

COMMUNITY DEVELOPMENT BUILDING

05/02/2023

Brian Kehler, Building Official

INTRODUCTION

SIGNIFICANT
CHANGES TO THE
2021 INTERNATIONAL
CODES WITH STATE
AMENDMENTS

INTERNATIONAL BUILDING CODE (IBC)

INTERNATIONAL RESIDENTIAL CODE (IRC) INTERNATIONAL FIRE CODE (IFC)

INTERNATIONAL WILDLAND URBAN INTERFACE CODE (IWUIC)

WASHINGTON STATE ENERGY CODE

DMC TITLE 10 UPDATES

Summary

Questions



INTRODUCTION

The International Codes are updated every three years. Each version must be formally adopted by the City. Duvall adopts the Washington State Codes which have amendments to the International Codes approved by the Washington State Building Code Council (SBCC). The following presentation highlights the significant changes from the 2018 to the 2021 Codes.





• 202 Definitions: Puzzle Room- type of special amusement area in which occupants are encouraged to solve a challenge to escape from a room or series of rooms. Penthouse- An enclosed, unoccupied rooftop structure used for sheltering mechanical and electrical equipment, tanks, elevators and related machinery, stairways, and vertical shaft openings.



• 404.5 Smoke control in atriums. In the evaluation of whether a smoke control system is required for an atrium condition, vertical opening protection consisting of a combination of both the atrium and a shaft enclosure is now recognized.

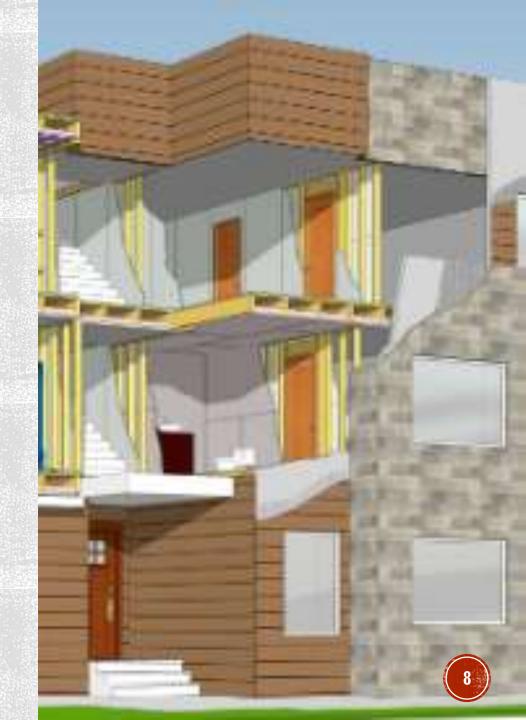
Activation of automatic-closing doors. In Group I-2
occupancies, the closing of automatic-closing doors on holdopen devices must now also occur upon activation of the fire
alarm system or automatic sprinkler system.





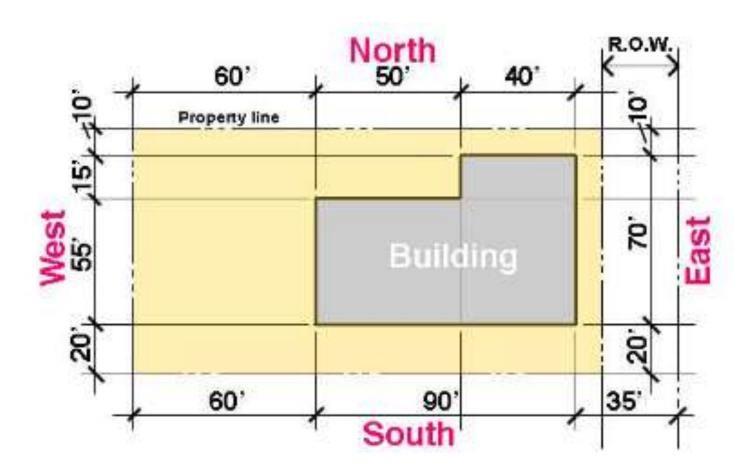
 411.5 Puzzle room exiting. Puzzle rooms are now regulated in a manner consistent with traditional special amusement areas. Special means of egress requirements have been established for puzzle rooms.

