Final Cost Benefit Analysis for Possible EPCA Preemption Issues in the 2021 Washington State Energy Code, Residential Provisions

I. Code Adoption and Significant legislative Rules

1. Introduction

The Council modified sections in the commercial and residential energy codes to address legal uncertainty stemming from the decision in California Restaurant Association v. City of Berkeley recently issued by the Ninth Circuit Court of Appeals. While the requirements in the 2021 Washington State Energy Code are not exactly analogous to the Berkeley prohibition on gas infrastructure, the Council moved forward to address the ruling expanding the scope of the Energy Policy and Conservation Act of 1975 (EPCA) preemption provisions. The Council sought public input on areas where the code may be impacted by a preemption issue and developed a proposed rule addressing those areas while retaining the efficiency gains made towards the goal of RCW 19.27A.160.

2. Amendment of 2021 Washington State Energy Code, Residential Provisions.

The Washington State Building Code Council (SBCC) filed the Preproposal Statement of Inquiry to initiate the review of possible areas where the Washington State Energy Code as adopted through WAC 51-11R, on January 10, 2022, may conflict with federal preemption on covered products in 42 USC § 6297. The Energy Policy and Conservation Act (EPCA), 42 U.S.C. § 6292(a), is a federal law that establishes efficiency standards for consumer appliances and contains a list of 19 consumer products that are considered covered products for which the US Secretary of Energy is authorized to establish energy conservation standards. In April 2023, a panel of the Ninth Circuit Court of Appeals invalidated a Berkeley ordinance prohibiting the extension of natural gas pipelines in new buildings, ruling that EPCA "preempts regulations that relate to the quantity of [natural gas] directly consumed by certain consumer appliances at the place where those products are used."

Under EPCA, building codes are exempt from the preemption rule if they meet seven specified requirements. 42 U.S.C. § 6297(f)(3).

1. The building code permits a builder to meet an energy consumption or conservation objective for a building by selecting items whose combined energy efficiencies meet the objective.
2. The building code does not require that the covered product have an energy efficiency exceeding the applicable energy conservation standard established by the DOE.
3. The credit to the energy consumption or conservation objective allowed by the building code for installing covered products having energy efficiencies exceeding the energy conservation standard established by the DOE is on a one-for-one equivalent energy use or equivalent cost basis.
4. If the building code uses one or more baseline building designs against which all submitted building designs are to be evaluated and such baseline building designs contain a covered product subject to an energy conservation standard established by the DOE, the baseline building designs are based on the efficiency level for the covered product which meets but does not exceed DOE's standard.
5. If the building code sets forth one or more optional combinations of items which meet the energy consumption or conservation objective, for every combination which includes a covered product the efficiency of which exceeds either standard or level referred to in criteria D., there

also must be at least one combination which includes such covered product the efficiency of which does not exceed the standard or level by more than 5%, except that at least one combination shall include such covered product the efficiency of which meets but does not exceed such standard.

6. The energy consumption or conservation objective is specified in terms of an estimated total consumption of energy (which may be calculated from energy loss- or gain-based codes) utilizing an equivalent amount of energy (which may be specified in units of energy or its equivalent cost)
7. The estimated energy use of any covered product permitted or required in the building code, or used in calculating the objective, is determined using the applicable test procedures prescribed under EPCA, except that the State may permit the estimated energy use calculation to be adjusted to reflect the conditions of the areas where the code is being applied if such adjustment is based on the use of the applicable EPCA appliance test procedures or other technically accurate documented procedure.

In considering amendments to the state energy code, the Council established and consulted with a technical advisory group (TAG) including representatives of appropriate state agencies, local governments, general contractors, building owners and managers, design professionals, utilities, and other interested and affected. On May 24, 2023, the SBCC opened a submittal period for proposals to address these preemption issues within both the residential and commercial provisions of the Washington State Energy Code.

The TAG was tasked with reviewing the proposals received and identifying which best addressed the issues with product preemption within the code. These proposals provided language on re-integrating the use of fossil-fuel fired appliances back into the code requirements while maintaining the energy efficiency gains from the previous requirement for heat pump space and water heating. The TAG also discussed whether modifications were needed to ensure the provisions were correlated with other requirements, technically feasible, and commercially available.

