Code Amendment Proposal Petition

NH Department of Safety
Office of the State Fire Marshal
Board of Fire Control
33 Hazen Drive, Concord, NH 03305
Phone: 603-223-4289 Fax: 603-223-4294
www.nh.gov/safety/divisions/firesafety

RE: 20-05-15
EXHIBIT #:_____

PETITIONER INFORMATION

Name: Paul Parisi

Date: 12/10/2020

Representing: State Fire Marshal's Office

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City: Concord

State: NH

Zip: 03305

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PROPOSED CODE LANGUAGE

This proposed code amendment (check one):

- [x] Amends (code, edition, section)
- [ ] Adopts a new code section (code, edition)
- [ ] Repeals (code, edition, section)

Code, Edition, and/or section affected:

2015 edition of NFPA 1 Section 11.12

You must provide language for review by the Board of Fire Control. Failure to provide language will invalidate the petition. Please use the following format to show additions and deletions from the code: Strike through = deleted text. Underline and bold = **New Text**

Proposed Language

11.12.2.1.7 Structural Analysis
Photovoltaic systems installed on roofs shall be reviewed and stamped by a NH licensed structural engineer.

11.12.2.2.2 One-and Two Family Dwellings and Townhouses.
Photovoltaic systems installed in one-and two-family dwellings shall be in accordance with this section.

Exception: Photovoltaic systems not occupying more than 50% of the aggregate roof area of a dwelling. When applying this exception a minimum 18" ridge setback shall be required unless approved by the AHJ.

PETITION CRITERIA

Attach to this petition written responses to the following questions. If needed, include in the response an explanation as to why a question does not apply to your proposed code petition. The Board may reject an incomplete petition.

Questions:

1. Is your proposed code amendment necessary to correct any unforeseen or probable outcomes resulting from the application of a code section, and if so, why?
2. Is your proposed code amendment needed to protect the health, safety, welfare, comfort and/or security of occupants and the public, and if so, why?
3. Does your proposed code amendment correct inadequate application by a code section to a method, material, or design, and if so, why?
4. Is your proposed code amendment necessary to correct unique geographic or climatic conditions within New Hampshire, and if so, why?
5. Is your proposed code amendment needed to eliminate conflicting, obsolete, or duplicative code provisions or standards among New Hampshire-adopted codes, statutes, or regulations, and if so, why?
6. Does your proposed code amendment provide for the use of unique or emerging technologies or promote advances in construction methods, devices, materials and techniques, and if so, how?
7. Does your proposed code amendment create any adverse fiscal impact or cost savings for the general public, the construction industry, local and state governments, or small businesses? If so, please describe the added or reduced cost of the proposed code amendment, the adverse fiscal impact or cost savings in relation to the current NH State Fire Code, and any standards of measure used to arrive at the result given.

PETITIONER'S SIGNATURE

Signature: _____ Date: 12/10/2020

Copyright Notice: *By signing this proposed code amendment petition, I understand and acknowledge that the work contained in this petition is original, or if not original, I have the right to copy the work. By signing this work, I understand that any rights I may have in this work, including any form of derivative works and compilations, are assigned to the N.H. Board of Fire Control. I also understand that I do not retain or acquire any rights once this work is used in an NH Board of Fire Control publication.*

APPLICATION PROCESSING

The Office of the State Fire Marshal reviews all applications and will determine if the application is in conflict with any existing law or rule. The division will return any application found to be in conflict with any existing statute or rule along with the specific reasons for the returned application.

Not Approved: ☐ Approved: ☐ Approved with Modifications: ☐
Hearing Date:_____ Voting Date:_____
Chair's Signature:_____ Date:_____
Printed Name:_____
Fire Marshal's Signature:_____ Date:_____
Printed Name:_____
Commissioner's Signature:_____ Date:_____
Printed Name:_____

NATIONAL FIRE CODES®

11.12 Photovoltaic Systems.

11.12.1
Photovoltaic systems shall be in accordance with Section 11.12 and NFPA 70.

11.12.2 Building-Mounted Photovoltaic Installations.

11.12.2.1 * Marking.
Photovoltaic systems shall be permanently marked as specified in this subsection.

11.12.2.1.1 Main Service Disconnect Marking.
A label shall be permanently affixed to the main service disconnect panel serving alternating current (ac) and direct current (dc) photovoltaic systems. The label shall be red with white capital letters at least ¾ in. (19 mm) in height and in a nonserif font, to read: "WARNING: PHOTOVOLTAIC POWER SOURCE." The materials used for the label shall be reflective, weather resistant, and suitable for the environment.