 414.2.3 Fire wall use for control areas. The scoping limitations of a fire wall's use to create separate buildings have been expanded through a new allowance for the number of control areas permitted.

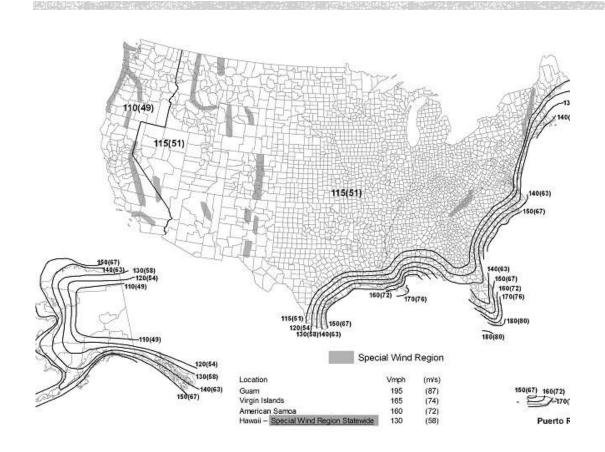




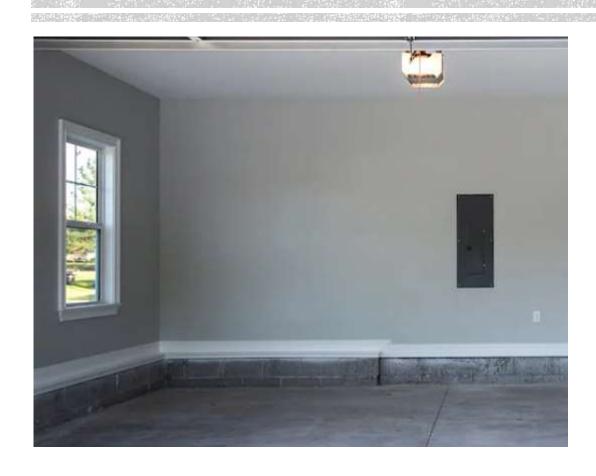
• 424 Play structures. The interior finish materials of play structures are now regulated for flame spread purposes. Play structures shall not be greater than 600 square feet in area, unless a special investigation, acceptable to the building official, has demonstrated adequate fire safety.



 506.3.2 Allowable area frontage increase. The methodology for establishing the permissible allowable area increase for frontage has been simplified by using a table.



• 301.2(2) Ultimate Design Wind Speed. Has been aligned with IBC and ASCE 7 maps. Structures designed for 110 mph.



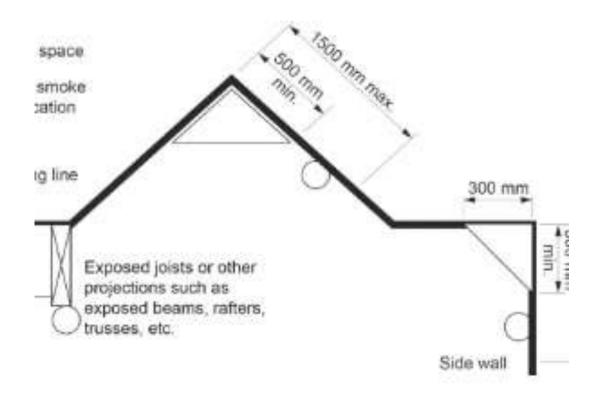
 302.5.1 Opening Protection. Has been clarified to state that doors separating the garage and dwelling must be self-latching, as well as selfclosing.



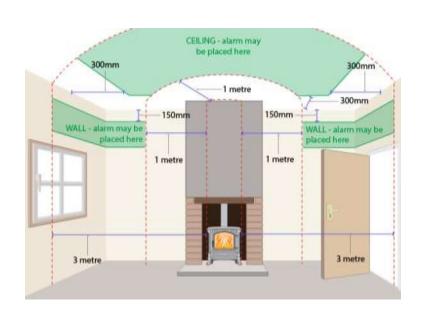
 310.1.1 Operational constraints and opening control devices. Clarifies that window opening control devices and fall prevention devices, complying with ASTM 2090, shall be allowed on emergency escape and rescue windows. The height of the mechanism is restricted to not more than 70" above the finished floor.



