STATE OF WASHINGTON
DEPARTMENT OF COMMERCE
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www.commerce.wa.gov

Sept. 2, 2020

MEMO

To: Rulemaking Stakeholders

From: Emily Salzberg, Managing Director, Buildings Unit
Chuck Murray, Senior Energy Efficiency Policy Specialist
Luke Howard, Building Performance Specialist

RE: 2020 Clean Buildings Initiative – Proposed Rules

The Washington Department of Commerce today filed the attached proposed rules (CR-102) to implement the Clean Buildings Initiative (Chapter 285, Laws of 2019). We greatly appreciate your suggestions, questions, and discussion during our 15 stakeholder workshops and corresponding comment periods in the last 10 months. We look forward to continued progress in implementing this legislation.

Background

The notice of inquiry (CR-101) for this rulemaking was published on August 15, 2019 (WSR 19-17-038). In it, Commerce identified Sections 3 and 4 of Chapter 285, Laws of 2019 as rulemaking subjects. Section 3 concerns the establishment of a state energy performance standard, reporting and enforcement requirements, penalties and an administrative appeal process, and any other rules necessary to implement the standard. Section 3 applies to buildings greater than 50,000 square feet, with exceptions for agricultural and industrial buildings.

Section 4 concerns the law's early adopter incentive program. The statute states that Commerce may adopt rules for this program. As communicated throughout this rulemaking, the early adopter incentive program is not a part of these rules.

ASHRAE Standard 100

The Legislature directed Commerce to adopt by reference the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 100-2018. With input from stakeholders during our workshops and comment periods, modifications were made to the standard to incorporate technical, economic and administrative features required by the law.

Washington Specific Energy Use Intensity Targets

The Legislature requires Commerce to develop energy use intensity targets (EUIt) that are no greater than the average energy use intensity for the covered commercial building type, with adjustments for unique energy using features.

Over eight months and five EUIt-specific rulemaking workshops, Commerce worked with consultants and stakeholders to establish the EUIt for many building use types. Consultants provided a study of building energy use based on data collected from 2008 to 2014. The most comprehensive and therefore primary data sources were the most recent national Commercial Buildings Energy Consumption Survey energy use data from 2012 and Northwest Commercial Building Stock Assessment (CBSA) data from 2007 to 2014. Hence, in most cases the average EUIs are higher than what the average EUIs likely are today or will be in 2026. The 2018 City of Seattle benchmarking data show generally lower EUIs than the older CBSA studies; however, they are not as comprehensive and are less representative of Washington's commercial building stock and therefore were not relied on to set average EUIs for the state. Commerce and the consultants consulted stakeholders about EUIs per building type at rulemaking workshops and stakeholder feedback was solicited following each workshop through comment periods.

In setting the targets, Commerce worked with consultants to track recent energy use technology and standards trends. Commerce reviewed recent evaluations of the Washington State Energy Code to understand recent trends in energy use in more recently constructed buildings. The consultant's published a memo on target recommendations. The consultant's memo on target recommendations states that "in combination with the Standard 100 requirements for an energy management plan and O&M reviews, tuning, and basic upgrades such as LED lighting, existing buildings on average can achieve 25-to-35 percent reduction in overall energy use without major changes to obsolete HVAC systems."

Based on the consultant's memo and stakeholder feedback, Commerce proposed a EUIt that is 15 percent less than the average for all commercial buildings. Some stakeholders argued that this was too lenient and that Commerce should set the target within the range suggested by the consultants. Others argued that this was too stringent and should be set at average. We do not believe setting the targets at or closer to average would be in line with the Legislature's direction to "maximize greenhouse gas reductions." We also want to be mindful not to set the targets too stringent. Lower targets mean somewhat more efficient buildings will be required to perform energy audits and implementation activities with less potential for identifying efficiency measures with cost effective savings. Commerce proposes in rule a EUIt of 15 percent less than the average EUI per building type.

To reduce the standard's impact on owners of buildings with EUIs greater than 200, the proposed rules require owners of these buildings reduce their building's EUI by 30 points from the mean, rather than the more expensive 15 percent.

Some stakeholders commented that they would like to see "stretch" targets that local jurisdictions can set to further reduce the energy use of their buildings. Commerce's targets do not pre-empt local jurisdictions from adopting more stringent targets. Some stakeholders also suggested that the agency establish a trajectory of targets to inform building owners' decisions. Commerce is required to update the Standard by July 1, 2029, and every five years thereafter. At that time, Commerce intends to reevaluate its target setting based on the data it gathers from the initial compliance period.

Lower EUIts for new commercial buildings

The law permits Commerce to set lower EUIts for more recently built covered commercial buildings based on the state energy code in place when the buildings were constructed.

