



STATE OF WASHINGTON
STATE BUILDING CODE COUNCIL

May 2018
Log No. _____

1. State Building Code to be Amended:

- | | |
|---|---|
| <input type="checkbox"/> International Building Code | <input type="checkbox"/> International Mechanical Code |
| <input type="checkbox"/> ICC ANSI A117.1 Accessibility Code | <input type="checkbox"/> International Fuel Gas Code |
| <input type="checkbox"/> International Existing Building Code | <input type="checkbox"/> NFPA 54 National Fuel Gas Code |
| <input type="checkbox"/> International Residential Code | <input type="checkbox"/> NFPA 58 Liquefied Petroleum Gas Code |
| <input checked="" type="checkbox"/> International Fire Code | <input type="checkbox"/> Wildland Urban Interface Code |
| <input type="checkbox"/> Uniform Plumbing Code | |

For the Washington State Energy Code, please see specialized [energy code forms](#)

Section(s): 105.5.14.1,

Section 320.4, 320.4.1 (New), 320.4.1.2 (New), 320.4.1.3 (New), 320.4.2.3, 403.10.6

Title:

Storage requirements, Limited indoor storage in containers, Used or unwanted battery collection, Waste storage, Miscellaneous storage, Fire Protection systems

2. Proponent Name (Specific local government, organization or individual):

Proponent: Ken Brouillette

Title: Technical Code Coordinator

Date:9/3/2024

3. Designated Contact Person:

Name: Ken Brouillette

Title: Technical Code Coordinator

Address: 220 3rd Ave S. , Seattle, WA, 98104

Office Phone: (206)386-1455

Cell: ()

E-Mail address: ken.brouillette@seattle.gov

4. Proposed Code Amendment. Reproduce the section to be amended by underlining all added language, striking through all deleted language. Insert new sections in the appropriate place in the code in order to continue the established numbering system of the code. If more than one section is proposed for amendment or more than one page is needed for reproducing the affected section of the code, additional pages may be attached.

Clearly state if the proposal modifies an existing amendment or if a new amendment is needed. If the proposal modifies an **existing amendment**, show the modifications to the existing amendment by underlining all added language and striking through all deleted language. If a new amendment is needed, show the modifications to the **model code** by underlining all added language and striking through all deleted language.

Code(s) 2024 IFC & WAC 51-54
(New), 320.4.1, 320.4.1.2 (New), 320.4.1.3 (New),
320.4.2.3, 403.10.6

Section(s) 105.5.14.1, 320.4, 320.4.1

Enforceable code language must be used.
Amend section to read as follows:

WAC 51-54A-0105

~~**105.5.14.1 Lithium batteries.** An operational permit is required for an accumulation of more than 15 cubic feet (0.42 m) of lithium-ion and lithium metal batteries, where required by Section 322.1~~ **RESERVED**

WAC 51-54A-3220

Lithium-ion and Lithium Metal batteries storage

3220.1 General. The storage of lithium-ion and lithium metal batteries shall comply with Section 3220.

EXCEPTIONS: 1. New or refurbished batteries installed in the equipment, devices, or vehicles they are designed to power.

2. New or refurbished batteries packed for use with the equipment, devices, or vehicles they are designed to power.

3. Batteries in original retail packaging that are rated at not more than 300 watt-hours or less for lithium-ion batteries or contain not more than 25 grams or less of lithium metal for lithium metal batteries.

4. Temporary storage of batteries or battery components during the battery manufacturing process prior to completion of final quality control checks.

5. Temporary storage of batteries during the vehicle manufacturing or repair process.

3220.2 Permits. Permits shall be required for an accumulation of more than 15 cubic feet (0.42 m³) of lithium-ion and lithium metal batteries, other than batteries listed in the exceptions to Section 3220.1, as set forth in Section 105.5.14.129.

3220.3 Fire safety plan. A fire safety plan shall be provided in accordance with Section 403.10.6404. In addition, the fire safety plan shall include emergency response actions to be taken upon detection of a fire or possible fire involving lithium-ion or lithium metal battery storage

3220.4 Storage requirements.

Lithium-ion and lithium metal batteries shall be stored in accordance with Section 320.4.1, 320.4.2 or 320.4.3, as applicable.

