



STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

Washington State Energy Code Development Standard Energy Code Proposal Form

May 2018

Log No. _____

Code being amended: Commercial Provisions Residential Provisions

Code Section # Appendix F

Brief Description:

Update Appendix Table F101.3.2 values using the September 18, 2020 report by Ecotope, and O'Brien 360, titled *Modeling the Washington State Energy Code – 2006 & 2018 Baseline Energy Consumption*

Proposed code change text: (Copy the existing text from the Integrated Draft, linked above, and then use underline for new text and ~~strikeout~~ for text to be deleted.)

See attachments.

Purpose of code change:

The values in the September 2020 report provide data that was not available during the 2018 code cycle and need to be updated to keep alignment with the state requirement for 70% energy use reductions by 2030 code cycle compared to the 2006 code.

Your amendment must meet one of the following criteria. Select at least one:

- Addresses a critical life/safety need.
- Consistency with state or federal regulations.
- The amendment clarifies the intent or application of the code.
- Addresses a unique character of the state.
- Addresses a specific state policy or statute.
(Note that energy conservation is a state policy)
- Corrects errors and omissions.

Check the building types that would be impacted by your code change:

- Single family/duplex/townhome
- Multi-family 4 + stories
- Institutional
- Multi-family 1 – 3 stories
- Commercial / Retail
- Industrial

Your name Michael Fowler Email address energycodewa@gmail.com

Your organization self Phone number

Other contact name

Instructions: Send this form as an email attachment, along with any other documentation available, to: sbcc@des.wa.gov. For further information, call the State Building Code Council at 360-407-9278.

Economic Impact Data Sheet

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants and businesses.

No economic impact changes compared to 2018 code. Similar and improved energy savings benefits to building owners, tenants, and businesses. Future proofing new construction to align with the Washington Clean Buildings Standard for existing buildings to meet a maximum EUI.

Provide your best estimate of the construction cost (or cost savings) of your code change proposal? (See OFM Life Cycle Cost [Analysis tool](#) and [Instructions](#); use these [Inputs](#). Webinars on the tool can be found [Here](#) and [Here](#))

[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

No incremental cost change compared to 2018 code.

Provide your best estimate of the annual energy savings (or additional energy use) for your code change proposal?

[Click here to enter text.](#)KWH/ square foot (or) [Click here to enter text.](#)KBTU/ square foot

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

Show calculations here, and list sources for energy savings estimates, or attach backup data pages

EUI improvements are shown in the comparison attachment.

List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:

No changes compared to 2018 code.

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

Comparison values between 2018 code (2003 / 2012 note) and options for the 2021 code (2006 and 2018 notes)
 Provided for background information only.