• 311.7 Stairways. Clarifies that stairways not within or attached to a building, porch, or deck are not regulated by this section. (Example: A stairway in the yard leading to a firepit area would not have to meet the riser height, tread depth, handrail, etc., requirements that a stairway inside of the house must meet.)



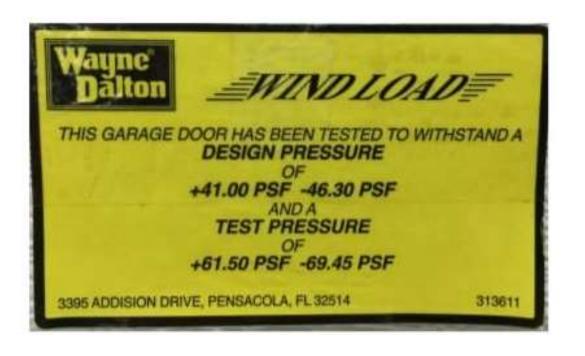
• 314.3 Locations. Is modified with a new location requirement for smoke alarms to address areas with high ceilings adjacent to hallways serving bedrooms. (In the hallway and in the room open to the hallway, where the ceiling height of a room open to a hallway serving bedrooms exceeds that of the hallway by 24" or more.)



additions. Is modified to require that carbon monoxide alarms be installed when there are repairs to, or replacement of, fuel fired mechanical systems.

• 326 Habitable Attics. Is modified to limit the area of a habitable attic to not greater than one-third of the floor area of the story below. The allowable area is allowed to be increased to not greater than one-half of the floor area of the story below when located within a dwelling unit equipped with a fire sprinkler system.





• 609.4.1 Garage door. Labeling has been added to require that all garage doors have a permanent label provided by the manufacturer. The label shall identify the door manufacturer, the model/series number, the wind pressure rating, the installation instruction drawing reference number, and the applicable test standard.

• N1101.14 (R401.3) Certificate. Is modified by requiring additional information related to the building thermal envelope, solar energy, Energy Rating Index, and the code edition be added to the energy certificate.

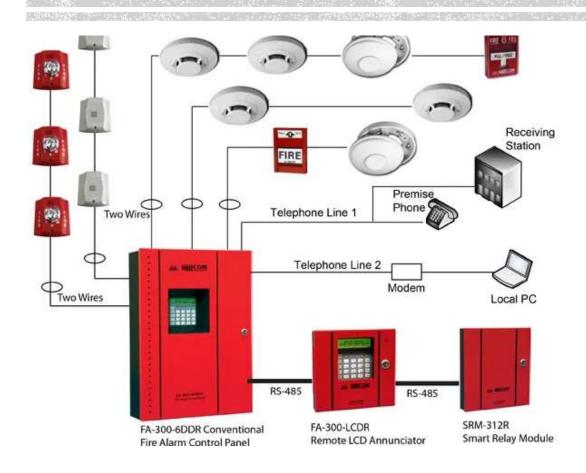
Builder, Permit Holder or Registered Design Pro- Print Name:	fessional	
Signature:		
Property Address:		
Date:		
Insulation Rating – List the value covering largest area to all that apply	R - Value	
Ceiling/roof:	R -	
Wall:	R -	
Floor:	R-	
Closed Crawl Space Wall:	R -	
Closed Crawl Space Floor:	R -	
Slab:	R -	
Basement Wall:	R-	
Fenestration:	Ì	
U-Factor		
Solar Heat Gain Coefficient (SHGC)		
Building Air Leakage		
☐ Visually inspected according to 402.4.2.1 OR		
Building Air Leakage Test Results (Sec. 402.4.2.2) ACH50 [Target: 5.0] or CFM50/SFSA [Target: 0.30]		
Name of Tester/Company:		
Date: Phone:		
Ducts:		
Insulation	R -	
Total Duct Leakage Test Result (Sect. 403.2.2) (CFM25 Total/100SF) [Target: 6]		
Name of Tester/Company:		
Date: Phone:		
Certificate to be displayed permanently		- 1



2021 INTERNATIONAL FIRE CODE

• 903.2.4.2 Group F-1 distilled spirits. An automatic sprinkler system shall be provided throughout a Group F-1 fire area used for the manufacture of distilled spirits.