Based on Washington State Energy Code (WSEC) progress to date in addition to the highs savings potential for HVAC systems incorporated in the 2015 and 2018 code cycles and the availability of custom and whole building utility new construction programs, our consultants suggested setting the targets between 25-to-40 percent less than the average EUI per building type.

Following the consultant's analysis and stakeholder consultation, Commerce proposed setting a target 15 percent below the EUI for all other covered buildings per building type. This is 30 percent less than the statistical average for all vintage of buildings developed by the consultant. Some stakeholders argued this was too lenient. Others argued that it was not stringent enough. Commerce has decided to stick with its proposed target. At 30 percent less than the statistical average, it captures the majority of the savings anticipated by codes. We also did not choose lower targets, to assure the recommissioning requirements developed for newer buildings would result in cost effective work.

Unlike older buildings, newer buildings with poor EUIs tend to result from poor operations, not equipment or building envelope inefficiencies. Following from this, Commerce requires buildings built under the 2015 WSEC or later be recommissioned if the buildings EUI falls between the buildings target and the target set for all other buildings, not audited as it would if the buildings EUI was lower than the target set for all other buildings. This should result in improved operations at a lower operational costs for the building owner without the additional cost burden of a full audit.

Conditional compliance methodology and life cycle cost methodology

The Legislature required Commerce to establish a conditional compliance methodology to ensure that covered commercial buildings that do not meet their EUIts are taking action to

achieve reduction in energy use, including investment criteria for conditional compliance that ensure that all cost effective energy efficiency measures identified by energy audits are implemented to achieve a covered commercial building's energy use intensity target.

The Legislature stipulates that the investment criteria for conditional compliance must require that a building owner adopt an implementation plan to meet the energy intensity target for the building type 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. 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.

Working with stakeholders, Commerce identified that a level 2—not a level 3—audit was required for conditional compliance and that NIST Standard 135 provides a well-defined methodology for life cycle cost analysis. Over the course of two workshops and comment periods, Commerce worked with a consultant and stakeholders to refine this standard in December 2019.

Utilization of carbon emissions rather that energy consumption as a measurement criteria. Some stakeholders advocated for the use of carbon as the unit of measure for targets setting rather than energy use or in addition to energy use. Commerce notes that the statute and standard 100 specify the unit of measure will be site energy use per square foot per year.

Including the social cost of carbon in audit cost-benefit analysis. Some stakeholders advocated that the social cost of carbon be included as a building owner cost in the analysis of cost and benefits. For building owners, there is no explicit cost of carbon emissions that would result in a cost or benefit. Commerce did not believe adding this cost to the building owner analysis would be consistent with the cost-benefit analysis specified by the statute.

Reporting requirements and penalties

The Legislature requires Commerce to establish mandatory reporting and documentation requirements, and administrative penalties for failure to submit documentation demonstrating compliance with the requirements of the law. The penalty may not exceed $5,000 plus an amount for any continuing violation that may not exceed daily amount equal to one dollar per year per gross square foot of floor area.

Working with stakeholders, Commerce established reporting and documentation requirements for the standard. We were mindful not to require anything more than what was necessary to implement the law. Penalties were limited to one year for all buildings meeting the standard prior to the next compliance date, rather than continuing to assess the penalty in future years. Commerce will use the Office of Administrative Hearings to adjudicate any disputes over penalties.

Next Steps

As noted in the CR-102 form, Commerce will conduct a public hearing on the proposed rules at 8:30 a.m., September 22, 2020. The deadline for written comments is the same date. Meeting details and submission details can be found on Commerce's buildings webpage. If you plan to provide oral comments, please RSVP at buildings@commerce.wa.gov

PROPOSED RULE MAKING

CR-102 (December 2017)
(Implements RCW 34.05.320)
Do **NOT** use for expedited rule making

CODE REVISER USE ONLY

OFFICE OF THE CODE REVISER
STATE OF WASHINGTON
FILED

DATE: August 18, 2020
TIME: 2:11 PM

WSR 20-17-129

Agency: Department of Commerce

☒ **Original Notice**

☐ **Supplemental Notice to WSR _____**

☐ **Continuance of WSR _____**

☒ **Preproposal Statement of Inquiry was filed as WSR** 19-17-038 **; or**

☐ **Expedited Rule Making--Proposed notice was filed as WSR _____; or**

☐ **Proposal is exempt under RCW 34.05.310(4) or 34.05.330(1); or**

☐ **Proposal is exempt under RCW _____.**

Title of rule and other identifying information: (describe subject) Establishing WAC 194-50 to implement the clean commercial building standard of RCW 19.27A.210.

