



Department of Commerce

Washington Building Energy Performance Standard

RULEMAKING ORIENTATION WEBINAR

Chuck Murray
SR ENERGY POLICY SPECIALIST

11/4/2019

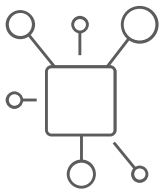




We strengthen communities



HOUSING / HOMELESSNESS



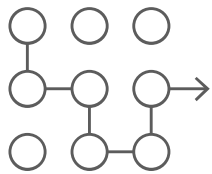
INFRASTRUCTURE



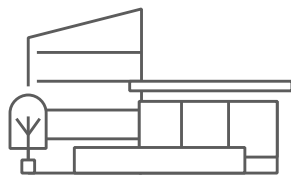
BUSINESS ASSISTANCE



ENERGY



PLANNING



COMMUNITY FACILITIES



CRIME VICTIMS / SAFETY



COMMUNITY SERVICE



Agenda

- Resources
- Rulemaking
- Primary rulemaking subjects
- Other rulemaking subjects
- Fall schedule

Disclaimer: Any comments we make today about specific rules are subject to change through the rulemaking process



Team Commerce

- Emily Salzberg Managing Director, Buildings Program
- Chuck Murray Policy Specialist and Technical Lead
- Austin Scharff Energy Rules and Legislative Coordinator

- and a huge supporting cast.....

- Webpage: www.commerce.wa.gov/buildings
- Email: buildings@commerce.wa.gov



Associates

WSU Energy Program

- David Van Holde
- Karen Janowitz
- Jake Volkman

Professional Engineer

Project Manager

Energy Program Coordinator

SBW / 2050 INSTITUTE

- Faith DeBolt
- Poppy Storm

EUI target setting



Clean buildings web page

- **Workshop Schedules**
- **Agendas**
- **Meeting Minutes**
- **Meeting Recordings**
- **Meeting Presentations**
- **Draft rules**

- **Updated as we go**
- **www.commerce.wa.gov/buildings**



Linked from web page

- Session Law
- RCWs
- Read Only ANSI/ASHRAE/IES Standard 100-2018
- ENERGY STAR Portfolio Manager