Twenty-one proposals were submitted during the two-week submittal period. The TAG ultimately recommended that six proposals move forward into the rulemaking process. Most of these proposals have no or minimal cost impact, and add more options in building design and compliance. One proposal was identified as having a possible cost impact. During the public comment period, the Council received testimony that one of the editorial changes outside of the EPCA considerations would have cost implications. This change was to correlate the U-factor to match the R-value for above-grade walls. The R-value had been updated to match the 2021 IECC, but the corresponding change to the U-factor had been unintentionally omitted. The Council also received much public testimony on the costs necessary for homes utilizing gas space and water heating to achieve the increased number of additional efficiency credits.

These six proposals were considered by the Council on November 28, 2023, after two public hearings and a public comment period. Minor editorial changes were made to Table R406.3 to correct typographical errors and include HSFP 2 values within the increased efficiency optional credits. Another change was made to Table R405.4.2(1) to change the baseline system for water heaters to a heat pump water heater meeting the efficiency standards of Table C404.2, rather than specifying a Tier 1 NEEA water heater. These changes did not have any cost impact on the code. Additionally, the Council chose

to retain the inequality between the U-factor and R-value in the Residential Code as adopted in November 2022. There will be no cost impact from this, but there may be some enforcement issues.

II. Code Proposals.

1. Summary of Economic Impact.

Code proposals are identified in Table 1. Only 21-GP3-035 was identified as having an economic impact.

TABLE 1
Code Change Proposals

Code Change Log Number	Sections Affected	Description	Small Business Impact	Economic Impact
21-GP3-001	R406.3, Ch 6	Added credit options for combustion equipment space and water heating Modified	This proposal will undo the negative impacts associated with the implementation of code sections prohibiting the use of conventional combustion driven equipment for primary space and water heating.	None. This proposal does not create any new requirements, but removes requirements that if not removed due to EPCA preemption would have increased cost to building owners, tenants, and businesses. Therefore, there is no cost impact where referenced to the currently adopted 2018 WSEC
21-GP3-002	R503.1.2, R503.1.3	Deleted references for HP space and water heating requirements Modified	This proposal will undo the negative impacts association with the implementation of these code sections.	None. This proposal does not create any new requirements, but removes requirements that if not removed due to EPCA preemption would have increased cost to building owners, tenants, and businesses. Therefore, there is no cost impact where referenced to the currently adopted 2018 WSEC
21-GP3-015	R403.5.5	Adds exceptions to water heater installation locations for tankless and gas heat pump water heaters Modified	This should reduce economic impact to small businesses.	This proposal will result in lower construction costs by allowing more flexibility for the installation of certain water heaters.
21-GP3-020	R406.3	Adds credit options for combustion space and water heating with value TBD – Building modeling showing efficiency gains was not completed at the time of filing and will be	This should reduce economic impact to small businesses.	This proposal will reduce construction costs by allowing more appliance choices for builders.

Code Change Log Number	Sections Affected	Description	Small Business Impact	Economic Impact
		submitted as public testimony.		
21-GP3-035	R403.5.6, R403.5.7, R403.13, Table R405.2(1), Table R406.2, R406.3, Table R406.3	Deletes HP space and water heating sections; revises fuel normalization table based on gas baseline; revises number of credits needed and credit vales based on gas baseline; restores gas credit option for WH Modified	None	Dwellings designed using fuel-fired appliances are required to attain up to 3 additional efficiency credits than required for dwellings using heat pumps. First cost and energy savings estimates have been developed for the various options using an estimating procedure used by the Northwest Power and Conservation Council (NPCC) using prototype buildings. Cost and energy savings will vary depending on the design and systems installed within the dwelling as noted in the detailed summary.
21-GP3-038	R405.2, R405.4, R502.3, R503.1	Modified the total building performance option to allow combustion appliances Modified	None	None. This should have no real economic impact aside from providing more flexibility for builders to use the performance pathway.

1.1 Conversion of R406 to Combustion Appliance Baseline, Proposal 21-GP3-035, This proposal moves the baseline space heating system from a heat pump to a combustion heating system and adjusts the credit baseline accordingly. The majority of dwellings installing a combustion space heating system will need to achieve an additional three credits to comply with Section R406. This maintains the energy efficiency gained in the previous code adoption.