2021 INTERNATIONAL FIRE CODE



• 1103.7.5 Group R-1. A fire alarm system and smoke alarms shall be installed in existing Group R1 occupancies in accordance with Sections 1103.7.5.1 through 1103.7.5.2.1.



2021 INTERNATIONAL FIRE CODE

• 1103.7.5.1 Group R-1 hotel and motel manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-1 hotels and motels more than one story in height or with more than 20 sleeping units.

2021 INTERNATIONAL WILDLAND URBAN INTERFACE CODE

- One of the big changes this cycle for Washington is the WUI Code which adds fire protection standards based on your proximity to wildlands and other areas with "vegetative fuels" that can contribute to wildfires.
- The City of Duvall is partnering with local jurisdictions in our region to bring awareness to our building community and hopefully provide clarity on some "prescriptive options to make this transition easier to understand.

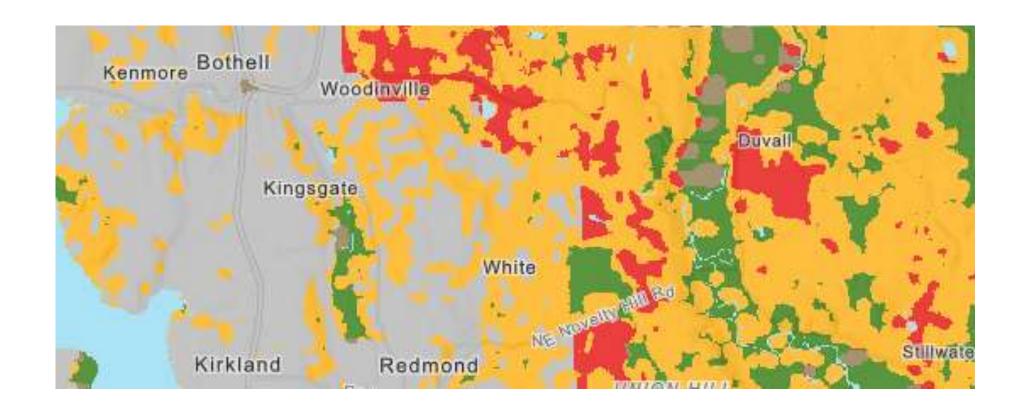
 DNR Map. Delineates your property into one of five interfaces.





2021 INTERNATIONAL WILDLAND URBAN INTERFACE CODE

- Current DNR map including interfaces.
- Urban Areas
- Wildland-Urban Interface
- Wildland-Urban Intermix
- Wildlands
- Long-Term Non buildable areas
- DNR map updated every Three years. Local municipalities are to update maps through "Findings of fact".