- www.commerce.wa.gov/buildings

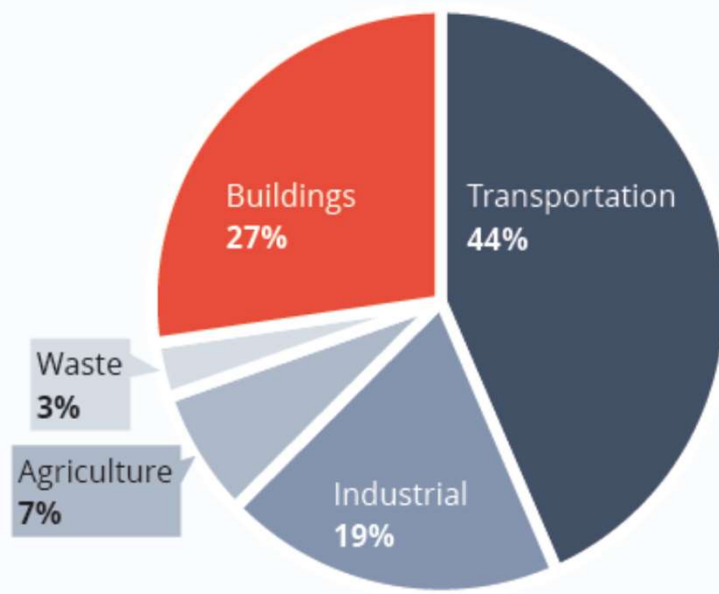


House Bill 1257 RCW

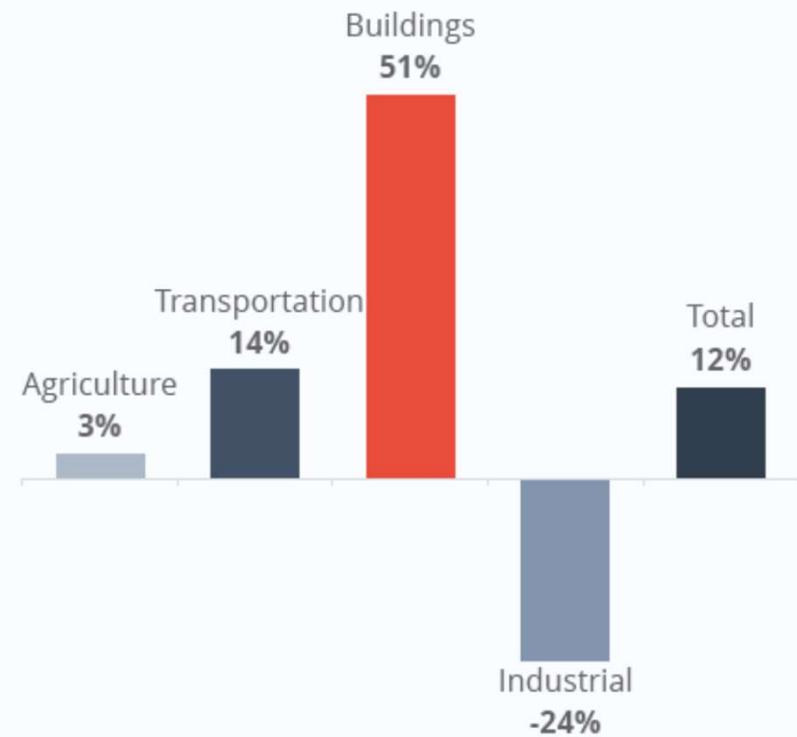
- [19.27A.200](#) State energy performance standard—Definitions.
- [19.27A.210](#) State energy performance standard.
- [19.27A.220](#) State energy performance standard—Early adoption incentive program.
- [19.27A.230](#) State energy performance standard—Limit on early adoption incentive payments.
- [19.27A.240](#) State energy performance standard—Early adoption incentive payment administration

Why target buildings?

Source of Washington Greenhouse Gas Emissions, 2015



Change in Washington Greenhouse Gas Emissions, 1990–2015





Instructions for Commerce

RCW 19.27a.210

“In developing energy performance standards, the department shall seek to maximize reductions of greenhouse gas emissions from the building sector”.




Rules development – high level overview

- **Pre-rulemaking workshops** **Fall 2019**
 - Informative presentations
 - Public input
- **Develop draft rules** **Winter 2019**
 - Combined work of Commerce and public
- **Publish proposed rules (CR102)** **Spring 2020**
 - Should represent the final rules as close as possible
- **Public hearings** **Summer 2020**
- **Final rules** **Fall 2020**



Incorporation by reference

- Many of the rules will be incorporated by reference to ASHRAE Standard 100
- Most State modifications will be incorporated into Standard 100
- Know the standard



Energy performance standard for existing commercial buildings

- Applies to nonresidential, hotel, motel, and dormitory buildings greater than 50,000 SF
- Compliance is a building owner obligation
- Rules under development, final by Nov. 1, 2020
- Early Adopter Incentive Program Begins July 1, 2021
 - Multifamily apartments also included in the incentive program
- Mandatory Requirements Beginning 2026-2028