> **Purpose of code change**: EPCA contains only limited exceptions to the general rule of preemption. This proposal is intended to ensure that the 2021 Washington State Energy Code, Residential Provisions meet the seven requirements required to avoid preemption. This proposal updates the R406 table within the 2021 WSEC-Res, but augments fuel normalization credits, credit targets, and option credit values assuming the removal of the heat pump space and water heating mandates within Section R403. This current R406 section is the same approach that has been used for the last three code cycles. The efficiency difference of minimally compliant heating equipment is taken into account (Table R406.2) so that the relative site energy use can be accounted and the energy savings objective is met on a one-for-one equivalent energy use basis in accordance with 42 USC §6297(f)(3).

Review Process: The TAG reviewed and modified this proposal to ensure it included covered products and provided additional credit options for gas appliances

Probable Benefits vs Probable Costs: This proposal was deemed to minimize the risk of preempting federal law while maintaining the efficiency gains made under the changes adopted for the 2021 Washington State Energy Code, Residential Provisions. The change allows the use of covered gas appliances; however, the use of those appliances requires that more efficiency credits be earned to make up the difference in energy use between a heat pump and a fossil-fuel appliance. A heat pump is generally 2-4 times more energy efficient than fossil fuel or electric resistance heating. Those additional efficiency credits come at a cost. The benefit of a higher cost is that it may push a consumer towards the more efficient, less carbon emissions producing heat pump. This aligns with State policy in RCW 19.27A.160 to increase energy efficiency by 70 percent by 2031 and align with State policy in RCW 19.27A.020 to achieve the broader goal of building zero fossil-fuel greenhouse gas emission homes and buildings by the year 2031. The Council acknowledged that there would be an increased cost for those choosing to use gas heating appliances, but felt that the increase was necessary to provide an equivalency in energy efficiency.

Energy Analysis:

Energy and Cost Summary Tables:

Table 1: Incremental Cost of Single Family options, by home size

Incremental Cost of Single Family Options

				Prototypes Weight % by Floor Area			
				1344	2200	2688	5000
Option-Description	Gas Credit Value	HP Credit Value	Weighted Measure Cost	15%	72%	11%	2%
1.1 - U-.24 Glaze	0.5	0.5	$ 1,730	$ 991	$ 1,790	$ 1,987	$ 3,688
1.2 - U-.20 Glaze	1	1	$ 2,537	$ 1,454	$ 2,625	$ 2,914	$ 5,409
1.3 - 5% UA reduc	0.5	0.5	$ 1,261	$ 955	$ 1,270	$ 1,762	$ 476
1.4 - 15% UA reduc	1	1	$ 3,263	$ 1,925	$ 3,255	$ 4,676	$ 5,802
1.5 - 22.5% UA reduc	2	1.5	$ 4,721	$ 2,938	$ 4,850	$ 5,735	$ 7,852
1.6 - 30% UA reduc	3	2.5	$ 11,235	$ 6,819	$ 12,095	$ 10,587	$ 16,991
2.1 - 2 ACH, HRV	1	0.5	$ 2,264	$ 1,395	$ 2,284	$ 2,790	$ 5,190
2.2 - 1.5 ACH, HRV	1.5	1	$ 5,411	$ 3,334	$ 5,457	$ 6,667	$ 12,402
2.3 - 0.6 ACH, HRV	2	1.5	$ 6,988	$ 4,306	$ 7,048	$ 8,612	$ 16,019
3.1a - Furnace	1	1	$ 252	$ 252	$ 252	$ 252	$ 252
3.2a - 9.5 HSPF HP	0.5	0.5	$ 1,388	$ 1,388	$ 1,388	$ 1,388	$ 1,388
3.3a - GSHP	1.5	1.5	$ 11,034	$ 10,900	$ 10,900	$ 10,900	$ 17,600
3.4 - DHP	1.5	1.5	$ 1,530	$ 1,530	$ 1,530	$ 1,530	$ 1,530
3.5a - 11.0 HSPF HP	1	1	$ 1,530	$ 1,530	$ 1,530	$ 1,530	$ 1,530
3.6a - DHP (15% elec)	2	2	$ 5,901	$ 5,901	$ 5,901	$ 5,901	$ 5,901
4.1 - Deeply buried	1	0.5	$ -	$ -	$ -	$ -	$ -
4.2 - HVAC inside	1.5	1	$ 328	$ 328	$ 328	$ 328	$ 328
5.1 - DWR	0.5	0.5	$ 437	$ 437	$ 437	$ 437	$ 437
5.2 - 0.80 gas DHW	0.5	0.5	$ 640	$ 640	$ 640	$ 640	$ 640
5.3 - 0.91 gas DHW, GSHP	1	1	$ 1,009	$ 1,009	$ 1,009	$ 1,009	$ 1,009
5.4 - Tier III HPWH	2	2	$ 955	$ 955	$ 955	$ 955	$ 955
5.5 - CO2 HPWH	2.5	2.5	$ 3,824	$ 3,824	$ 3,824	$ 3,824	$ 3,824
6.1 - Solar pV	1	1	$ 5,040	$ 5,040	$ 5,040	$ 5,040	$ 5,040
7.1 - ES Appl+ventless Dryer	0.5	0.5	$ 505	$ 505	$ 505	$ 505	$ 505

