Building Code Briefing

Overview

The Washington State Building Code Council is ready to pass the country's most stringent and most expensive package of residential building codes as part of its 2021 code proposals. Washington is already one of only 3 states in the nation adhering to the 2018 Energy Code, and 80% of the country is on the 2012 code or earlier.

- **Washington has a housing crisis—and we're well ahead of the rest of the nation when it comes to required energy efficiency**.
    - If the council passes all its code proposals, not including the Wildland Urban Interface (WUI) codes, it would add a minimum of **$24,070**[a] to the up-front cost to build a 2,200 sq. ft. new home. This translates to $72,210[b] being paid by the homeowner over the lifetime of a 30-year mortgage.
    - At a time when every $1,000 added to the price of a new home prices out 2,182 households, these additional costs rob nearly 53,000 families of the opportunity to purchase a home.
    - If you add in the up-front cost of passing the WUI, the total minimum cost of the requirements would be a minimum of **$55,282**--and more than 121,000 families are priced out of the opportunity to become homeowners.
    - Only 15% of Washingtonians can afford to purchase a home (new and existing) right now.
- **Washington's residential construction workforce isn't prepared to handle these changes.**
    - L&I Electrical Code does not allow HVAC Specialty Electricians to connect indoor and outdoor units of ductless mini-split systems (despite all other states, including California, allowing specialty electricians to do this work.)
    - This means more delays and additional costs to the homeowner, builder, and HVAC technician to wait for a journey-level electrician – many of whom do not receive specific training on these connections – to do the work. The wall is left open until the connection is completed.
- **Washington's energy grid can't handle this additional load.**
    - Natural gas provides warmth to 1.2 million residences in Washington state. Moving all those residences and all newly built homes to electricity will increase demand for electricity with no statewide plan for building more transmission lines. An increase in demand for electricity also requires a robust lineman workforce, which is currently struggling to recruit workers. Once recruited, the required training takes years to complete.
    - At present, electricity is affordable in Washington. But adding new generating capacity is expensive and will drive power rates higher. Amid inflationary pressures, Washingtonians cannot afford higher utility costs.
    - The Utilities and Transportation Commission was directed by the legislature to analyze decarbonization scenarios for the state. Until that work is complete, building codes that disadvantage natural gas to the point of extinction as a viable energy source for heating homes is ill-advised.

a: Based on cost estimates utilizing Option 1 of the R406 Tables. If Option 2 is adopted by the SBCC, up-front costs surpass $33,000.
b: Calculation based upon $1,000 of up-front added cost to a home. Over a conventional 30-year mortgage, a homeowner would pay $3,000 in additional costs due to interest.

What's at stake?

These proposals:

- Eliminate the ability for home builders to install natural gas cost-effectively in new homes, eliminating energy choice in the state and pushing cooking with natural gas into extinction for new homes after July 1, 2023.
- Require heat pumps as the preferred source for space and water heating in all new homes, increasing the up-front cost of a new home by $8,350. Worse yet, the true cost to the homeowner over their 30-year mortgage will surpass $25,000.
- Require existing homes to upgrade their current HVAC systems to heat pumps if they increase the size of their original HVAC equipment. Estimates show that could cost homeowners a minimum of $23,000.
- Add another $9,200 to the price of every new home for compliant windows and air leakage requirements.
- Require all new homes with carports and garages to have electric vehicle charging capabilities, regardless of the cost of upgrading electrical infrastructure, and without a direct mandate from the Washington State Legislature.
- Ban heat pump water heaters from being placed in your garage. Instead, large utility closets would have to be installed, taking up usable square footage of new homes.
- Cause building material costs to skyrocket due to the fire-resistive material required in the Wildland Urban Interface Code. Arbitrary limits on where homes can be built and how much vegetation can surround them would become regulation, even though this surpasses the rulemaking authority of the State Building Code Council.

Voice your concerns

Public hearings scheduled

- September 29, 10:00 am – 5:00 pm
  Location: 129 N 2nd St; Yakima, WA 98901
  THIS HEARING IS EXCLUSIVE TO THE RESIDENTIAL ENERGY CODE
- September 30, 10:00 am – 5:00 pm
  Location: 129 N 2nd St; Yakima, WA 98901
  Codes: IBC (structural), IEBC, IRC, IMC, UPC, WUI, and IFGC
- October 14, 10:00 am – 5:00 pm
  Location: Room 1213, 1500 Jefferson St SE; Olympia, WA 98504
  ALL CODES

You must submit a sign-up form to testify before the hearing date. The sooner you sign up, the earlier you will be able to testify.