Hearing location(s):

Date:	**Time:**	**Location:** (be specific)	**Comment:**
September 22	8:30	Zoom meeting	This hearing will be virtual only. Please check the Commerce Buildings webpage for meeting information: https://www.commerce.wa.gov/growing-the-economy/energy/buildings/

Date of intended adoption: September 29 (Note: This is **NOT** the **effective** date)

Submit written comments to:

Name: Emily Salzberg
Address: PO Box 42525, Olympia, WA 98504
Email: buildings@commerce.wa.gov
Fax:
Other:
By (date) September 22

Assistance for persons with disabilities:

Contact Austin Scharff
Phone: 360.764.9632
Fax:
TTY:
Email: buildings@commerce.wa.gov
Other:
By (date) September 18

Purpose of the proposal and its anticipated effects, including any changes in existing rules: RCW 19.27A.210 directs Commerce to adopt rules to establish a state energy performance standard for commercial buildings over 50,000 square feet. It requires Commerce to establish reporting, enforcement, administrative appeal process, and other rules necessary to implement the standard. Owners of covered commercial buildings will be required to comply with the standard, which represents a cost-effective strategy to reduce greenhouse gas emissions from the building sector.

Reasons supporting proposal: RCW 19.27A.210 directs Commerce to adopt rules to establish a state energy performance standard for commercial buildings over 50,000 square feet. The standard offers the opportunity to reduce greenhouse gas emissions, lower energy consumption, and avoid energy costs, and provides a technology-neutral, building-specific approach to greenhouse gas emissions reductions with a long-term planning horizon. Energy use intensity targets (EUIts) will be set to achieve greenhouse gas reductions without major changes to the state's building stock.

Statutory authority for adoption: RCW 19.27A.210.

Statute being implemented: Chapter 19.27A.210

Is rule necessary because of a:

Federal Law?	☐ Yes	☒ No
Federal Court Decision?	☐ Yes	☒ No
State Court Decision?	☐ Yes	☒ No

If yes, CITATION:

Agency comments or recommendations, if any, as to statutory language, implementation, enforcement, and fiscal matters:

Name of proponent: (person or organization)

☐ Private
☐ Public
☒ Governmental

Name of agency personnel responsible for:

	Name	Office Location	Phone
Drafting:	Chuck Murray	1011 Plum Street SE P.O. Box 42525 Olympia, WA 98504-2525	360-725-3113
Implementation:			
Enforcement:			

Is a school district fiscal impact statement required under RCW 28A.305.135? ☐ Yes ☒ No

If yes, insert statement here:

The public may obtain a copy of the school district fiscal impact statement by contacting:

Name:
Address:
Phone:
Fax:
TTY:
Email:
Other:

Is a cost-benefit analysis required under RCW 34.05.328?

☐ Yes: A preliminary cost-benefit analysis may be obtained by contacting:

Name:
Address:
Phone:
Fax:
TTY:
Email:
Other:

☒ No: Please explain: The Washington State Dept. of Commerce is not a listed agency under RCW 34.05.328(5)(a)(i)

Regulatory Fairness Act Cost Considerations for a Small Business Economic Impact Statement:

This rule proposal, or portions of the proposal, **may be exempt** from requirements of the Regulatory Fairness Act (see chapter 19.85 RCW). Please check the box for any applicable exemption(s):

☐ This rule proposal, or portions of the proposal, is exempt under RCW 19.85.061 because this rule making is being adopted solely to conform and/or comply with federal statute or regulations. Please cite the specific federal statute or regulation this rule is being adopted to conform or comply with, and describe the consequences to the state if the rule is not adopted.

Citation and description:

☐ This rule proposal, or portions of the proposal, is exempt because the agency has completed the pilot rule process defined by RCW 34.05.313 before filing the notice of this proposed rule.

☐ This rule proposal, or portions of the proposal, is exempt under the provisions of RCW 15.65.570(2) because it was adopted by a referendum.

☒ This rule proposal, or portions of the proposal, is exempt under RCW 19.85.025(3). Check all that apply:

- ☒ RCW 34.05.310 (4)(b) (Internal government operations)
- ☒ RCW 34.05.310 (4)(c) (Incorporation by reference)
- ☒ RCW 34.05.310 (4)(d) (Correct or clarify language)
- ☒ RCW 34.05.310 (4)(e) (Dictated by statute)
- ☐ RCW 34.05.310 (4)(f) (Set or adjust fees)
- ☒ RCW 34.05.310 (4)(g) ((i) Relating to agency hearings; or (ii) process requirements for applying to an agency for a license or permit)

☐ This rule proposal, or portions of the proposal, is exempt under RCW _____.

Explanation of exemptions, if necessary:

COMPLETE THIS SECTION ONLY IF NO EXEMPTION APPLIES

If the proposed rule is **not exempt**, does it impose more-than-minor costs (as defined by RCW 19.85.020(2)) on businesses?