Appendix F - Table F101.3.2 (COMPARISON ONLY)																	
Occupancy / Use	Zone	2006			2018			2021		2024		2027		2030			
		4c	State	5b	4c	State	5b	4c	5b	4c	5b	4c	5b	4c	5b		
A-3	Library	2003/2012	104		108.8	49.9		52.2	45.30	47.30	40.60	42.40	35.90	37.50	31.20	32.60	
B	Office	2018	small	38	39	40	22.17	22.82	23.47	19.48	20.60	16.79	17.74	14.09	14.87	11.40	12.00
			medium	41	43	45	25.52	26.82	28.12	22.22	24.47	18.91	20.81	15.61	17.16	12.30	13.50
			large	39	40	41	27.17	27.82	28.47	23.30	24.43	19.44	20.39	15.57	16.34	11.70	12.30
B	Office	2006	small	38	39	40				21.38	22.50	18.05	19.00	14.73	15.50	11.40	12.00
			medium	41	43	45				23.06	25.31	19.48	21.38	15.89	17.44	12.30	13.50
			large	39	40	41				21.94	23.06	18.53	19.48	15.11	15.89	11.70	12.30
B	Office	2003/2012	67.3		68.6	68.6		30.9	26.70	28.30	24.50	25.80	22.40	23.20	20.20	20.60	
B	Health out-patient	2018	124	125	126	102.35	103	103.65	86.06	87.19	69.78	70.73	53.49	54.26	37.20	37.80	
B	Health out-patient	2006	124	125	126				69.75	70.88	58.90	59.85	48.05	48.83	37.20	37.80	
B	Med non-diagnostic	2003/2012	50.4		51.3	25.4		24.6	25.40	22.30	22.80	20.00	20.20	17.70	17.50	15.40	
E	School	2018	primary	49	52	55	35.22	37.17	39.12	30.09	33.47	24.96	27.81	19.83	22.16	14.70	16.50
			secondary	44	47	50	30.22	32.17	34.12	25.97	29.34	21.71	24.56	17.46	19.78	13.20	15.00
E	School	2006	primary	49	52	55				27.56	30.94	23.28	26.13	18.99	21.31	14.70	16.50
			secondary	44	47	50				24.75	28.13	20.90	23.75	17.05	19.38	13.20	15.00
E	School	2003/2012	58.4		62.4	28		30	25.40	27.20	22.80	24.30	20.20	21.50	17.50	18.70	
I-2	Hospital	2018	145	174	203	104.15	123	141.85	88.99	121.61	73.83	101.38	58.66	81.14	43.50	60.90	
I-2	Hospital	2006	145	174	203				81.56	114.19	68.88	96.43	56.19	78.66	43.50	60.90	
I-2	Hospital	2003/2012	176.1		165.5	84.5		79.4	76.60	72.00	68.70	64.50	60.80	57.10	52.80	49.70	
M	Grocery	2018		195	202	209	158.45	163	167.55	133.46	141.34	108.48	115.13	83.49	88.91	58.50	62.70
			2006	195	202	209				109.69	117.56	92.63	99.28	75.56	80.99	58.50	62.70
			2003/2012	227.4		226.1	109.1		108.5	98.90	98.40	88.70	88.20	78.50	78.00	68.20	67.80
M	Retail	2018	stand alone	66	70	74	33.4	36	38.60	30.00	34.50	26.60	30.40	23.20	26.30	19.80	22.20
			strip mall	71	76	81	31.75	35	38.25	29.14	34.76	26.53	31.28	23.91	27.79	21.30	24.30
M	Retail	2006	stand alone	66	70	74				37.13	41.63	31.35	35.15	25.58	28.68	19.80	22.20
			strip mall	71	76	81				39.94	45.56	33.73	38.48	27.51	31.39	21.30	24.30
M	Retail	2003/2012	87.5		73	42		46.6	38.10	42.20	34.10	37.80	30.20	33.50	26.30	29.10	
S-1	Garage	2018	enclosed (a)	13		13	8.00		8.00	7.00	7.00	5.90	5.90	4.90	4.90	3.90	3.90
			open (a)	7.8		7.8	4.80		4.80	4.20	4.20	3.60	3.60	3.00	3.00	2.30	2.30
S-2	Warehouse	2018	non-ref (b)	13	14	15	7.35	8	8.65	6.49	7.61	5.63	6.58	4.76	5.54	3.90	4.50
				13	14	15				7.31	8.44	6.18	7.13	5.04	5.81	3.90	4.50
S-2	Warehouse	2003/2012	29.2		35.8	14		17.2	12.70	15.60	11.40	14.00	10.10	12.40	8.80	10.70	
R-2	Multifamily	2018	46	47	48	36.35	37	37.65	30.71	31.84	25.08	26.03	19.44	20.21	13.80	14.40	
R-2	Multifamily	2006	46	47	48				25.88	27.00	21.85	22.80	17.83	18.60	13.80	14.40	
R-2	Multifamily	2003/2012	70.5		70.5	27.39		30.09	26.43	27.86	24.67	25.61	22.91	23.39	21.16	21.16	
R-2	Multifamily units	2003/2012	kWh/person/yr						3,089	3,212	2,681	2,789	2,256	2,348	1,808	1,886	
									3,156	3,314	3,028	3,133	2,900	2,952	2,771	2,771	
R-2	Multifamily common	2003/2012	kWh/sf/yr						15.0	15.8	11.6	12.2	8.5	8.9	5.7	5.9	
									15.3	16.3	13.1	13.8	10.9	11.2	8.8	8.7	

Building type descriptions. If not described elsewhere in the code, adding this and the next page as reference within Appendix F will be useful.