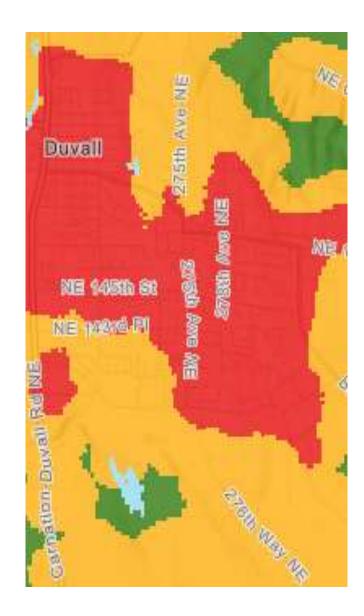


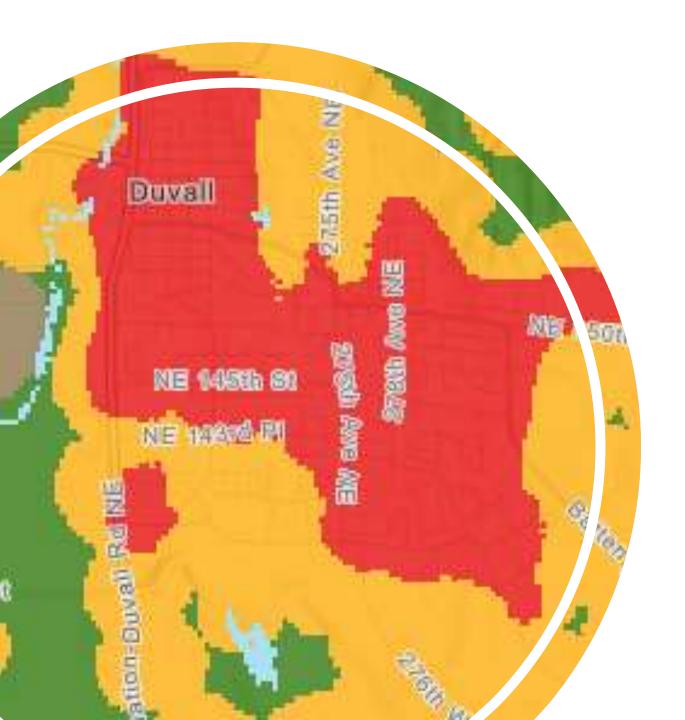
URBAN AREAS

 Are relatively self-explanatory: they are those areas in Washington with both dense human development, as well as less than 50% vegetative (wildland) cover. These areas are defined by their high density of structures.

WILDLAND-URBAN INTERFACE

- The interface is often found along the outskirts of urban areas.
- The Wildland-Urban Interface is defined as those areas where human development MEETS areas that are covered with more than 50% wildlands.
- To be considered interface, development/structures must be bordered by wildlands on at least one side.





WILDLAND-URBAN INTERMIX

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- Intermix is often found between the Interface and the wildlands.
- Intermix can also be found in undeveloped/low-density pockets of urban areas.



WILDLANDS

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- Most wildlands could eventually become intermix, interface, or even urban areas.
- Example- a new single-family home in the woods could make wildlands into intermix, while a new housing development, strip mall, or other series of structures could turn a section of wildlands into interface.



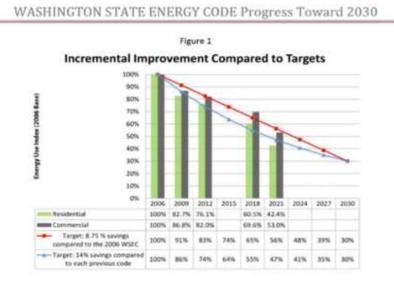
PRESCRIPTIVE OPTIONS AS OUTLINED IN SECTIONS 501.1 THROUGH 501.8

- Class A roofing.
- Metal roof valleys.
- Exterior walls and projections made of ignition resistant materials.
- Rated decks or concrete patios.
- Double pane or tempered windows.
- Specific attic ventilation opening requirements.

2021 WASHINGTON STATE ENERGY CODE



• Washington's first energy code, adopted in 1977 by statute, was a voluntary requirement. The State Building Code Act and State Energy Code Act (SECA) were passed by the legislature in 1985. The State Building Code Act gave rulemaking authority to the SBCC, which oversees all building and energy codes within the state. Per RCW 19.27A.020(2)(a) The Washington state energy code shall be designed to construct increasingly energy efficient homes and buildings that help achieve the broader goal of building zero fossil-fuel greenhouse gas emission homes and buildings by the year 2031.



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 Fast forward to 2013. Gov. Inslee brought together a bipartisan group of lawmakers to develop a plan for the state to meet its greenhouse gas emissions targets (SB 5802).