320.4.1 Limited indoor storage in containers. A maximum volume of 15 cubic feet (0.42 m³) of lithium-ion or lithium metal batteries per fire area shall be permitted where stored in accordance with any of the methods provided in Sections 320.4.1.1 through 320.4.1.3.

~~322.4.1~~ **320.4.1.1 Limited indoor storage in containers Used or unwanted battery collection.** ~~Not more than 15 cubic feet (0.42 m³) of lithium ion or lithium metal batteries be permitted to be stored in containers in accordance with all of the following:~~

Areas where used or unwanted lithium-ion or lithium metal batteries are collected from the public or employees shall comply with all of the following:

1. Containers shall be open top and constructed of noncombustible materials or shall be approved for battery collection.
2. Individual containers and groups of containers shall not exceed a capacity of 7.5 cubic feet (0.21 m³).
3. A second container or group of containers shall be separated by not less than 3 feet (914 mm) of open space or 10 feet (3048 mm) of space that contains combustible materials.
4. Containers shall be located not less than 5 feet (1524 mm) from exits or exit access doors.

320.4.1.2 Waste storage. Waste batteries that are packaged in accordance with DOTn shipping requirements.

320.4.1.3 Miscellaneous storage. Limited storage of lithium-ion or lithium metal batteries, other than collection of used or unwanted batteries, or waste storage, shall comply with any of the following:

1. Stored in containers complying with Section 320.4.1.1.
2. Stored in original wholesale packaging or containers complying with DOTn regulations.
3. Approved battery storage cabinets.
4. Other approved storage methods.

3220.4.2 Indoor storage areas. Indoor storage areas for lithium-ion and lithium metal batteries, other than those complying with Section 322.4.1, shall comply with Sections 322.4.2.1 through 322.4.2.6

3220.4.2.1 Technical opinion and report. Where required by the *fire code official* a technical opinion and report complying with Section 104.8.2 ~~2.2~~ shall be prepared to evaluate the fire and explosion risks associated with the indoor storage area and to make recommendations for fire and explosion protection. The report shall be submitted to the *fire code official* and shall require the *fire code official's* approval prior to issuance of a permit. In addition to the requirements of Section 104.8.2~~2.2~~, the technical opinion and report shall specifically evaluate the following:

1. The potential for deflagration of flammable gases released during a thermal runaway event.
2. The basis of design for an automatic sprinkler system or other approved fire suppression system. Such design basis shall reference relevant full-scale fire testing or another approved method of demonstrating sufficiency of the recommended design.

3220.4.2.2 Construction requirements. Where indoor storage areas for lithium-ion and lithium metal batteries are located in a building with other uses, battery storage areas shall be separated from the remainder of the building by 2-hour rated *fire barriers* or *horizontal assemblies*. *Fire barriers* shall be constructed in accordance with Section 707 of the International Building Code, and horizontal assemblies shall be constructed in accordance with Section 711 of the International Building Code.

EXCEPTIONS: 1. Where battery storage is contained in one or more approved prefabricated portable structures providing a complete ~~two~~ 2-hour fire resistance rated enclosure, *fire barriers* and *horizontal assemblies* are not required.

2. Where battery storage is limited to new batteries in packaging that has been demonstrated to and approved by the *fire code official* as sufficient to isolate a fire in packaging to the package interior, *fire barriers* and *horizontal assemblies* are not required.

3220.4.2.3 Fire protection systems. Indoor storage areas for lithium-ion and lithium metal batteries shall be protected by an automatic sprinkler system complying with Section 903.3.1.1 or an approved alternative fire suppression system. ~~The system design shall be based on recommendations in the approved technical opinion and report required by Section 322.4.2.1.~~

3220.4.2.4 Fire alarm systems. Indoor storage areas for lithium-ion and lithium metal batteries shall be provided with an *approved* automatic fire detection and alarm system complying with Section 907. The fire detection system shall use air-aspirating smoke detection, radiant energy-sensing fire detection, or both.

3220.4.2.5 Explosion control. Where the approved technical opinion and report required by Section 3220.4.2.1 recommends explosion control, explosion control complying with Section 911 shall be provided.

3220.4.2.6 Reduced requirements for storage of partially charged batteries. Indoor storage areas for lithium-ion and lithium metal batteries with a demonstrated state of charge not exceeding 30 percent shall not be required to comply with Section 3220.4.2.1, 3220.4.2.2, or 3220.4.2.5, provided that procedures for limiting and verifying that the state of charge will not exceed 30 percent have been *approved*.