☐ No Briefly summarize the agency's analysis showing how costs were calculated. _____

☒ Yes Calculations show the rule proposal likely imposes more-than-minor cost to businesses, and a small business economic impact statement is required. Insert statement here:

SMALL BUSINESS ECONOMIC IMPACT STATEMENT

CHAPTER 50

WAC 194

A rule concerning Washington's Clean Commercial Building Standard

8/19/2020

SECTON 1:

Describe the proposed rule, including: A brief history of the issue; an explanation of why the proposed rule is needed; a brief description of the probable compliance requirements and the kinds of professional services that a small business is likely to need in order to comply with the proposed rule.

1.1 Chapter 285, Laws of 2019

The Washington State Legislature directed the Washington State Department of Commerce (Commerce) to establish an energy performance standard for commercial buildings larger than 50,000 square feet. In doing so, the Legislature instructed Commerce to "maximize reductions of greenhouse gas emissions from the building sector."

The Legislature directed Commerce to use the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 100-2018 as the basis for the standard. The Legislature required Commerce to develop state specific building energy use intensity targets and methods of conditional compliance that include an energy management plan, operations and maintenance program, energy efficiency audits, and investment in energy efficiency measures designed to meet the targets.

The Legislature required that the conditional compliance method ensure that covered commercial buildings that do not meet the specified energy use intensity targets (EUIts) are taking action to achieve reduction in energy use, including 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 (EUIt).

The Legislature stipulated that the investment criteria require a building owner adopt an implementation plan to meet the target or implement an optimized bundle of energy efficiency measures (EEMs) that provide maximum energy savings without resulting in a savings-to-investment ratio of less than 1.0, except as exempted under RCW 19.27A.210(2)(d)(ii).

The Legislature stated that the implementation plans must be based on an investment grade energy audit and a life cycle cost analysis that accounts for the period during which a bundle of measures will provide savings. Furthermore, the Legislature requires that a building owner's costs for implementing energy efficiency measures reflect net cost, excluding any cost covered by utility or government grants.

The Legislature also established mandatory reporting and documentation requirements for building owners (RCW 19.27A.210(7)), and administrative penalties for failure to submit documentation demonstrating compliance (RCW 19.27A.210(10)).

Finally, the Legislature requires Commerce to adopt rules as necessary to implement the statute (RCW 19.27.210.12), including but not limited to:

> (a) Rules necessary to ensure timely, accurate, and complete reporting of building energy performance for all covered commercial buildings;
>
> (b) Rules necessary to enforce the standard established under this section; and
>
> (c) Rules that provide a mechanism for appeal of any administrative penalty imposed by the department under this section.

Mandatory compliance begins 2026-2028. An early adopter incentive program starts July 1, 2021. Rules around the incentive program are not included in this rulemaking.

1.2 The Regulatory Fairness Act

The Regulatory Fairness Act (RFA), chapter 19.85 RCW, directs Commerce to determine if its rules would have a disproportionate compliance cost burden on small business, and if legal and feasible, to reduce this disproportionate impact.

This statement focuses on rules that are not exempt from RFA requirements.

1.3 Likely impact of the proposed rules

The Legislature calls for Commerce to establish state specific building energy use intensity targets (EUIt) that are no greater than average EUI and to maximize reductions of greenhouse gas emissions from the building sector. The Legislature authorizes Commerce to implement lower EUIts for more recently built buildings based on the state energy code in place when the buildings were constructed.

Commerce proposes a EUIt 15 percent below the average EUI per building type. For buildings over 200 EUI points, Commerce proposes they only reduce their EUIs by 30 points rather than by 15 percent.

Commerce proposes an additional 15 percent reduction for newer covered buildings, e.g. buildings built to the 2015 Washington State Energy Code. We propose owners of these buildings recommission their buildings rather than undergo a level 2 audit.

These proposed rules would result in more building owners being required to either audit or recommission their buildings and could require more building owners to implement cost-effective EEMs.

SECTION 2:

Identify which businesses are required to comply with the proposed rule using the North American Industry Classification System (NAICS) codes.

The law applies to commercial buildings greater than 50,000 square feet in floor area. There are some exceptions for factory or agricultural buildings; however, manufacturing and agricultural business may also own large buildings in other building classifications. Multiple building owners may own a commercial building; this provides access to ownership for many business types. Some large buildings owned and managed with few employees by assigning many of the required business activities to third party contractors, making it possible that many business holding large real estate are small business.

Commerce could not identify any data sources that provide comprehensive building ownership classifications by building activity type and size because such a data source does not exist. As directed by RCW 19.27A.210(3), Commerce must create a database of covered buildings and building owners required to comply, to complete building owner notification by July 1, 2021, as directed by RCW 19.27A.210(4).