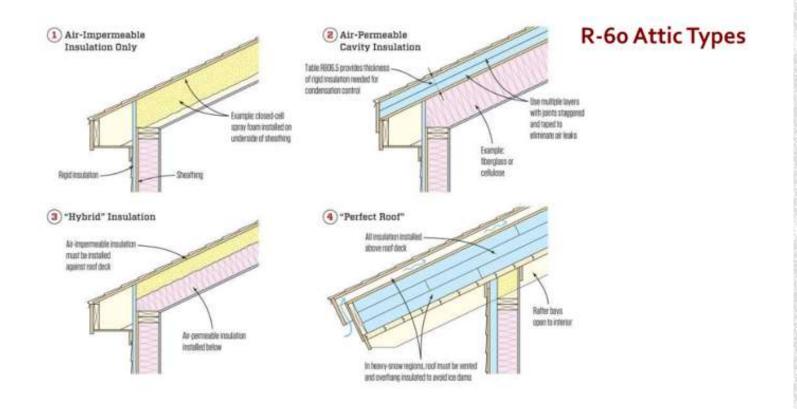
SIGNIFICANT CHANGES TO THE WSEC 2021

TABLE R402.1.3

JM R-VALUES AND FENESTRATION REQUIREMENTS

CLIMATE ZONE 5 AND MARINE 4		
ration U-Factor ^{b, j}	0.30	
nt ^b U-Factor	0.50	
R-Value ^e	60	
Frame Wall ^{g,i} R-Value	20+5 or 13+10	
t-Value	30	
Grade ^{c,h} Wall R-value	10/15/21 int + 5TB	
R-Value & Depth	10, 4 ft	

- R-values in insulation have been increased.
- Ceiling increased from R-49 to R-60.
- Wood frame walls increased from R-21/R-13 to 20+5/13+10
- Slab depth increased from 2 ft to 4 ft.



SIGNIFICANT CHANGES TO THE WSEC 2021

- Examples of a wall with 20+5 and a R-60 ceiling insulation.
- The +5 refers to continuous rigid insulation on the outside of the building which has an R-value of 5.

Chapter 4

Significant Changes R 406.3

R406.3 Additional energy efficiency requirements. Each dwelling unit in a residential building shall comply with sufficient options from Table R406.2 and R406.3 so as to achieve the following minimum number of credits:

- Small Dwelling Unit: ((3.0)) 2.5 credits
 (Dwelling units less than 1500 square feet in conditioned floor area with less than 300 square feet of fenestration area. Additions to existing building that are greater than 500 square feet of heated floor area but less than 1500 square feet.)
- Medium Dwelling Unit: ((6.0)) 5.0 credits
 (All dwelling units that are not included in #1, #3, or #4.)
- Large Dwelling Unit: ((7.0)) 6.0 credits
 (Dwelling units exceeding 5000 square feet of conditioned floor area.)
- Dwelling units serving Group R-2 occupancies: 4.5 credits
 (See Section R401.1 and residential building in Section R202 for Group R-2 scope. 4.5 credits)
- 5. Additions ((less than or equal to)) 150 square feet to 500 square feet: ((1.5)) 2.0

SIGNIFICANT CHANGES TO THE WSEC 2021

- Total energy credits have been reduced in dwelling units by 1.0 credit.
- Additions under 150 sq ft. don't require energy credits.
- Additions 150 sq ft.- 500 sq ft. will require 2.0 credits.

TABLE R406.2 FUEL NORMALIZATION CREDITS

System Type	Description of Primary Heating Source	Credits	
		All Other	Group R-2
1	For combustion heating equipment meeting minimum federal efficiency standards for the equipment listed in Table C403.3.2(5) or C403.3.2(6)	-3.0	0
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(2) and supplemental heating provided by electric resistance or a combustion furnace meeting minimum standards listed in Table C403.3.2(5) ^b	0	0
3	For heating system based on electric resistance only (either forced air or Zonal)	-1.0	-0.5
4 °	For heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(2) or C403.3.2(9) or Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590	1.5	2.0
5	For heating system based on electric resistance with: 1. Inverter-driven ductless mini-split heat pump system installed in the largest zone in the dwelling, or 2. With 2kW or less total installed heating capacity per dwelling	0.5	0

- a. See Section R401.1 and residential building in Section R202 for Group R-2 scope.
- b. The gas back-up furnace will operate as fan-only when the heat pump is operating. The heat pump shall operate at all temperatures above 38°F (3.3°C) (or lower). Below that "changeover" temperature, the heat pump would not operate to provide space heating. The gas furnace provides heating below 38°F (3.3°C) (or lower).
- c. Additional points for the HVAC system are included in Table R406.3.

SIGNIFICANT CHANGES TO WSEC 2021

- Gas furnace as primary heat source will now be -3.0 credits.
- Electric heat pumps with supplemental heating from a furnace will now be 0 credits.



SUMMARY

- Building codes evolve, and for good reasons. It is important that we adopt the latest editions to stay current with state requirements and to stay in line with other cities in our area to better protect our city and the people that live here.
- 2021 International Codes will be in effect July, 1st 2023.

