

APPENDIX F

OUTCOME-BASED ENERGY BUDGET

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

F101.1 General. This section is an outcome-based energy budget compliance requirement pursuant to RCW Chapter 19.27A.160 to incrementally move toward achieving by 2031 a 70 percent reduction in annual net energy use compared with 2006 baseline. As an outcome-based energy budget, this requirement uses a building’s actual energy use to determine compliance.

F101.2 Scope. Buildings permitted under this section shall document one year of net energy use below an energy budget within three years after occupancy and every five years thereafter. Buildings and sites shall also be designed with the ability to offset in the future all estimated energy needs through renewable energy generation with minimum 40 percent on-site, maximum 40 percent off-site, and maximum 20 percent through green power purchase. Buildings that exceed the energy budget by up to 20 percent shall offset the excess amount through a green power purchase agreement. Buildings that exceed the energy budget by more than 20 percent shall, using a posted performance bond or financial security, offset the excess amount over 20 percent by installing renewable energy or with an energy retrofit.

F101.3 Building permit submittal. Building designs shall establish on the Washington State Outcome-Based Energy Budget Form (Figure F101.3):

1. The anticipated building energy use is lower than the energy budget.
2. The energy generation ability in the future is greater than or equal to the anticipated building energy use.

F101.3.1 Anticipated building energy use. The total yearly energy use from all metered fuel sources is the anticipated building energy use. Any energy used from district energy, combined heat and power, renewable energy, or captured waste heat systems must be metered. Buildings with any non-metered energy sources are not permitted for compliance with this section. All secondary spaces and services (examples: exterior building and site lighting, surface parking, garages, and exterior swimming pools) associated with the building shall be included in the overall energy use total. The anticipated site Energy Use Intensity (EUI) for each fuel source shall be reported in units of kWh/ft²/yr or kBtu/ ft²/yr using the conversions listed below:

Metered Fuel Source	to kWh:	to kBtu
Electric	kWh x 1	kWh x 3.412
Gas	Therm x 29.308	Therm x 100
Propane	Cubic Foot x 0.738	Cubic Foot x 2.5185
Fuel Oil	Gallon x 43.872	Gallon x 149.6905

F101.3.2 Building use and occupancy types. Building use and occupancy types permitted are indicated in Table F101.3.2(1).

F101.3.3 Maximum site energy budget. Table F101.3.2(1) indicates the site EUI budget for each building use and occupancy type along with the building enclosure requirements for all use and occupancy types.

F101.3.3.1 Mixed-use buildings. For buildings that contain more than one building use or occupancy type, the overall energy budget shall be based on the individual floor area percentage totals of each use times the individual energy budget and summing the results of all individual areas.

F101.3.3.2 Energy budget level options. Development teams may commit to a future, more stringent energy budget level from Table F101.3.2(1). Actual energy use and energy generation ability will be evaluated on this lower budget level.

F101.3.3.3 Energy modeling. A proposed building energy model is required for compliance with Section F101.3.2. A baseline energy model is not required. The proposed design model must show estimated energy use below the energy.

F101.3.4 Energy generation ability. Permit documents shall indicate the location, space allocated, and connection pathways for future installation of all potential energy generation systems. Only items defined by the Washington State Energy Code as On-Site Renewable Energy shall be used to meet energy generation requirements.

F101.3.4.1 Energy Generation Categories. The development team shall complete the Washington State Outcome-Based Energy Budget Form (Figure F101.3) to show the total renewable energy generation ability in the following categories:

1. Building Integral: Renewable energy generation sources attached to the building. This value, combined with the on-site value, shall be at least 40 percent of the energy budget.
2. On-site: Renewable energy generation sources located on the building site property. This value, combined with the building integral value, shall be at least 40 percent of the energy budget.
3. Off-site: Renewable energy generation sources not located on the building site. This amount is limited to 40 percent of the energy budget. A specific off-site location does not need to be identified.
4. Green Power: Renewable energy purchased through the electric utility provider for the building. This amount is limited to 20 percent of the energy budget.

F101.3.4.2 Energy generation ability for building sites within a 2030 district. The development team for building sites within a designated 2030 District recognized by Architecture 2030 may use the Architecture 2030 Challenge 70 percent energy reduction target from the 2003 baseline as the energy budget. Building locations meeting this criteria and choosing this energy budget are exempt from the building integral and on-site requirements in Section F101.3.4.1. Green power remains capped at 20 percent. The generation requirements may be split, in any amount, among the building integral, on-site, or off-site categories. Actual energy use will be evaluated against the Architecture 2030 Challenge 70 percent energy reduction budget.

F101.4 Actual energy use submittal. The building owner or representative shall submit energy use documentation summary from all energy source providers or from an energy benchmarking service to the building code official. Code compliance is achieved with net energy use below the energy budget for any continuous 12-month span within the first three years of occupancy.

F101.4.1 Energy use monitoring period and occupancy. The energy use monitoring timeframe shall start on the first full-month billing cycle of the utility or energy source provider(s) six months after a certificate of occupancy is issued. Buildings shall be deemed substantially occupied when a minimum 85 percent of the floor area, including all common areas, is occupied. The energy monitoring start time may be delayed up to an additional 6 months from certificate of occupancy (up to 12 months total) if 85 percent occupancy is not yet achieved. Buildings not 85 percent occupied after 12 months shall start the monitoring period for the portions occupied with an energy budget based on the spaces occupied and all common areas combined.