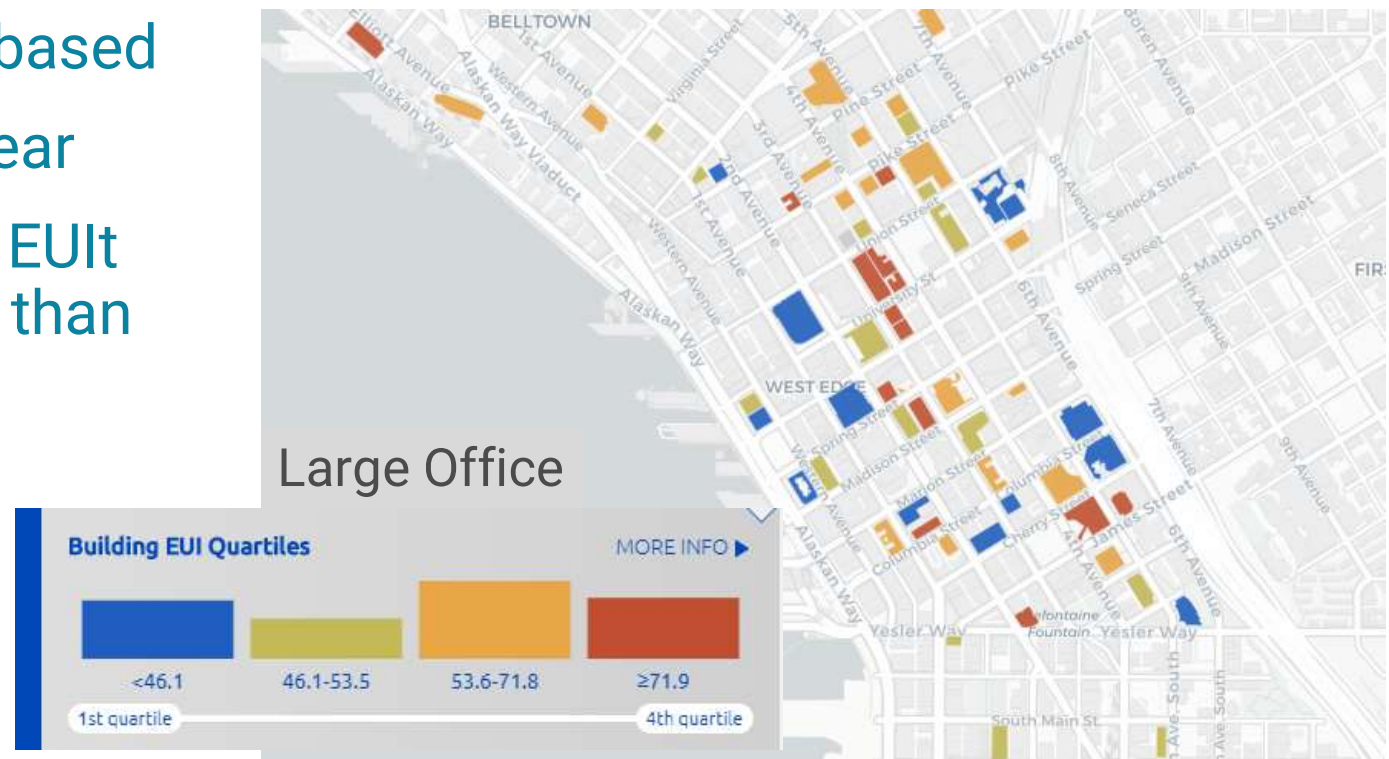


EUI and EUI_t

- **Energy Utilization Index (EUI)**
 - Site energy use per square foot of floor area per year
 - *A measurement that normalizes a building's site energy use relative to its size. A building's energy use intensity is calculated by dividing the total net energy consumed in one year by the gross floor area of the building, excluding the parking garage. "Energy use intensity" is reported as a value of thousand British thermal units per square foot per year.*
- **Energy Utilization Index Target (EUI_t)**
 - *The net energy use intensity of a covered commercial building that has been established for the purposes of complying with the standard.*
 - TABLE 7-2a Building Activity Site Energy Targets

Energy Utilization Targets (EUIt)

- Performance based
- $EUI = \text{Btu/SF/year}$
- State specific EUIt shall be- “less than average”





Compliance & conditional compliance

- **Compliance**

- Meeting all the provisions and administrative requirements including meeting the energy use intensity target
 - Detailed in section 4 of standard 100

- **Conditional compliance**

- *A temporary compliance method used by building owners that demonstrate the owner has implemented energy use reduction strategies required by the standard, but has not demonstrated full compliance with the energy use intensity target.*

- **Exemptions from the standard – RCW 19.27A.210 (7)(c)**



Administrative penalties

- (i) Failure to submit a compliance report in the form and manner prescribed by the department;
- (ii) Failure to meet an energy use intensity target or failure to receive conditional compliance approval;
- (iii) Failure to provide accurate reporting consistent with the requirements of the standard established under this section; and
- (iv) Failure to provide a valid exemption certificate.