11.12.2.1.2 Circuit Disconnecting Means Marking.
A permanent label shall be affixed adjacent to the circuit breaker controlling the inverter or other photovoltaic system electrical controller serving ac and dc photovoltaic systems. The label shall have contrasting color with capital letters at least ⅜ in. (10 mm) in height and in a nonserif font, to read: "PHOTOVOLTAIC DISCONNECT." The label shall be constructed of durable adhesive material or other approved material.

11.12.2.1.3 * Conduit, Raceway, Enclosure, Cable Assembly, and Junction Box Markings.
Marking shall be required on all interior and exterior dc conduits, raceways, enclosures, cable assemblies, and junction boxes.

11.12.2.1.3.1 Marking Locations.
Marking shall be placed on all dc conduits, raceways, enclosures, and cable assemblies every 10 ft (3048 mm), at turns, and above and below penetrations. Marking shall be placed on all dc combiner and junction boxes.

11.12.2.1.3.2 * Marking Content and Format.
Marking for dc conduits, raceways, enclosures, cable assemblies, and junction boxes shall be red with white lettering with minimum ⅜ in. (10 mm) capital letters in a nonserif font, to read: "WARNING: PHOTOVOLTAIC POWER SOURCE." Marking shall be reflective, weather resistant, and suitable for the environment.

11.12.2.1.4 Secondary Power Source Markings.
Where photovoltaic systems are interconnected to battery systems, generator backup systems, or other secondary power systems, additional signage acceptable to the AHJ shall be required indicating the location of the secondary power source shutoff switch.

11.12.2.1.5 Installer Information.
Signage, acceptable to the AHJ, shall be installed adjacent to the main disconnect indicating the name and emergency telephone number of the installing contractor.

11.12.2.1.6 * Inverter Marking.
Markings shall not be required for inverters.

11.12.2.2 Access, Pathways, and Smoke Ventilation.

11.12.2.2.1 General.
Access and spacing requirements shall be required to provide emergency access to the roof, provide pathways to specific areas of the roof, provide for smoke ventilation opportunity areas, and to provide emergency egress from the roof.

11.12.2.2.1.1 Exceptions.
The AHJ shall be permitted to grant exceptions where access, pathway, or ventilation requirements are reduced due to any of the following circumstances:

(1) Proximity and type of adjacent exposures
(2) Alternative access opportunities, as from adjoining roofs
(3) Ground level access to the roof
(4) Adequate ventilation opportunities beneath photovoltaic module arrays
(5) Adequate ventilation opportunities afforded by module set back from other rooftop equipment
(6) Automatic ventilation devices
(7) New technologies, methods, or other innovations that ensure adequate fire department access, pathways, and ventilation opportunities

11.12.2.2.1.2 Pitch.
Designation of ridge, hip, and valley shall not apply to roofs with 2-in-12 or less pitch.

11.12.2.2.1.3 Roof Access Points.
Roof access points shall be defined as areas where fire department ladders are not placed over openings (windows or doors), are located at strong points of building construction, and are in locations where they will not conflict with overhead obstructions (tree limbs, wires, or signs).

11.12.2.2.2 One- and Two-Family Dwellings and Townhouses.
Photovoltaic systems installed in one- and two-family dwellings and townhouses shall be in accordance with this section.

11.12.2.2.2.1 Access and Pathways.

11.12.2.2.2.1.1 Hip Roof Layouts.
Photovoltaic modules shall be located in a manner that provides a 3 ft (914 mm) wide clear access pathway from the eave to the ridge of each roof slope where the photovoltaic modules are located. The access pathway shall be located at a structurally strong location of the building, such as a bearing wall.

Exception: The requirement of 11.12.2.2.2.1.1 shall not apply where adjoining roof planes provide a 3 ft (914 mm) wide clear access pathway.

11.12.2.2.2.1.2 Single Ridge Layouts.
Photovoltaic modules shall be located in a manner that provides two 3 ft (914 mm) wide access pathways from the eave to the ridge on each roof slope where the modules are located.

11.12.2.2.2.1.3 Hip and Valley Layouts.
Photovoltaic modules shall be located no closer than 1½ ft (457 mm) to a hip or valley if modules are to be placed on both sides of the hip or valley. Where modules are located

on only one side of a hip or valley of equal length, the photovoltaic modules shall be allowed to be placed directly adjacent to the hip or valley.

11.12.2.2.2 Ridge Setback.

Photovoltaic modules shall be located not less than 3 ft (914 mm) below the ridge.