APPENDIX D – COMMERCIAL BUILDING TYPE DESCRIPTIONS

Table 20. Commercial Building Prototype Descriptions Compared to CBSA Building Types

Commercial Prototypes	CBSA Detailed Building Type Included	Other Criteria
Small Office	office- admin, professional, government, financial; call center; city hall; retail banking; sales office; other office	Less than 20,000 square feet
Medium Office	office- admin, professional, government, financial; call center; city hall; retail banking; sales office; other office	20,001 - 100,000 square feet
Large Office	office- admin, professional, government, financial; call center; city hall; retail banking; sales office; other office	Greater than 100,000 square feet
Stand-alone Retail	auto parts; auto/boat dealer/ show room; beauty / barber; car wash; clothing; department store; dry cleaner; electronics/appliances; florist, nursery; hardware; home improvement; laundromat (self-service); pharmacy; post office; rental center; repair shop; studio/gallery; vehicle repair; warehouse club; other specialty merchandise	Single stand-alone building
Strip Mall	auto parts; auto/boat dealer/ show room; beauty / barber; car wash; clothing; department store; dry cleaner; electronics/appliances; florist, nursery; hardware; home improvement; laundromat (self-service); pharmacy; post office; rental center; repair shop; studio/gallery; vehicle repair; warehouse club; other specialty merchandise	Part of larger mixed-use building
Supermarket	grocery	
Primary School	elementary school; middle school; pre-school; other k-12 school	
Secondary School	high school	
Small Hotel	motel; bed & breakfast; boarding/rooming house, apt hotel	
Large Hotel	hotel; hotel - resort	
Hospital	hospital	
Warehouse (non-refrigerated)	ministorage; warehouse, distribution; warehouse, storage; other warehouse	

Commercial Prototypes	CBSA Detailed Building Type Included	Other Criteria
Quick Service Restaurant	cafeteria; catering service; coffee, doughnut, or bagel shop; fast food restaurant; ice cream or frozen yogurt shop; take-out restaurant; truck stop	
Full-Service Restaurant	bar, pub, lounge; sit down restaurant; other restaurant	
Outpatient Healthcare	dental office; medical clinic / outpatient medical; medical office; medical urgent care clinic; outpatient rehab; veterinarian office/clinic	
Mid-rise Apartment	Not included in CBSA. Should represent all high rise (up to 4 stories) apartment buildings.	Census Data used to estimate number of apartments and square footage. Seattle Benchmarking Data used to estimate high rise to mid-rise split in urban area.
High-rise Apartment	Not included in CBSA. Should represent all low rise (greater than 4 story) apartment buildings.	Census Data used to estimate number of apartments and square footage. Seattle Benchmarking Data used to estimate high rise to mid-rise split in urban area.
Residential Care	assisted living; in-patient rehab; nursing home; retirement home; other residential care	

Proposed new Appendix F - Table F101.3.2

Appendix F - Table F101.3.2									
		2021		2024		2027		2030	
Occ / Use	EUI	4c	5b	4c	5b	4c	5b	4c	5b
B	Office - small	19.48	20.60	16.79	17.74	14.09	14.87	11.40	12.00
	Office - medium	22.22	24.47	18.91	20.81	15.61	17.16	12.30	13.50
	Office - large	21.94	23.06	18.53	19.48	15.11	15.89	11.70	12.30
B	Health out-patient	69.75	70.88	58.90	59.85	48.05	48.83	37.20	37.80
E	School - primary	25.40	27.20	22.80	24.30	18.99	21.31	14.70	16.50
	School - secondary	24.75	28.13	20.90	23.75	17.05	19.38	13.20	15.00
I-2	Hospital	76.60	72.00	68.70	64.50	56.19	57.10	43.50	49.70
M	Grocery	98.90	98.40	88.70	88.20	75.56	78.00	58.50	62.70
M	Retail - stand alone	30.00	34.50	26.60	30.40	23.20	26.30	19.80	22.20
	Retail - strip mall	29.14	34.76	26.53	31.28	23.91	27.79	21.30	24.30
S-1	Garage - enclosed (a)	7.00	7.00	5.90	5.90	4.90	4.90	3.90	3.90
	Garage - open (a)	4.20	4.20	3.60	3.60	3.00	3.00	2.30	2.30
S-2	Warehouse (non-ref) (b)	6.49	7.61	5.63	6.58	4.76	5.54	3.90	4.50
R-2	kWh/person/year	3,089	3,212	2,681	2,789	2,256	2,348	1,808	1,886
R-2	Common kWh/sf/yr	15.0	15.8	11.6	12.2	8.5	8.9	5.7	5.9