Primary rulemaking subjects

- Adopt with modifications ASHRAE Standard 100
- Set WA specific Energy Utilization Targets (EUI_t) for select building types
- Adopt a life cycle cost methodology in support of the conditional compliance method
- Develop administrative procedures
 - Mandatory reporting and documentation
 - Incentive application, implementation and qualification
- Procedures for incentive payments
 - Commerce / Utilities

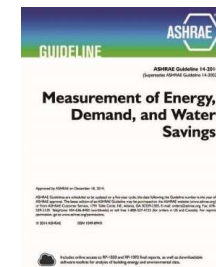
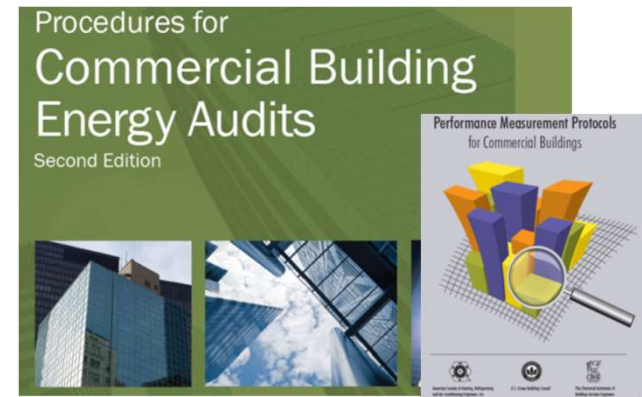
RCW 19.27a.210 & standard 100

STANDARD

ANSI/ASHRAE/IES Standard 100-2018
 (Supersedes ANSI/ASHRAE/IES Standard 100-2015)
 Includes ANSI/ASHRAE/IES addenda listed in Annex N

Energy Efficiency in Existing Buildings

Direct Reference



Procedures for Commercial Building Energy Audits, Second Edition
 Sample EEM Summary Table

Item Number	Resource Description	Point Value	Minimum Energy Savings Potential	Estimated Energy Savings Potential
EMM-1	Engine Incentives Larger with CFCs	7.0	15,240	-
EMM-2	Reduce Process Setting on Pneumatic Compressor	-	2,312	-
EMM-3	Install VFD on Fan Motor Compressor Load Pump in Mechanical Room	10.0	101,872	-
EMM-4	Install VFD on Fan Motor Compressor Control	-	12,449	101
EMM-5	Install VFD on Fan Motor Compressor Control	-	12,449	101
EMM-6	Install VFD on Fan Motor Compressor Control	-	12,449	101
EMM-7	Install VFD on Fan Motor Compressor Control	-	12,449	101
EMM-8	Install VFD on Fan Motor Compressor Control	-	12,449	101
EMM-9	Install VFD on Fan Motor Compressor Control	-	12,449	101
EMM-10	Install VFD on Fan Motor Compressor Control	-	12,449	101
EMM-11	Install VFD on Fan Motor Compressor Control	-	12,449	101
EMM-12	Install VFD on Fan Motor Compressor Control	-	12,449	101
TOTAL (Recommended Minimum)		37.0	238,860	17,403

Informative background and tools



ANSI/ASHRAE/IES Standard 100-2018

4. COMPLIANCE REQUIREMENTS

- **All buildings**

- 5. ENERGY MANAGEMENT PLAN

- 6. OPERATIONS AND MAINTENANCE REQUIREMENTS

- 7. ENERGY-USE ANALYSIS AND TARGET REQUIREMENTS

- **Buildings that exceed EUI targets and buildings without EUI targets**

- 8. ENERGY AUDIT REQUIREMENTS

- 9. IMPLEMENTATION AND VERIFICATION REQUIREMENTS

- Developed to meet EUI target

- OR

- Developed to adopt all cost-effective measures



RCW 19.27a.210 (2)(a) building types

- May be selected from Standard 100 or ENERGY STAR Portfolio Manager
- There are some differences