Submit written comments

You must submit written testimony by 5 p.m. on Oct. 14, 2022.

- Online contact form
- Comment by email to SBCC@des.wa.gov

Sign the petition

Sign and share our petition to support energy choice and stop unfunded mandates that drive up the cost of new homes.

Background and Recommended Talking Points on specific proposals

21-GP2-091: Electric Vehicle Supply Equipment (Residential Code)

Stance: Oppose

Requires a 40-amp, 208/240-volt branch circuit to be installed in all new construction homes with carports and garages.

Talking points:

- 47% of new homes are already being built with EV charging capabilities. The only exceptions are instances where the electrical infrastructure cannot support increased loads and must be upgraded (cost estimates are upwards of $11,000 per home in a subdivision).
- SBCC lacks the authority to pass this code. There is no legislative mandate to adopt an EV charging requirement in the Residential Code. E2SHB 1287 passed with a mandate for the council to adopt rules related to R-3 occupancies (which only exist in the International Building Code). The Residential Code does not recognize R-3 occupancy classifications.
    - Legislative intent is not sufficient for the adoption of a rule outside of the scope of what was authorized in the passage of E2SHB 1287.
- A code of this nature belongs in the Electrical Code (managed by Labor & Industries and not the State Building Code Council) and not the Residential Code.
    - Labor & Industries spoke on this issue at the June 17, 2022 meeting: "sizing of circuits is dedicated and determined by equipment being used." Providing specifications for a branch circuit without knowing the equipment being installed is meaningless.
- Enforcement of this code, should it be adopted, would be impossible for most jurisdictions that do not have an electrical building official and/or inspector on staff and there is no pointer in the electrical code that helps electrical inspectors know what the requirements are within the IRC.

Cost: $640
True Cost to Buyer (over 30-year mortgage): $1,920
Number of Families Priced-Out: 1,408

21-GP2-065: Heat Pump Space Heating and 21-GP2-066: Heat Pump Water Heating (Energy Code)

Stance: Oppose

Requires new homes to have heat pumps for space and water heating.

Talking Points:

- 84% of builders report the upfront cost of heat pumps is the biggest hurdle in building affordable entry-level houses.
- Requiring new homes to have heat pumps for space heating limits energy choice for homeowners and increases the cost of buying a new home. Eastern Washington will need supplemental heat sources during cold periods; this adds more upfront costs for Eastern Washington homebuyers.
- Heat pump systems are severely backlogged due to supply chain disruptions and increased demand due to the 2018 iteration of the energy code.
    - This will get worse in 2023 and beyond as the supply chain continues to struggle with meeting increased demand (California is now mandating heat pumps) and changes with the refrigerant standards.
- There is a disconnect between the building code and the planning/zoning codes' setback requirements. The outside compressor location is a challenge with single-family construction. Setback requirements and laws concerning decibel levels at the property line restrict the

available locations for the unit. This is not an issue with a gas-fired furnace because they do not have an outside component.

- 60% of builders state that consumers do not like their heat pumps. Consumer complaints noted by members: Prone to improper installation, increasing service calls, and maintenance costs for homeowners. Mechanical issues are prominent and expensive to repair. Compressor failure is prominent and costs an average of $2,200.
- Heat recovery time for heat pump water heaters lags behind tankless water heaters. This isn't suitable for larger families. If homeowners are set on "hybrid" mode, allowing electric resistance heating elements to operate instead, efficiency will be reduced. This defeats the purpose of this code change.
- Plumbers are not accustomed to working with electricity, and this lack of experience may make them hesitant to suggest HPWHs.
- Consumers complain about noise if it's placed in conditioned spaces. Another proposal requires water heaters to be installed in the building's thermal envelope (which does not include a garage) so these systems will be placed within the home. Venting the cold air emitted from the heat pump water heater will need to be explored or homeowners will be paying to heat their water heaters.

