



**Memorandum**

DATE: February 16, 2024  
 TO: County Council’s Planning & Development Committee  
 FROM: Curtis Metz, Building Services Division Manager, Deputy Fire Marshal  
 THROUGH: Mark Personius, Director  
 RE: Comparison of the Costs Associated with 2018 and 2021 Energy Codes

**Purpose**

To provide a comparison of the changes from the 2018 energy code to the 2021 energy code. The Washington State Energy Code (RCW 19.27.A.020) is set up to become increasingly more efficient each code cycle to reach the goal of reducing annual net energy consumption by 70% by 2031 as compared to the 2006 Energy Code (RCW 19.27A.160, RCW 19.27A.020).

The following comparison sheet shows the changes to the Fuel Normalization Table, Credit Requirement table and the most common or most utilized path used by builders/contractors.

This information is being presented to the County Council’s Planning & Development Committee, along with the ordinance amending Whatcom County Code Title 15 (Building & Construction) that would adopt the Whatcom County amendments to the specific portions of the administrative rules and appendices of 2021 International Building and associated Codes.

In previous code cycles, the Committee has asked for an estimate of what the costs might be for a typical house built in Whatcom County due to the new Energy Codes, this memo attempts to answer that question.

**Cost Comparison between the 2018 and 2021 Energy Codes**

The Credit Requirement Table compares the change in the number of required credits that need to be gained from the 2018 Energy Code to the 2021 Energy Code for a given size structure or addition.

Table 1. Credit Requirements Table

Heated living space only, does not include garages, porches, etc.	Credit requirements	
	2018 Code	2021 Code
Additions less than 500 SF	1.5	2
Small Dwelling units, less than 1,500 SF of conditioned floor area with less than 300 SF of fenestration and additions greater than 500 SF but less than 1,500 SF	3	5
All dwelling units that are not included in category #1, #2 or #4	6	8
Large dwelling units, exceeding 5,000 SF	7	9

The Fuel Normalization Table increases or decreased the number of required credits depending on which type of heating system you choose. In the following example we use the “Heat Pump” option which will reduce our required credits by (3).

**Table 2. Fuel Normalization Table**

2018 Credit Adjustments for Heat Type Used

LP/Nat <sup>a</sup> FAU or zonal	Heat Pump <sup>b</sup>	Electric resistant FAU or zonal	Heat Pump and Zonal ele.	Other heat type <sup>c</sup>
0	-3	-5	-2	0
a. Equipment listed in Table C403.3.2(5) or C403.3.2 (6) b. Equipment listed in Table C403.3.2(2) or C403.3.2 (9) c. Hydronic heat systems, Solar heating systems, Ground source heat system				

<sup>1</sup> This only includes those portions of the heated living space; it does not include garages, porches, or covered porch areas.

The average size house permitted in Whatcom County ranges from 1,800 to 2,100 SF of heated living space<sup>1</sup> The following examples use the average size home permitted in Whatcom County to compare Energy Credit requirements. From the Credit Requirement Table above, any house that is greater than 1500 square feet and up to 4,000 SF would need to obtain 8 credits using any allowable combination of the 34 credit options available. In the attached example, we have shown the two preferred credit option combination pathways chosen for the 2018 code cycle. In contrast, we have provided a break down for the same pathway under the proposed 2021 code cycle. As you move down the worksheet, the left column is the common pathway for the 2018 code credits, the center column will help identify the changes and approximate cost, and the right column is the projected pathway for the same credit option path under the proposed 2021 code.

There are two main components to the following flow chart. The first reflects cost increases associated with the changes in credit options and total credits required. The second (below the solid red line), are base line code changes that every structure will be required to obtain no matter the size of proposed dwelling unit. From this comparison the “Ducted Heat Pump Pathways” estimated cost increase from the 2018 Energy Code requirements to the 2021 Energy Code requirements would be an approximate total of \$7,025.

Note, though, that these options displayed are just two possible pathways to meet the energy code requirements under the 2021 Energy Code, and is our best guess of what we may see submitted. There are 34 individual and separate options with varying credit values, each with its’ own associated cost. Although \$7,025 is not a small amount, the cost can be substantially more or less depending on what the homeowner or contractor decides to use on these homes. It is also important to remember installing solar and increasing insulation will have a positive return on investment for the consumer and pay for itself over the first 10 years.

If builders or homeowners are looking for a less costly approach, the cheapest option would be to construct a house less than 1,500 sf (of heated living space). The base line code increases will be minimal for these homes but the return on investment for improving efficacy and eliminating heat loss though these buildings will help off set the cost in the long run of the home’s energy consumption and usage.

<sup>1</sup> This only includes those portions of the heated living space; it does not include garages, porches, or covered porch areas.

Average cost to build is \$200 per Sq. ft.

2000 Sq. ft. Home = \$400,000

WSEC increase = \$7025.00

$7025/400,000 = .0175$

**=1.75% of total cost to build increase from the 2018 code cycle.**