11.12.2.2.3 Buildings Other Than One- and Two-Family Dwellings and Townhouses.

Photovoltaic energy systems installed in any building other than one- and two-family dwellings and townhouses shall be in accordance with this section. Where the AHJ determines that the roof configuration is similar to a one- and two-family dwelling or townhouse, the AHJ shall allow the requirements of 11.12.2.2.2.

11.12.2.2.3.1 Access.

A minimum 4 ft (1219 mm) wide clear perimeter shall be provided around the edges of the roof for buildings with a length or width of 250 ft (76.2 m) or less along either axis. A minimum 6 ft (1828 mm) wide clear perimeter shall be provided around the edges of the roof for buildings having length or width greater than 250 ft (76.2 m) along either axis.

11.12.2.2.3.2 Pathways.

Pathways shall be established as follows:

(1) Pathways shall be over areas capable of supporting the live load of fire fighters accessing the roof.
(2) Centerline axis pathways shall be provided in both axes of the roof.
(3) Centerline axis pathways shall run where the roof structure is capable of supporting the live load of fire fighters accessing the roof.
(4) Pathways shall be in a straight line not less than 4 ft (1219 mm) clear to skylights, ventilation hatches, and roof standpipes.
(5) Pathways shall provide not less than 4 ft (1219 mm) clear around roof access hatches with at least one not less than 4 ft (1219 mm) clear pathway to the parapet or roof edge.

11.12.2.2.3.3 Smoke Ventilation.

Ability for fire department smoke ventilation shall be provided in accordance with this section.

11.12.2.2.3.3.1 Maximum Array.

Arrays of photovoltaic modules shall be no greater than 150 ft (45.7 m) × 150 ft (45.7 m) in distance in either axis.

11.12.2.2.3.3.2 Ventilation Options.

Ventilation options between array sections shall be one of the following:

(1) A pathway 8 ft (2438 mm) or greater in width
(2) A pathway 4 ft (1219 mm) or greater in width and bordering on existing roof skylights or ventilation hatches
(3) A pathway 4 ft (1219 mm) or greater in width and bordering 4 ft (1219 mm) × 8 ft (2438 mm) venting cutouts options every 20 ft (6096 mm) on alternating sides of the pathway

11.12.2.2.4 Location of Direct Current (DC) Conductors.

11.12.2.2.4.1

Exterior-mounted dc conduits, wiring systems, and raceways for photovoltaic circuits shall be located as close as possible to the ridge, hip, or valley and from the hip or valley as directly as possible to an outside wall to reduce trip hazards and maximize ventilation opportunities.

11.12.2.2.4.2

Conduit runs between subarrays and to dc combiner boxes shall be designed to take the shortest path from the array to the dc combiner box.

11.12.2.2.4.3

DC combiner boxes shall be located so that conduit runs are minimized in the pathways between arrays.

11.12.2.2.4.4

DC wiring shall be run in metallic conduit or raceways where located within enclosed spaces in a building.

11.12.2.2.4.4.1

Where dc wiring is run perpendicular or parallel to load-bearing members, a minimum 10 in. (254 mm) space below roof decking or sheathing shall be maintained.

11.12.3 Ground-Mounted Photovoltaic System Installations.

Ground-mounted photovoltaic systems shall be installed in accordance with 11.12.3.1 through 11.12.3.3.

11.12.3.1 * Clearances.

A clear area of 10 ft (3048 mm) around ground-mounted photovoltaic installations shall be provided.

11.12.3.2 * Noncombustible Base.

A gravel base or other non-combustible base acceptable to the AHJ shall be installed and maintained under and around the installation.

11.12.3.3 * Security Barriers.

Fencing, skirting, or other suitable security barriers shall be installed when required by the AHJ.

UPDATED LANGUAGE - AGREED TO AT BOFC HEARING
11/20/19
APPROVED WITH MODIFICATIONS

MODIFICATIONS:

Exhibit RE 19-03-15 Amendment

November 20, 2019

11.12.2.1.7 Structural Analysis

Photovoltaic systems installed on roofs shall be reviewed and stamped by a NH licensed professional engineer.

11.12.2.2.2 One-and Two-Family Dwellings and Townhouses.

Photovoltaic systems installed in one- and two-family dwellings and townhouses shall be in accordance with this section.

Exception: Photovoltaic systems not occupying more than 50% of the aggregate roof area of one and two-family dwellings only. When applying this exception a minimum 18" ridge setback shall be required unless approved by the AHJ.