Commerce acknowledges that the proposed rules could affect all NAICs codes. However, Commerce also recognizes that many NAIC codes may not be impacted. Commerce assumes the proposed rules affect all NAIC codes.

SECTION 3:

Analyze the probable cost of compliance. Identify the probable costs to comply with the proposed rule, including: cost of equipment, supplies, labor, professional services and increased administrative costs.

We compiled cost data for auditing and existing building recommissioning by reviewing literature published by the U.S. Department of Energy (DOE) and the national energy laboratories.[1] Because the data originates from studies compiled ten or more years ago, we adjusted costs using an inflation adjustment factor recommended by the Washington State Office of Financial Management.[2]

3.1 Audit cost

The scope of energy audits is defined in ASHRAE Standard 211.[3] Level 1 audits are sometimes known as a "walkthrough audit," and provide a relatively simple assessment of the opportunities for improvement. Level 2 audits require in-depth detail defining each existing system's energy use and opportunities for improvement based on engineering estimates. Level 3 audits, frequently called "investment grade audits," include detailed system energy metering and cost estimates for the installation of energy conservation measures based on cost estimates from contractors.

The standard, as proposed, would require a level 2 audit, with some added level 3 economic analysis. This is a least cost approach to gaining many of the benefits of the level 3 audit, without the cost of specific end use monitoring. Most audit and economic evaluation costs would be attributable to a level 2 audit cost estimates.

For commercial building energy audits, cost provided by DOE studies offer a range, low to high, for each audit level. The narratives describe a few factors that impact cost of audits and explain the range. Simple, single system audits cost less. Comprehensive audits cost more. Cost are reported as cost per square foot. Cost are much higher per square foot for small buildings than large buildings. One study notes cost for buildings less than 50,000 square feet may be four times more than the cost for buildings over 250,000 square feet. The DOE studies also emphasize the importance of competitive bidding as a way to reduce cost. The proposed rules would apply to buildings greater than 50,000 square feet. The proposed rules would require a level 2 audit and a comprehensive life-cycle cost analysis equivalent to a Level 3 audit.

[1] DOE published a series of Advanced Energy Retrofit Guide Practical Ways to Improve Energy Performance in 2011 and 2012. These studies compiled and published the data. https://www.energy.gov/eere/buildings/advanced-energy-retrofit-guides

[2] OFM Inflation https://www.ofm.wa.gov/washington-data-research/economy-and-labor-force/inflation

[3] ANSI/ASHRAE/ACCA Standard 211-2018, Standard for Commercial Building Energy Audits

8Table 1: Estimated costs for audits as provided by DOE Reports

Audit Cost	2020 Cost/Square Foot	
	Low	High
Level 1	$ 0.024	$ 0.071
Level 2	$ 0.060	$ 0.179
Level 3	$ 0.119	$ 0.595

3.2 Cost of installation of efficiency measures

Commerce has not compiled cost of installing efficiency measures. As required by statute, Commerce has proposed rules that do not require capital investments in efficiency projects that are not cost effective to the building owner. A wide range of costs is allowed to be included in this analysis. This would require upfront investments, but with a payback to the building owner over the life of the energy efficiency measures. As well as the energy cost savings provided by the upgrade, most building upgrades result in added value to the asset.

3.3 Cost for recommissioning

The standard as proposed by Commerce includes requirements specifically for newer buildings. Buildings constructed to the 2015 Washington State Building Code or later would be required to meet lower energy utilization targets than all other buildings due to the improved energy performance of buildings built to contemporary energy codes. To accommodate the needs of these specific buildings, rather than auditing and implementing efficiency measures, newer buildings would be required to implement a recommissioning process. Recommissioning is less expensive than level 2 audits and capital investments. Recommissioning would be a better option for most newer buildings. Newer buildings that do not meet the EUIts set for all other buildings would be required to comply with the general compliance requirements of the standard.

It is important to note that the State Energy Code required all buildings of this vintage to be commissioned as part of the construction process. The standard as proposed by Commerce adopts the code requirements, and would require recommissioning. Each building's existing process documentation created during construction would be used to guide the recommissioning process. This should reduce overall cost. Keep in mind, these costs include actions that would be required to reduce energy use, and would not require additional capital investments. Below are the cost summarized in a report published by Lawrence Berkeley Laboratory.[4] The existing building cost noted would apply to the proposed requirements.

> The median normalized cost to deliver commissioning was $0.30/ft2 ($0.35/ft2 2020$) for existing buildings and $1.16/ft2 (1.37/ft$_2$ 2020$) for new construction (or 0.4% of the overall construction cost). The commissioning projects for which data are available revealed over 10,000 energy-related problems, resulting in 16% median *whole-building* energy savings in existing buildings and 13% in new construction, with payback time of 1.1 years and 4.2 years, respectively.