Table 2: Modeled Energy Savings - Single Family, by home size and heating system type

	S				M				MF
	gfac	gfac	ashp	zonl	gfac	gfac	ashp	zonl	zonl
Options Table 2021	kWh	Therm	kWh	kWh	kWh	Therm	kWh	kWh	kWh
mandatory req's	0	0	0	0	0	0	0	0	0
windows U=0.24	114	5	1143	173	292	5	302	348	132
windows U=0.2	160	12	1192	291	369	18	492	597	263
envelope 3 - 5% UA	18	0	1101	94	-70	-2	59	122	-34
envelope 4 - 15% UA	151	24	1243	406	288	28	528	648	223
envelope 5 - 22.5% UA	303	33	1315	581	577	41	817	1015	420
envelope 6 - 30%UA	348	55	1430	821	887	69	1158	1456	555
air leakage 1 hrv	-116	3	1059	-10	-271	19	105	111	329
air leakage 2 hrv	4	45	283	344	87	67	504	664	642
air leakage 3 hrv	91	54	414	487	530	78	762	997	934
AFUE .95	-84	34	-	-	55	51	-	-	
HSPF 9.5	-	-	248	-	-	-	328	-	
DHP HSPF 10(zonal only)	-	-	-	689	-	-	-	1129	-41
HSPF 11	-	-	371	-	-	-	980	-	
DHP HSPF 10 whole house (zonal only)	-	-	-	1154	-	-	-	2185	740
ducts inside	356	32	385	-	781	38	666	-	
drain water heat recovery	76	23	260	247	-55	33	282	318	182
dwh gas UEF 0.80	18	27	-	-	3	34	-	-	
dwh gas UEF 0.91	-28	39	-	-	12	48	-	-	
hpwh Tier III	-930	121	1407	1395	-1167	153	1761	1790	973
UEF 2.9	-813	121	1536	1512	-1099	156	1916	1941	1055
Energy Star appliances	722		824	784	625		750	776	629

Table 3: Incremental Cost of Multifamily options and Modeled Energy Savings (Zonal Electric only)

Option-Description	Credit Value		Measure Cost
1.1 - U-.24 Glaze	0.5		---
1.2 - U-.20 Glaze	1		$ 887
1.3 - 5% UA reduc	---		$ 173
1.4 - 15% UA reduc	1		$ 947
1.5 - 22.5% UA reduc	1.5		$ 1,383
1.6 - 30% UA reduc	2		$ 3,779
2.1 - 2 ACH, HRV	0.5		$ 851
2.2 - 1.5 ACH, HRV	1		$ 2,034
2.3 - 0.6 ACH, HRV	1.5		$ 2,627
3.1a - Furnace	1		$ 252
3.2a - 9.5 HSPF HP	---		---
3.3a - GSHP	1		---
3.4 - DHP	2		$ 3,060
3.5a - 11.0 HSPF HP	---		$ -
3.6a - DHP (15% elec)	3		$ 5,245
4.1 - Deeply buried	0.5		$ -
4.2 - HVAC inside	---		---
5.1 - DWR	---		$ 505
5.2 - 0.80 gas DHW	0.5		---
5.3 - 0.91 gas DHW, GSHP	1		---
5.4 - Tier III HPWH	2.5		$ 318
5.5 - CO2 HPWH	3		$ 1,275
6.1 - Solar pV	1		$ 5,040
7.1 - ES Appl+ventless Dryer	1.5		$ 505

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements RCW 19.27A.020 - State energy code—Adoption by state building code council—Preemption of local residential energy codes.

