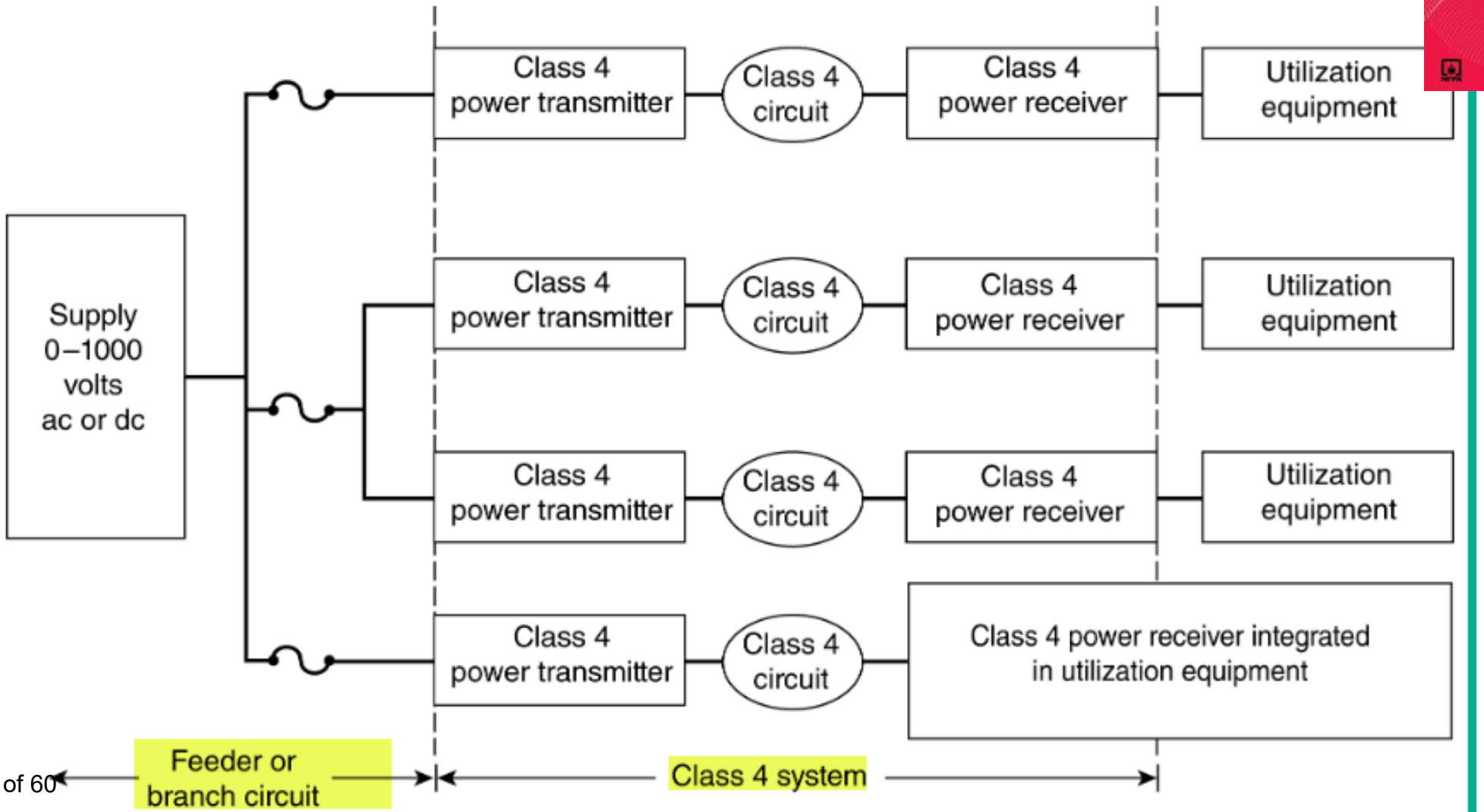
Summary of Fault Protections for GFCI, AFCI and FMPS

Hazard	Fault Type	GFCI	AFCI	FMPS
Shock	Line-to-Earth	✓	✓	✓
	Line-to-Line	✗	✗	✓
Fire	Series Arc	✗	✓	✓
	Parallel Arc	✗	✓	✓
	Line-to-Line Resistive	✗	✗	✓
	Series Resistive	✗	✗	✓

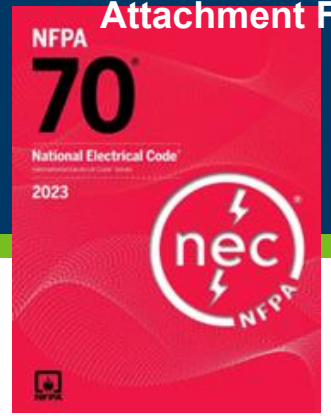
Article 726



Informational Note Figure 726.121 Class 4 Circuits.



Article 726 – Cable installation



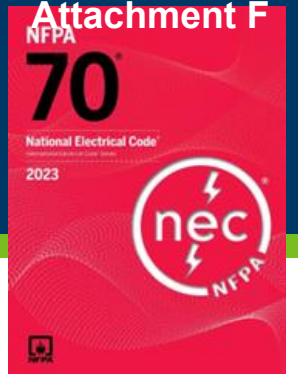
726.3 Other Articles.