Portfolio Manager - Office

- Medical Office
- Office
- Veterinary Office
- Other – Office

Standard 100 - Office

- Admin/professional office
- Government Office
- Medical office (nondiagnostic)
- Medical office (diagnostic)
- Mixed-use office



Existing standard 100 table 7-2a

No.	Commercial Building Type	EUIs by Building Type by Climate Zone (kBtu/ft ² ·yr)											
		ASHRAE Climate Zone											
		1A	2A	2B	3A	3B Coast	3B Other	3C	4A	4B	4C	5A	5B
1	Admin/professional office	39	40	39	42	33	39	33	46	40	40	48	42
2	Bank/other financial	55	57	56	59	46	55	47	65	56	57	68	59
3	Government office	49	50	49	52	41	48	42	57	49	50	60	52
4	Medical office (nondiagnostic)	33	34	33	35	28	33	28	39	34	34	41	36
5	Mixed-use office	45	46	45	48	38	45	39	53	46	47	56	48
6	Other office	38	39	38	40	32	37	32	44	38	39	47	40
7	Laboratory	178	176	171	175	147	165	159	194	173	179	209	187

Many more....



RCW 19.27a.210(2) EUI development

(a) **Must develop energy use intensity targets that are no greater than the average** energy use intensity for the covered commercial building occupancy type with **adjustments for unique energy using features**. The department must also develop energy use intensity targets for additional property types eligible for incentives in section 4 of this act. **The department must consider regional and local building energy utilization data**, such as existing energy star benchmarking data, in establishing targets for the standard. Energy use intensity targets must be developed for two or more climate zones and be representative of energy use in a normal weather year;



RCW 19.27a.210 (2) EUI development

Newer buildings

(c) May implement lower energy use intensity targets for more recently built covered commercial buildings based on the state energy code in place when the buildings were constructed;



EUI targets (EUI_t)

- Set not greater than average
- Consider unique energy using features
 - Additional normalization factors?
 - What is considered unique?
 - How to document meaningful unique features?
 - Does the inclusion of additional normalization factors or unique features change the “average” target?
- Table 7-2a Building Activity Site Energy Targets (EUI_{t1}) (I-P Units)
- Table 7-3 Building Operating Shifts Normalization Factor



RCW 19.27A.210(d)(i) Conditional compliance

- Must adopt a conditional compliance method that ensures that covered commercial buildings that do not meet the specified energy use intensity targets are taking action to achieve reduction in energy use
- Investment criteria for conditional compliance that ensure that energy efficiency measures identified by energy audits are implemented to achieve a covered commercial building's energy use intensity target.



Conditional compliance

- **Must be approved by Commerce prior to the compliance date**
- **Buildings that exceed EUI targets and buildings without EUI targets**

8. ENERGY AUDIT REQUIREMENTS

- Level 2 Energy Audit

9. IMPLEMENTATION AND VERIFICATION REQUIREMENTS

- Developed to meet EUI target
- OR
- Developed to adopt all cost-effective measures



Energy Audits

Standard 100, Section 8

For large buildings, prescribes level 2 audit

Includes direct reference to *ASRAE Procedures for Commercial Building Energy Audits*