SECTION 4:
Analyze and determine whether the proposed rule may impose more than minor costs on businesses. Determine whether the proposed rule may have a disproportionate impact on small businesses.

Section 4.1 Minor cost threshold

Commerce cannot confirm whether the proposed rules would impose more than a minor cost on businesses, because we do not have data to determine whether or not these costs are larger than the minor cost at a more detailed level (for example, 4-digit NAICS level). We also do not have data to identify the number and proportion or ratio of businesses in these sectors that own a building greater than 50,000 square feet, the size of those buildings, and the costs of implementing EEMs. Therefore, the department assumes these rules will impose more than minor costs.

Section 4.2 Disproportionate impact on small businesses

There is insufficient data to estimate the cost difference between large and small businesses, and determine if the proposed rules would have a disproportionate impact on small businesses. As required by RCW 19.85.030, in the absence of data, we identified cost-mitigation measures, where legal and feasible, as described in Section 5.

[4] Evan Mills, Ph.D. Building Commissioning A Golden Opportunity for Reducing Energy Costs and Greenhouse Gas Emissions Lawrence Berkeley National Laboratory July 21, 2009.

SECTION 5:

If the proposed rule is likely to impose a disproportionate impact on small businesses, identify the steps taken to reduce the costs of the rule on small businesses. If the impacts cannot be reduced provide a clear explanation of why.

Commerce reviewed the list of methods for reducing the impact on small businesses under RCW 19.85.030 and is taking the following steps to reduce the costs of the rules on small businesses.

5.1 Reducing, modifying, or eliminating substantive regulatory requirements

5.1.1 Target setting: Over eight months and five EUIt specific rulemaking workshops, Commerce worked with consultants and stakeholders to establish the EUIt for many building use types. Commerce consultants, SBW and the 2050 Institute, developed regional EUI means by building type using the national 2012 Commercial Energy Consumption Survey (CBECS) and the 2009, 2014, and 2019 Commercial Building Stock Assessment (CBSA). Because some of these data sets are roughly a decade old, the consultants used peer-reviewed science and recent localized data to inform recommendations. Commerce also reviewed recent evaluations of Washington State Energy Code to understand recent trends in energy use in more recently constructed buildings. Stakeholders were consulted at rulemaking workshops and stakeholder feedback was solicited and reviewed following each workshop.

The consultant's memo on target recommendations states that "in combination with the Standard 100 requirements for an energy management plan and O&M reviews, tuning, and basic upgrades such as LED lighting, existing buildings on average can achieve 25-to-35 percent reduction in overall energy use without major changes to obsolete HVAC systems."

Based on the consultant's memo and stakeholder feedback, Commerce proposed a EUIt that is 15 percent less than the average EUI per building type. Some stakeholders argued that this was too lenient of a target and that Commerce should set the targets within the range suggested by the consultants. Others argued that this was too stringent and Commerce should set the targets at the average EUI per building type. We do not believe setting the targets closer to the average EUI per building type would be in line with the Legislature's direction to "maximize greenhouse gas reductions." We also want to be mindful not to set the targets too stringent. Lower targets mean somewhat more efficient buildings will be required to perform energy audits and implementation activities with less potential for identifying efficiency measures with cost-effective savings. Commerce proposes in rule EUIt of 15 percent less than the average EUI per building type.

5.1.2 Buildings with EUIs greater than 200: Commerce allows building types with EUIs greater than 200, such as hospitals, to reduce their EUI by 30 points from the mean EUI per building type, rather than by the more stringent 15 percent target. This reflects the fact that very high EUI buildings likely have more process loads in the total, and are subsequently less able to reduce loads through traditional building efficiency improvements. The difference between the flat 30-point reduction and the 15 percent reduction in a building's EUI reflects the cost savings to the building owner.

5.1.3 Target setting for newer buildings: The Legislature authorizes Commerce to implement lower EUIts for more recently built buildings based on the state energy code in place when the buildings were constructed. Based on Washington State Energy Code progress to date in addition to the highs savings potential for HVAC systems incorporated in the 2015 and 2018 code cycles and the availability of custom and whole building utility new construction programs, our consultants suggested setting the targets between 25-to-40 percent less than the average EUIs.

Following the consultant's analysis and stakeholder consultation, Commerce proposed setting a target 15 percent below the EUI for all other covered buildings per building type. This is 30 percent less than the statistical average for all vintage of buildings developed by the consultant. Some stakeholders argued this was too lenient. Others argued that it was not stringent enough. Commerce has decided to stick with its proposed target. At 30 percent less than the statistical average, it captures the majority of the savings anticipated by codes. We also did not choose lower targets, to assure the recommissioning requirements developed for newer buildings would result in cost-effective work.