F101.4.2 Change of occupancy use during monitoring period. If an area within the building changes from one occupancy use to another with a different target EUI energy budget or if the building occupancy level drops below 50 percent, the target EUI energy budget shall be recalculated to become the new energy budget against which the building energy use shall be compared for compliance.

F101.4.3 Energy metering. All building spaces and uses subject to an energy budget or a portion of the energy budget shall be metered separately for all energy uses.

F101.4.4 Energy budget responsibility. The building owner is responsible for the compliance of the whole building. At the building owner's discretion, responsibility for the energy use budget may be divided and transferred into portions attributable to the occupant, operator or controller of each energy budget space. Common area spaces not under the control of an occupant or tenant may not be transferred.

F101.5 Actual energy use above the energy budget. Buildings exceeding the energy budget are not in compliance with the energy code and the building owner shall complete one of the following measures within one year:

1. Owners of buildings with actual energy use that exceeds the energy budget by up to 20 percent may offset the excess energy amount through annual green power purchase agreement from the utility provider at a rate of 1.1 times the excess energy amount until future code compliance is demonstrated.
2. Owners of buildings with actual energy use that exceeds the energy budget by more than 20 percent and up to 40 percent shall complete item 1 and either install on-building, on-site, or off-site energy generation equipment or invest in an energy conservation retrofit using the performance bond or financial security for energy amount remaining above 20 percent.
3. Owners of buildings with actual energy use that exceeds the energy budget by more than 40 percent shall complete item 1, item 2, and post a replacement performance bond or financial security equal to the first bond or security amount.

F101.5.1 Continued energy monitoring. Upon completing the necessary compliance measure(s) in Section F101.5 the building owner is provided another three-year timeframe to achieve and document net energy use below the energy budget for any continuous 12-month span. Owners of buildings that remain more than 20 percent above the energy budget shall repeat the measures in Section F101.5, up to three times maximum, using the performance bond or financial security to install energy generation equipment or to install an energy retrofit and post a new performance bond equal to the first.

F101.5.2 Tradable certificate for energy savings. As an alternate to the requirements of Section F101.5 a building owner may, when this market-based instrument becomes available, purchase a Tradable Certificate for Energy Savings (TCES) or

‘white certificates’ from a building or entity with energy savings. The building owner shall purchase TCES’s equal to 1.1 times the amount that the building’s actual energy use exceeds the energy budget.

F101.6 Performance bond or financial security. A building developer must secure and submit to the code official a performance bond or an irrevocable financial security letter of credit from a State of Washington financial institution prior to certificate of occupancy issuance. The bond or security shall have a value equal to \$4.00 per square foot of gross conditioned floor area. The bond or security shall be used only to install renewable energy on the building or for investment into energy conservation measures as part of an energy retrofit. The bond or security may also be held for one additional three-year energy-monitoring period if green power is purchased. Upon demonstrated compliance with the energy budget, the bond or security requirement shall be released.

F101.6.1 Failure to submit energy use data. Building owners that fail to submit energy use data at the end of the three-year monitoring period shall forfeit the full amount of the performance bond or financial security as payment to the local jurisdiction. Building owners that fail to submit energy use data at the end of each continuing five year monitoring period shall be fined an amount equal to the original bond or financial security by the local jurisdiction.

F101.7 Continued energy budget certification. After achieving code compliance buildings shall be required every five years to document a continuous 12-month span with net energy use that is lower than the required energy budget. Owners of buildings with actual energy use that is at least 2.5 percent below their energy budget (from year permitted baseline, not voluntary year) may sell, when a future market-based instrument becomes available, their unused energy equivalents in the form of a ‘white certificate’ or Tradable Certificate for Energy Savings.

F101.8 Local amendments. Local jurisdictions may amend the current code cycle EUI maximum energy budget by adopting a more-stringent future code year value stated in Table F101.3.2(1).

**TABLE F101.3.2(1)
WASHINGTON STATE OUTCOME-BASED ENERGY BUDGET**

Building Occupancy/Use		Site EUI							
		2021		2024		2027		2030	
		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 (nonref) ^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

a. Lighting power allowance must still comply with Table C405.4.2(2).

b. Applicable to heated warehouses only.

**TABLE F101.3.2(2)
COMMERCIAL BUILDING TYPE DESCRIPTIONS**

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

**TABLE F101.3.2(2)—continued
COMMERCIAL BUILDING TYPE DESCRIPTIONS**

Commercial Prototypes	CBSA Detailed Building Type Included	Other Criteria
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	
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 Health care	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	

FIGURE F101.3.2
WASHINGTON STATE OUTCOME-BASED ENERGY BUDGET FORM

WASHINGTON STATE OUTCOME-BASED ENERGY BUDGET FORM

(reserved for graphics)

Building occupancy/use _____

Conditioned floor area SF

Code maximum site EUI energy budget

Predicted EUI

Electric

Gas

Propane

Oil

Other (source/generation)

Generation Potential EUI

Building Integral (combined must exceed 40%)

On-site

Offsite (max 40%)

Purchase (max 40%)

Percentage better than energy budget

Percentage potential EUI above predicted EUI

PROJECT SUMMARY

Building Name _____

Address _____

City _____

Owner _____

Address _____

City, State, Zip _____

PROJECT CERTIFICATION

Name _____

Firm _____

Date _____

(seal)