(1) The state building code council in the department of enterprise services shall adopt rules to be known as the Washington state energy code as part of the state building code.

(2) The council shall follow the legislature's standards set forth in this section to adopt rules to be known as the Washington state energy code. The Washington state energy code shall be designed to:

(a) 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;

(b) Require new buildings to meet a certain level of energy efficiency, but allow flexibility in building design, construction, and heating equipment efficiencies within that framework; and

(c) Allow space heating equipment efficiency to offset or substitute for building envelope thermal performance.

This rule adopts standards for the Washington State Energy Code, Residential provisions, that are in line with federal law, that remain efficient, allow flexibility and help move toward the broader goal of building zero fossil-fuel greenhouse gas emission homes by 2031.

(1)(b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule:

The Council is required to adopt and maintain the state building code, as provided in chapters 19.27, 19.27A, and 70.92 RCW, and the state legislature. The primary objective of the Council is to encourage consistency in the building code throughout the state of Washington and to maintain the building code consistent with the state's interest as provided in RCW 19.27.020. The Council is further required by RCW 19.27A.160 to adopt state energy codes from 2013 through 2031 that incrementally move towards achieving a 70% reduction in annual net energy consumption in residential and nonresidential construction permitted under the 2031 state energy code using the adopted 2006 Washington state energy code as a baseline. The statewide code adoption process is defined in WAC 51-04 and the Council bylaws. All proposals are submitted in writing on the appropriate form with the indicated supporting documentation. Each proponent must identify where a proposed amendment has an economic impact and estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of energy efficiency and safety in buildings consistent with accepted standards and as required under law.

(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

The probable benefits of the adopted rule are greater than its probable costs. The amendments clarify the intent and application of the code and maintains the progress gained towards achieving the statutory goals in RCW 19.27A.020 and RCW 19.27A.160.

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for

those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

The amendments are the least burdensome alternative for those required to comply with it and will achieve the general goals and specific objectives stated above in (1)(a). Failing to make incremental progress on achieving the 2031 energy efficiency goal as required by law in the current code cycle would necessarily require energy efficiency improvements to be more stringent in future cycles. In addition, there are no alternatives to this procedure. If the rules were not adopted, there may be a violation of federal law. If this code were amended to be less stringent, it would be a violation of the State Law, RCW 19.27A.045, which will affect the promotion of energy efficiency and safety in buildings consistent with accepted standards.

(1)(f) Determine that the rule does not require those to whom it applies to take an action that violates requirements of another federal or state law:

The Council entered rulemaking to modify sections in the commercial and residential energy codes to address legal uncertainty stemming from the decision in California Restaurant Association v. City of Berkeley recently issued by the Ninth Circuit Court of Appeals. While the requirements in the 2021 Washington State Energy Code are not exactly analogous to the Berkeley prohibition on gas infrastructure, the Council moved forward to address the ruling expanding the scope of the Energy Policy and Conservation Act of 1975 (EPCA) preemption provisions. The Council sought public input on areas where the code may be impacted by a preemption issue and developed a proposed rule addressing those areas while retaining the efficiency gains made towards the goal of RCW 19.27A.160. The adopted rule meets requirements for an exemption from preemption under EPCA and does not require those to whom it applies to take an action that violates requirements of another federal or state law.

(1)(g) Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law:

The amendments adopted for the 2021 Washington State Energy Code, Residential Provisions, do not impose more stringent performance requirements on private entities than on public entities.

(1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter and, if so, determine that the difference is justified by the following:

☒This does not differ from any federal regulations or statute applicable to the same activity.

☐(1)(i) A state statute explicitly allows the agency to differ from federal standards; or

☐(1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and

☐(1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.