Cost: $8,347 (more than the common gas furnace and electric water heater combination) or to meet credits at the lowest cost possible = $23,000 added to a new home.
True Cost to Buyer (over 30-year mortgage): $25,041
Number of Families Priced-Out: 18,363

21-GP2-073: R406 Table - OPTION 1: heat pumps NOT required vs. OPTION 2: heat pumps required (Energy Code)

Stance: Option 1 preferred

Updates the R406 energy code credit options table.

Talking Points:

- Option 1 – Not requiring heat pump installation in new homes presents the lowest cost to homeowners, only adding $15,234 to the cost of building a home. Further, Option 1 preserves energy choice and material flexibility that's important while supply chains recover from the fallout of the pandemic and the HVAC industry adapts to the new refrigeration standards.
- Option 2 – We do not recommend this option as it presents space heating source credits that penalize homes built with secondary heating systems, common in colder climates such as Eastern Washington. This option also presents a de facto ban on natural gas, eliminating energy choice for Washington homeowners.

Cost: The lowest cost option adds $23,000 to the cost of building a new home.
True Cost to Buyer (over 30-year mortgage): $69,000
Number of Families Priced-Out: 50,600

21-GP2-079: U-Factor Replacements (Energy Code)

Stance: Oppose

Increases stringency of windows (previously 0.30, the new change would require 0.28)
Talking Points:

- Removes an option from R406 for energy efficiency credit and requires all windows to adhere to a U-factor of 0.28. This further reduces the number of compliant windows available for builders to install in new homes.
- Windows are already extremely efficient. National Fenestration Rating Council recommends windows be 0.30 for prescriptive compliance.

Cost: $2,593 (difference between 0.30 and 0.28 windows)
True Cost to Buyer (over 30-year mortgage): $7,779
Number of Families Priced-Out: 5,704

21-GP2-089: Allowed Leakage Rates (Energy Code)

Stance: Oppose

Lowers air barrier testing from 5 ACH to 3 ACH and removes 8.5-foot height for calculations

Talking Points:

- Builders are already having a difficult time meeting the 5 ACH standard for compliance while watching costs. The primary barrier is finding qualified subcontractors. We don't recommend moving to a 3 ACH standard.
- Requiring 3 ACH will result in higher costs for home buyers since achieving the air changes per hour will require more sophisticated and costly ventilation and air sealing systems.
- For example, air sealing systems (Aerobarrier specifically) cost an average of $6,600 for a 2,000 sq. ft. home.
- Harvard School of Public Health recommends a target of 3-4 ACH.

Cost: $6,600
True Cost to Buyer (over 30-year mortgage): $19,800
Number of Families Priced-Out: 14,520

21-GP2-058, 21-GP2-059, 21-GP2-060 – Wildland Urban Interface Code

Stance: Oppose

Incorporates all sections of the WUI code with specific amendments

Talking Points:

- No legislative mandate for these code amendments. ESSB 6109 only directed the SBCC to adopt specific portions of the 2018 WUI code.
- Process of adopting proposed code amendments was extremely rushed and lacked adequate representation of all interested stakeholders.
- WUI code changes have real impacts on constructing homes affordably.
- DNR mapping lacks parcel-level detail which is key for implementing provisions of the code. The mapping methodology is flawed; areas with the most wildfire risk are not required to comply with the WUI code.
- Provides the Building Official sole authority over modification of DNR's WUI mapping. This could create inconsistent implementation statewide.

COST: $31,212 (single-story) and $41,352 (2-story)
True Cost to Buyer (over 30-year mortgage): $93,636 (single-story) and $124,056 (2-story)
Number of Families Priced-Out: 68,666

21-GP2-032: Sealed Air Handler (Energy Code)

Stance: Oppose

Requires air handler to be within the conditioned space

Talking Points:

- Does not allow for the air handler to be placed in a semi-conditioned space (like a garage).
- If the house does not have a garage, the air handler would then need to be placed in a utility-type closet in the home's conditioned space (not in an attic or crawlspace).
    - Limits usage square footage for home buyers since these rooms need to be 2-3 feet (9 square feet) of clearance for proper airflow.
- Amount of energy efficiency gains realized is not worth the time, cost, or hassle of this code change.