2021 INTERNATIONAL CODE UPDATE





COMMUNITY DEVELOPMENT BUILDING

02/06/2024

Brian Kehler, Building Official

DMC TITLE 10 OVERVIEW TITLE 10 SECTION 10.01

TABLES

TITLE 10 SECTION 10.04

INTERNATIONAL FIRE CODE (IFC)

INTERNATIONAL
WILDLAND URBAN
INTERFACE CODE
(IWUIC)

WASHINGTON STATE ENERGY CODE

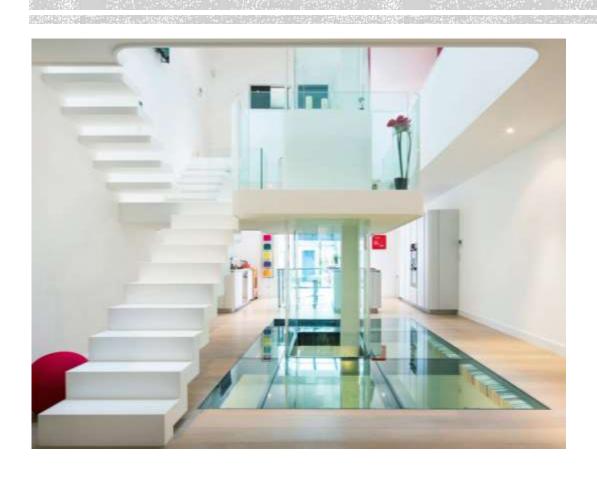
Questions





- We last update the building code in 2021
- In 2023 we briefed the Council on building code updates
- The Building Code Council differed the adoption twice in 2023
- In late 2023 the City was notified the Building Code Update would become effective on March 15, 2024
- In early 2024 the legislature and the Building Code Council are considering additional changes that could impact/change the current code language – STAY TUNED

DMC TITLE 10.01 BUILDINGS AND CONSTRUCTION OVERVIEW



- Formatting
- Amendments to section 105
 Permits IBC/IRC
- Addressing Numbering Size table
- Tables updated
- Added adopted codes Swimming pool, property maintenance, and WUI

TABLES

Current

Ground snow load. 25# Wind Speed 85 mph Seismic design D-2 Weathering moderate 12" Frost line depth Termite slight to moderate 26 degrees F Winter design temp ice Shield none DMC_14.84 Flood Hazards Air freezing index 113 51.2 degrees F Mean annual temperature

Proposed

25lbs/ft2	
110 mph	
YES	
D1/D2	
Moderate	
18"	
slight	
26 degrees	
No	
See DMC 14.84	
113	
51.2 degrees F	



DMC TITLE 10.04

- Moved and amended section 10.04 to 10.01.120 International Fire Code.
- The need for the update is because Duvall is growing, and as the buildings become larger and more complex, so must the codes.
- The Update would align with other valley cities as this would be a regional update.
- Last update was in 2013

2021 INTERNATIONAL WILDLAND URBAN INTERFACE CODE UPDATE:

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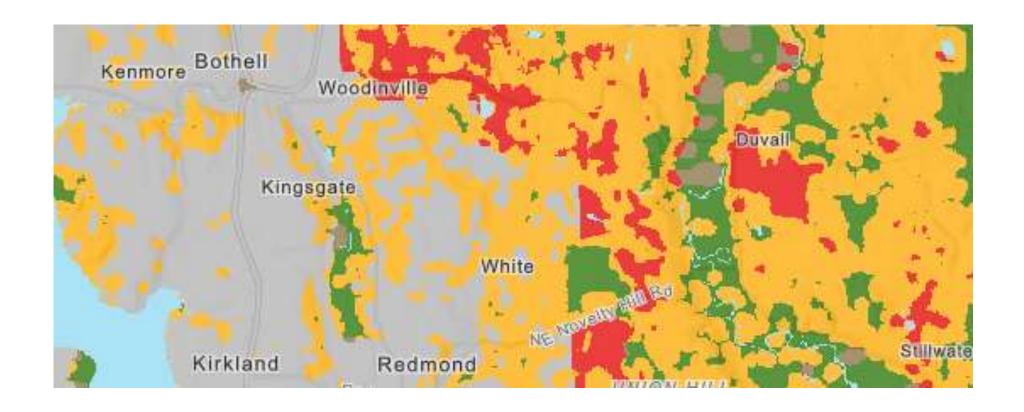
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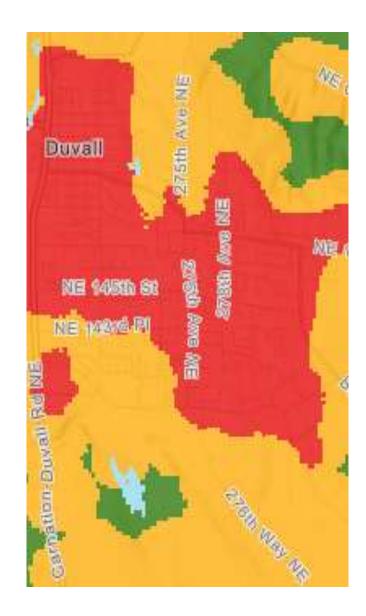