The listing and installation of cables for Class 4 circuits shall comply with Article 722. Only those sections of Article 300 referenced in Article 722 shall apply to Class 4 circuits.

726.136(A) General.

Cables and conductors of Class 4 circuits shall not be placed in any cable, cable tray, compartment, enclosure, manhole, outlet box, device box, raceway, or similar fitting with conductors of electric light, power, Class 1, non–power-limited fire alarm, and medium-power network-powered broadband communications circuits unless permitted by 726.136(B) through (H).

Article 726 – Other takeaways



- Article 722 wiring methods (limited energy). The flexibility of Class 4 to install power delivery alongside communications greatly simplifies installations by converging power and data to the same pathway.
- Article 726 contains some requirements for the connection hardware used for Class 4 circuits. The cables, transmitter, receiver and components associated must be listed with the appropriate ratings. The connectors used may not be interchangeable with other non-power limited circuits.
- Standards are in place and testing is being done (UL 1400-1 and UL 1400-2)

Proposed new structure of the NEC

Chapter 4 Wiring and Protection for Limited Energy Systems		Chapter 14 in 2026 NEC and relocated to Chapter 4 in 2029 NEC
400	Wiring Requirements and Materials	
405	Conductors and Cables (Including Listing and Flammability)	722
406	Use and Identification of Conductors	
430	Interior Cabling Systems (Part I- Class 2 & 3, Part II - Class 4)	
435	Exterior Cabling Systems (Outside Plant)	
440	Overcurrent Protection	724, 725, 726
442	Overvoltage Protection	Chapter 8
450	Grounding and Bonding	

Discussion

Should a Class 4 system be considered a technology system when enforcing our licensing requirements?

Process Control Circuits and Systems

DEPARTMENT OF LABOR AND INDUSTRY

Electrical Act Review

As a part of the department policy review, the department is considering removal of “Process Control Circuits or Systems”

326B.31 Subd. 26.Process control circuits or systems. "Process control circuits or systems" are circuits or systems, regardless of electrical classification, that are integrated with a manufacturing, mining, energy, finishing, conveyance of equipment or product, material handling or packaging process that makes or assembles, or similar process. Process control systems does not include premises network and communication systems whose purpose or function is not dedicated to process control circuits or systems.

326B.31 Subd. 26.Process control circuits or systems.

Why remove the language?

- Hard to define and identify in the field.
- Enforcement: Distinction between Technology System and Electrical Contractor work. (Hard to enforce)
- Licensing laws are dictated by the power supply.

§ Subd. 26. **Process control circuits or systems.** "Process control circuits or systems" are circuits or systems, regardless of electrical classification, that are integrated with a manufacturing, mining, energy, finishing, conveyance of equipment or product, material handling or packaging process that makes or assembles, or similar process. Process control systems does not include premises network and communication systems whose purpose or function is not dedicated to process control circuits or systems.

326B.31 Subd. 26.Process control circuits or systems.

Important Information:

Process control circuits or systems, the term, is only used in the Electrical Statute in the definition of Technology circuits or systems.

In Minnesota Rule 3800 and 3801, the language is only found in 3800, in reference to time accrual toward an electrical license.

“wiring and maintaining process control circuits or systems: minimum experience of zero months, maximum credit allowance is _____months; and ”

Question

What is the Board's position on removing the term "Process Control Circuits or Systems"?

DEPARTMENT OF LABOR AND INDUSTRY

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443 Lafayette Road North
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dli.ccldboards@state.mn.us

Mr. Lawrence Ayer
NEC Correlating Committee, Chair
2867 Stanton Avenue
Cincinnati OH 45206

Dear Mr. Ayer,

The Minnesota Board of Electricity represents many electrical stakeholder groups across our state. The membership of the Board represents: inspectors, rural electric suppliers, electrical contractors, licensed workers, technology system contractors, engineers, and the public. One of the main duties of the Board is to adopt the most current edition of the National Electrical Code (NEC). On behalf of the Minnesota State Board of Electricity membership, I am excited to express our support for the proposed NEC structure and realignment. The new arrangement, as proposed, will make the NEC a more user-friendly document, and thus support the electrical industry in Minnesota through clear understanding and enforcement.

The Board has reviewed the National Electrical Code Correlating Committee's White Paper *Keeping the NEC® Relevant - Is Now the Time to Modernize?* and agrees that based on industry trends, a change to the NEC's structure may be in order. The Board supports the proposed structure changes for the following reasons:

- Continued improvement of the medium voltage articles
- Reorganization and streamlining of the limited energy articles, understanding that these systems are not considered "special systems" as they are grouped in Chapters 7 and 8. These systems are very common in all types of buildings and structures
- Expansion and realignment to incorporate future technologies
- Parallel numbering with common chapters and articles to enhance user understanding which promotes code compliance and safe installations

As the process continues, please be aware of the transitional impact that these future changes will have on existing trades people and electrical industry personnel that have used the NEC as a resource for years.

In conclusion, the Board agrees with the statement, "… the structure of the NEC plays a critical role for personnel in learning, understanding, applying, and enforcing the requirements established within this regulatory code", and supports the work of the Correlating Committee.

Sincerely,

Board of Electricity- Department Liaison