TABLE 1 — ENERGY AUDIT REQUIRED TASKS

Process	Level		
	1	2	3
Conduct PEA	•	•	•
Conduct walk-through survey	•	•	•
Identify low-cost/no-cost recommendations	•	•	•
Identify capital improvements	•	•	•
Review mechanical and electrical (M&E) design and condition and O&M practices		•	•
Measure key parameters		•	•
Analyze capital measures (savings and costs, including interactions)		•	•
Meet with owner/operators to review recommendations		•	•
Conduct additional testing/monitoring			•
Perform detailed system modeling			•
Provide schematic layouts for recommendations			•
Report	Level		
	1	2	3
Estimate savings from utility rate change	•	•	•
Compare EUI to EUIs of similar sites	•	•	•
Summarize utility data	•	•	•
Estimate savings if EUI were to meet target	•	•	•
Estimate low-cost/no-cost savings		•	•
Calculate detailed end-use breakdown		•	•
Estimate capital project costs and savings		•	•
Complete building description and equipment inventory		•	•
Document general description of considered measures		•	•
Recommend measurement and verification (M&V) method		•	•
Perform financial analysis of recommended EEMs		•	•
Write detailed description of recommended measures			•
Compile detailed EEM cost estimates			•



RCW 19.27A.210(d)(i) Investment criteria

- Enough to meet the EUI_t
or
- Implement an optimized bundle of energy efficiency measures that provides maximum energy savings without resulting in a savings-to-investment ratio of less than 1.0
 - life-cycle cost analysis accounts for the period during which a bundle of measures will provide savings
 - The building owner's cost for implementing energy efficiency measures must reflect net cost, excluding any costs covered by utility or government grants
 - The implementation plan may exclude measures that do not pay for themselves over the useful life of the measure
 - The implementation plan may include phased implementation such that the building owner is not required to replace a system or equipment before the end of the system or equipment's useful life



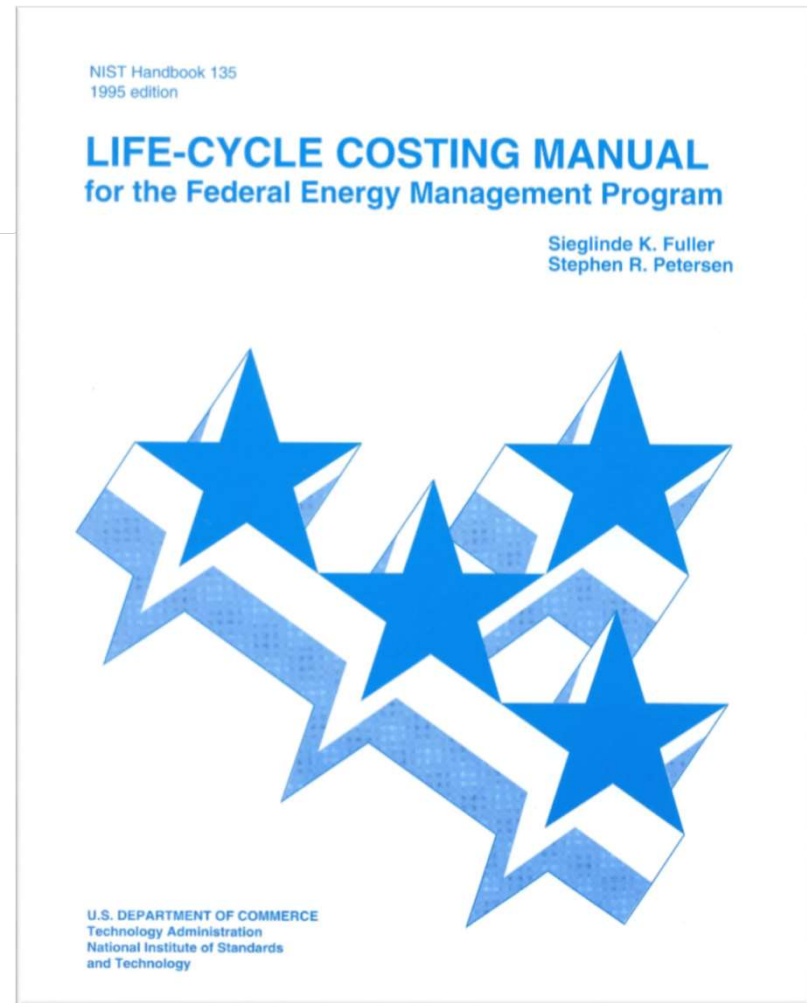
SIR - definition

(22) "Savings-to-investment ratio" means the ratio of the total present value savings to the total present value costs of a bundle of an energy or water conservation measure estimated over the projected useful life of each measure. The numerator of the ratio is the present value of net savings in energy or water and nonfuel or non water operation and maintenance costs attributable to the proposed energy or water conservation measure. The denominator of the ratio is the present value of the net increase in investment and replacement costs less salvage value attributable to the proposed energy or water conservation measure.