21-GP2-080: Water Heater Install Location (Energy Code)

Stance: Oppose

Requires installation of water heaters in the thermal envelope

Talking Points:

- Tank manufacturers are already increasing insulation levels to reduce standby energy losses if placed in semi-conditioned spaces like an attic or garage.
- This is a design standard that will add cost and reduce the flexibility of builders to design a home to consumers' preferences.
- Reduces usable square footage in homes, often closet space, and can reduce a home's value.
- Consumers complain that noise from heat pump water heater is an issue if it's placed within habitable spaces.
- Amount of energy efficiency gains realized is not worth the time, cost, or hassle of this code change.

21-GP2-062 and 21-GP2-063: Increased Range Hood Ventilation (Mechanical Code)

Stance: Oppose

Increase ventilation of residential range hoods from 100 cfm of exhaust over range hood and this increases to 160 cfm over an electric range and 250 cfm over a gas range

Talking Points:

- Availability of range hoods with this cfm is of concern amongst our current supply chain issues.
- Setting an arbitrary level of ventilation without regard to the size of the range hood can decrease indoor air quality if the range being installed is large.
- Range hoods should be properly sized with the BTU rating of the range in question and considerations placed on frequency and type of food that is being cooked.
- Home Ventilating Institute recommends 100 cfm as a minimum and following the manufacturer's advice on ventilation requirements.
- Requirement for increased ventilation with range hoods doesn't mean indoor air quality will be improved since it's dependent upon the individual cooking to turn it on.

Cost: $425

True Cost to Buyer (over 30-year mortgage): $1,275

Number of Families Priced-Out: 935

Sources

R406 Table Options	Source(s)
Building Envelope Table	1. https://sbcc.wa.gov/sites/default/files/2022-04/073_WSEC_R_R406.3_R406_Chapter6_Odum.pdf 2. BNI Building News. 2022. Home Builder's Cost Book. BNi Publications, Inc. 3. BIAW member survey* and bids for accuracy of source #1.
Air Leakage and Ventilation Table	1. https://sbcc.wa.gov/sites/default/files/2022-04/073_WSEC_R_R406.3_R406_Chapter6_Odum.pdf 2. https://zeroenergyproject.org/2018/07/16/is-aerobarrier-the-future-of-air-sealing/ 3. BIAW member survey* and bids for accuracy of source #1.
HVAC Equipment Table	1. Equalized values from building industry bids* 2. BNI Building News. 2022. Home Builder's Cost Book. BNi Publications, Inc.
Smart Thermostat	1. https://www.energystar.gov/productfinder/product/certified-connected-thermostats/results
HVAC Distribution Table	1. https://sbcc.wa.gov/sites/default/files/2022-04/073_WSEC_R_R406.3_R406_Chapter6_Odum.pdf 2. BIAW member survey* and bids for accuracy of source #1.
Water Heating Table	1. https://sbcc.wa.gov/sites/default/files/2022-04/073_WSEC_R_R406.3_R406_Chapter6_Odum.pdf 2. BIAW member survey* and bids for accuracy of source #1.
Renewable Energy Table: Based on Solar PV	1. https://sbcc.wa.gov/sites/default/files/2022-04/073_WSEC_R_R406.3_R406_Chapter6_Odum.pdf 2. BIAW member survey* and bids for accuracy of source #1.
Appliance Package Table	1. https://sbcc.wa.gov/sites/default/files/2022-04/073_WSEC_R_R406.3_R406_Chapter6_Odum.pdf
Windows (U = 0.30 to 0.28)	1. BIAW member survey* and bids
EV Charging: Indoor load center, 1 phase 240v main lug only, 150a - 16 spaces	1. BNI Building News. 2022. Home Builder's Cost Book. BNi Publications, Inc.
Hood range ventilation requirements (160 cfm for electric ranges and 250 cfm for gas ranges / current requirement is 100 cfm for both)	1. BNI Building News. 2022. Home Builder's Cost Book. BNi Publications, Inc.

**BIAW's member survey and industry bids will not be released to adhere with anti-trust laws. For more information, please view https://www.ftc.gov/advice-guidance/competition-guidance/guide-antitrust-laws/dealings-competitors/price-fixing for more information. National data on whole-home electrification is available here.*

WUI cost study: Used Denver as comparison since the location factor on pricing is similar to Washington's of 1.04. Also removed costs associated with sprinkler systems since they're not required in the proposal and/or required statewide. Please note an automatic sprinkler system in Washington is estimated to cost $6,743 per house