~~**403.10.6 Buildings with lithium-ion or lithium metal battery storage.** An approved fire safety plan in accordance with Section 404 shall be prepared and maintained for buildings with lithium-ion or lithium metal battery storage.~~**RESERVED**

5. Briefly explain your proposed amendment, including the purpose, benefits and problems addressed.

WAC 51-54-0105 **Permits.** had a section added for Lithium Batteries and it is no longer needed since the 2024 IFC now has a permit in Section 105.5.29 for Lithium battery storage.

The current WAC 51-54-0322 was based on the 2024 IFC. The 2024 IFC now has renumbered and titled the section to 320. This proposal shows the renumbering of the current WAC to correspond with the new numbering in the 2024 IFC.

WAC 51-54-0403 had section 403.10.6 added and it is no longer necessary as the 2024 IFC has the same section covering these fire safety and evacuation plans.

Additional technical changes are as follows.

320.4.1.1 Revised the Limited Storage section to clarify the open top container storage (e.g., batteries placed loose into drums) are for collection of used or unwanted batteries from public or employees (identical to NFPA 855).

320.4.1.2 adds a provision for limited storage DOTn regulations require batteries placed in bags to prevent short circuiting, and space between filled with vermiculite. This is common practice and is safer than loose used battery collection into open drums. The quantity limit is still limited to 15 cf.

320.4.1.3 Adds a section general miscellaneous storage (still limited to 15 cf) to clarify that other storage configurations are allowed, and often are safer, than just the open top unwanted battery collection. This

includes storage in original wholesale shipping containers and DOT packaging which has undergone extensive testing for shipping for lithium-ion batteries and cells. Tests include impact, crushing, altitude, discharge, overcharge, thermal testing, external short circuit, vibration, and shock. Batteries and cells in packaging complying with transport regulations provide a high-level of safety. See <https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2021-09/Lithium-Battery-Guide.pdf>

320.4.2.3 – A revision is included to correct an oversight in this section. It required the automatic fire sprinkler system design to be based on a Technical Report per 320.4.2.1, however many scenarios will have batteries with less than 30% SOC which exempts the Technical Report requirement. 903.3.1.1 has also been revised to provide additional guidance on the automatic fire sprinkler system design for lithium-ion battery protection. This section should simply point to 903.

6. Specify what criteria this proposal meets. You may select more than one.

- The amendment is needed to address a critical life/safety need.
- The amendment clarifies the intent or application of the code.
- The amendment is needed to address a specific state policy or statute.
- The amendment is needed for consistency with state or federal regulations.
- The amendment is needed to address a unique character of the state.
- The amendment corrects errors and omissions.

7. Is there an economic impact: Yes No

If no, state reason: The change proposal is editorial in nature or a clarification. The core requirements relating to construction costs are currently included in the code now. Other than editorial clarifications, this proposal increases recognition of other currently available safe storage methods and eliminates an unnecessary technical report for those cases where storage is of batteries at 30% or less state of charge. These modifications reduce operating costs.

If yes, provide economic impact, costs and benefits as noted below in items a – f.

- a. **Life Cycle Cost.** Use the OFM Life Cycle Cost [Analysis tool](#) to estimate the life cycle cost of the proposal using one or more typical examples. Reference these [Instructions](#); use these [Inputs](#). Webinars on the tool can be found [Here](#) and [Here](#)). If the tool is used, submit a copy of the excel file with your proposal submission. If preferred, you may submit an alternate life cycle cost analysis.
- b. **Construction Cost.** Provide your best estimate of the construction cost (or cost savings) of your code change proposal.

\$[Click here to enter text.](#)/square foot

(For residential projects, also provide \$[Click here to enter text.](#)/ dwelling unit)

Show calculations here, and list sources for costs/savings, or attach backup data pages
- c. **Code Enforcement.** List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:
- d. **Small Business Impact.** Describe economic impacts to small businesses:
- e. **Housing Affordability.** Describe economic impacts on housing affordability:

- f. ***Other.*** Describe other qualitative cost and benefits to owners, to occupants, to the public, to the environment, and to other stakeholders that have not yet been discussed:

Please send your completed proposal to: sbcc@des.wa.gov

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.