NIST Standard 135

- Grounding reference
- Other information will be provided





Informative annex B: timeline

Event	Time Frame	Reference
Step 1—Determine (a) the building’s measured energy-use intensity (EUI) and (b) the building’s energy target.	Time 0	Section 4.3.1
Step 2—If building’s measured EUI is equal to or less than its energy target, go to Step 9. If the building’s measured EUI is greater than its energy target, continue to Step 3.	Time 0	Sections 4.3.1.1 and 4.3.1.2
Step 3—Carry out an energy audit.	0 to 4 months	Sections 4.3.1.2 and 8.2.2
Step 4—Identify a package of energy efficiency measures (EEMs) and, assuming their implementation, calculate an adjusted EUI for the building that is equal to or lower than its energy target.	2 to 6 months	Section 8.2.2
Step 5—Implement the selected package of EEMs.	3 months to 1 year	Sections 8.2.2 and 9.1.1.1
Step 6—Apply for conditional compliance	At completion of Step 5.	Section 4.3.1.2 a
Step 7—Measure the building’s energy use for 12 months and determine its postEEM energy-use intensity.	12 to 15 months after completion of Step 5.	Section 4.3.1
Step 8—If the building’s measured EUI is equal to or less than its energy target, go to Step 9. If the building’s measured EUI is greater than its energy target, return to Step 4, identify additional EEMs, and calculate a new adjusted EUI that is equal to or lower than the building’s energy target.	12 to 15 months after completion of Step 5.	
Step 9—Apply for compliance with Standard 100.	12 to 15 months after completion of Step 5.	Section 4.3.1.3 and Form A

Before Compliance Date

← Approved Before Compliance Date



Additional subjects

- Professional qualifications
- Staff implementation vs 3rd party
- Alternate compliance
- More deliberate carbon emissions accounting
- Incentive allocation schedule, geography, equity



Documentation and reporting

Three (or more)different paths

- Building meets EUI target
- Conditional Compliance
- Building seeking Incentives
- Other?



RCW 19.27A.240 Utility Role

- **Utilities will serve as administrators for the state incentive program**
 - (1)(a) Each qualifying utility must administer incentive payments for the state energy performance standard early adoption incentive program.....
- **Utilities will continue to provide customer efficiency programs**
 - (4) The participation by an entity in the administration of incentive payments under this section does not relieve the entity of any obligation that may otherwise exist or be established to provide customer energy efficiency programs or incentives.
- **Interpretation**
 - Required building owner projects do not preempt utility participation
 - Utilities may take credit for project results



The fall schedule

www.commerce.wa.gov/buildings

- **Introduction webinar** Wednesday, Oct. 30, 2019 at 2 p.m. PST
- **Tentative workshops, Smart Building Center Seattle, 10am-2pm:**
 - Friday, November 8, 2019
 - Tuesday, November 19, 2019
 - Wednesday, December 4, 2019
 - Tuesday, December 10, 2019
 - Thursday, December 19, 2019



November 8 Agenda

- Presentation Standard 100, sections 5 and 6
- Public input – priority topics
- Guest presentation

- Ways to participate:
 - In person - Smart Building Center, Seattle
 - Remote participation - Webex
 - *Please register on the buildings web site*



Thank you for participating

buildings@commerce.wa.gov

www.commerce.wa.gov/buildings

Thank you!

Chuck Murray
SENIOR ENERGY POLICY SPECIALIST

Email: chuck.murray@commerce.wa.gov

Phone: (360) 725-3113



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