5.1.4 Recommissioning rather than a level 2 audit for newer buildings: More recently constructed buildings that do not meet this target would be required to recommission their buildings. As discussed in Section 3.3, this is a cheaper and more efficacious way of reducing energy use in these buildings than a level 2 audit.

5.1.5 Conditional compliance: As directed by statute, Commerce proposes rules for a conditional compliance method for building owners who fail to meet their buildings EUIt. Under this conditional compliance method, owners would be required to implement an optimized bundle of EEMs that provides maximum energy savings without resulting in a savings-to-investment ratio less than 1.0. They would not be required to meet the target. They would not be penalized for not meeting the target. They would only need to undergo an audit and implement cost-effective energy efficiency measures to be in compliance with the law, thereby reducing the costs associated with meeting targets for small business owners.

5.1.6 Level 2 audits rather than level 3 audits: Commerce proposes by rule level 2 rather than level 3 energy audit requirements. Commerce aligned audit reporting with the energy audit reporting tool provided by the DOE. Commerce is choosing to do this so covered entities can use the tool at no charge. We will meet the legislative intent for an investment grade audit by providing a tool that calculates the discounted savings to investment ratio at no cost to participants.

5.1.7 Financial hardship exemptions: Finally, it is worth noting that the law provides a number of financial hardship exemptions for building owners (RCW 19.27A.10(7)(c)(vi)).

5.2 Simplifying, reducing, or eliminating recordkeeping and reporting requirements

Commerce proposes the adoption of Energy Star Portfolio Manager for reporting energy consumption, energy conversion factors, and energy accounting. This proposal aligns with RCW 19.27A.190. These proposed rules would provide owners a tool to assist them in the management and documentation of requirements, which would likely save them time and money. Portfolio Manager is a tool supported by the Environmental Protection Agency and is free for use by the public.

5.3 Reducing the frequency of inspections

Commerce proposes alternative O&M program implementation options, as deemed equivalent by Commerce, such as those offered by the City of Seattle and Bonneville Power Administration. This proposal would reduce administrative burdens.

5.4 Delaying compliance timetables

The law provides long regulatory time horizon of more than 5 years prior to mandatory compliance. Building owners will be able to mitigate regulatory costs by starting ahead of the compliance deadline.

5.5 Reducing or modifying fine schedules for non-compliance

Commerce proposes in its rules a seven-day grace period to correct administrative or documentation errors before issuing fines. Commerce proposes to limit the maximum daily penalties to the cumulative value of one year, rather than continuing to assess fines after one year as allowed by the law.

5.6 Addressing Unique Building Characteristics Commerce created energy utilization targets for 111 unique commercial building occupancies compared to the 49 included in Standard 100. Commerce allows more flexibility in defining mixed use buildings, creating opportunities to only audit part of a building, rather than the entire building. Commerce created unique building definitions for data centers and urgent care health facilities to align with unique operating criteria of these spaces.

5.7 Any other mitigation techniques suggested by small businesses or small business advocates

Commerce developed the above mitigation in consultation with stakeholders representing over 120 organizations during 15 workshops in eight months.

After reviewing comments submitted for its final rulemaking comment period, which ended on July 23, Commerce is unaware of any outstanding requests by small businesses or small business advocates that have not been submitted through the comment periods.

SECTION 6:

Describe how small businesses were involved in the development of the proposed rule.

On October 21, 2019, Commerce Communications sent a press release on the kick-off of the rule making process to an estimated 26,000 subscribers. Since kick-off, Commence has involved small businesses, building owners, utility companies, and other stakeholders in the development of rules. Their involvement was a vital part of our rulemaking process. Commerce attempted to establish clear, concise and consistent communication with stakeholders. Commerce created a webpage, sent weekly bulletins, maintained a dedicated inbox, set formal comment periods, and hosted 15 rulemaking workshops. The webpage included links to the state law, schedules for rulemaking workshops, instructions on how to sign-up for the weekly bulletin, and access to other relevant information.

Commerce hosted 15 workshops that ran from 1.5-3 hours via Webex or in person. These workshops allowed Commerce to meet stakeholders in-person and created an open and collaborative dialogue between Commerce and stakeholders, ensuring stronger standard and administrative procedures consistent with current regional practices and procedures. The workshops covered modifications to ASHRAE Standard 100, 2018, administrative procedures, and technical rules developed by Commerce to support and conform to RCW 19.27A.210.

Each workshop included discussion and input on topics including training and technical assistance needs, equitable access to incentive dollars and strategies for reducing administrative cost of compliance. For the final workshop, Commerce Communication sent out another press release inviting the public to review the final draft of the proposed rules.