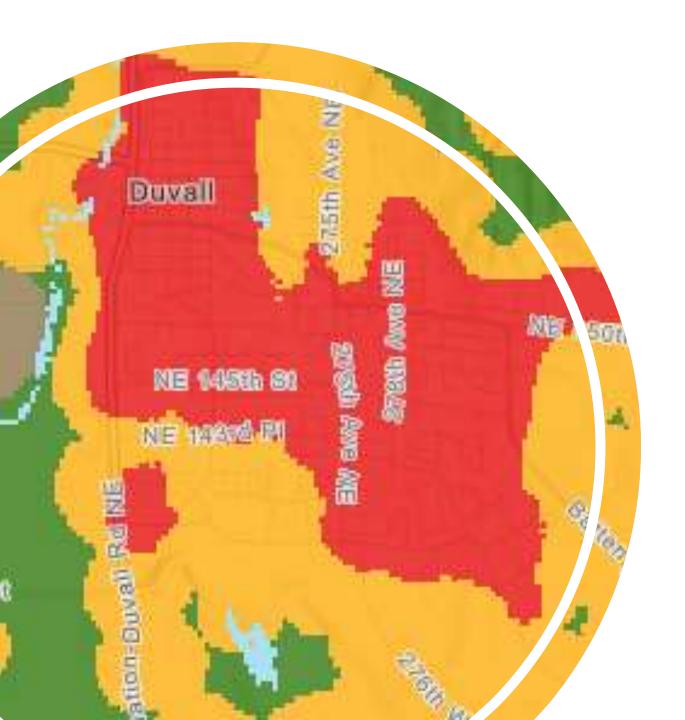
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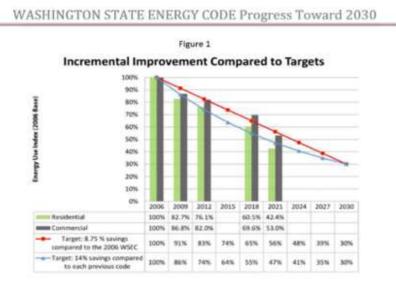
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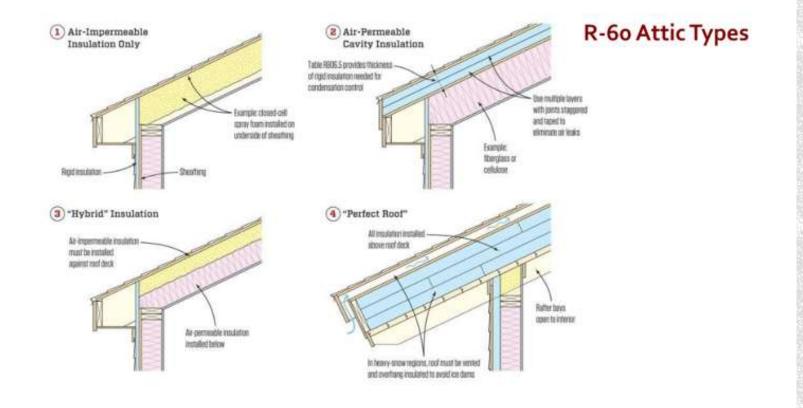
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- SB 6120 is an amendment to the WUI code and is up for review and approval

2021 BUILDING CODE UPDATE