After each workshop, Commerce requested formal comments. Comment periods were formally open for two weeks after each workshop; although, comments were accepted regardless submission date. Stakeholder comments were submitted through the dedicated inbox and later published and made public on the Buildings webpage.

Commerce and consultants presented the energy use means by building type and a range of scenarios for target setting. Commerce evaluated and requested input on the range of options for target setting including setting the targets at the mean EUI by building type and reductions from mean EUI including five percent, ten percent, 15 percent and 25 percent. Commerce solicited input in EUI targets by building type during two subsequent comment periods. After considering stakeholder input, Commerce decided on its proposed targets.

Table 2: Public events

Date(s)	Activity How were small businesses notified and involved in the development of the proposed rule? (News release, public meeting, survey etc.)
Weekly	Newsletter with link to webpage, updates, and schedules for workshops.
07/28/2020	EFX20 Summer Webinar Series: Clean Buildings Presentation
07/09/2020	Virtual-only workshop: Workshop on stakeholder comments
07/19/2020	Virtual presentation for the WA Office of Superintendent of Public Instruction, Technical Advisory Committee Work Session
06/18/2020	Virtual-only workshop: Targets, normalization, and new construction
06/10/2020	Virtual-only workshop: Additional administrative procedures
05/27/2020	Virtual-only workshop: ASHRAE Standard 100, section 4, administrative procedures workshop
05/21/2020	Virtual-only workshop: Methodology for Developing Regionally- Adjusted EUI Targets
04/15/2020	Virtual-only workshop: ASHRAE Standard 100, sections 7, 8, and 9 virtual-only workshop
03/21/2020	Presentation at the AIA Summit on Clean Buildings
03/04/2020	Virtual-only workshop: Utility Incentives Webinar
02/26/2020	In-person workshop: ASHRAE Standard 100 Sections 5 and 6
01/30/2020	In-person workshop: ASHRAE Standard 100, Sections 1, 2, and 3
12/19/2020	In-person workshop: EUI Target Setting and Conditional Compliance Investment Criteria Continued
12/04/2020	In-person workshop: Audits and Implementation of Standard 100, Sections 8 and 9
11/18/2019	In-person workshop: Building Types, Bench-marking, and Standard 100, Sections 5 and 7
11/08/2019	In-person workshop: Clean Buildings Rulemaking Kickoff
10/30/2019	Virtual-only workshop: Introduction to the Clean Buildings Standard Pre-Rulemaking

Below is a list of identified representatives that attended these webinars, as well as participants in smaller meetings with Commerce.

Table 3: Event Attendees by Affiliation

ArchEcology LLC	Gordon Thomas Honeywell Gov't Affairs
AIA Washington Council	Green Energy Management, Inc.
Association of Washington Business;	Hogan Lovells
Avista Utilitites	Hargis Engineers
ATS Automation	Hermanson
Arup	Health Care without Harm
Bonneville Power Administration;	I4 Utility Grid
Building Owners & Managers Association	Issaquah School District 411
Benton PUD	Kaiser Permanente
BCRA Design	Kelso School District
Bellevue College	Klickitat Valley Health
Building Codes Division- Oregon	Lewellen Associates LLC

Brewer Public Affairs City of Seattle City of Seattle Office of Sustainability and Environment Cascade Energy Inc. Cascade Natural Gas City of Richland Clark Public Utilities Cowlitz PUD Columbia Electric Supply CedarStack Coffman Engineers City of Issaquah Cadmus Group Chelan County PUD DB Engineering DC Engineering Emerald Cities Collaborative Ecotope EY Ernst & Young LLP The Evergreen State College Empower Dataworks Emerald Cities Collaborative Fred Hutch Cancer Research Center	PSR Mechanical Mithun MEETS Coalition MacDonald Miller McKinstry NW Energy Coalition; National Propane Gas Association Northwest Energy Efficiency Alliance NW Energy Coalition NW GeoSolar, Inc. NW Natural Notkin Mechanical Engineers Office of Superintendent of Public Instruction O'Brien360 Putnam Price Group; Puget Sound Energy Providence Health & Services PUD No. 1 of Clallam County Providence St. Joseph Health Pacific Power RE Tech PSR Mechanical OSPI Rushing Co
Resource Synergy; Resource Refocus LLC Rock Ventures RE Tech Advisors, Inc. Seattle City Lights, Snohomish PUD Seattle Public Schools Smart Buildings Center Stillwater Energy Seattle Children's Museum Stantec SBW Consulting, Inc. Solar Installers of Washington Tacoma Power University of Washington, Integrated Design Lab; UMC, Inc. US EPA Vulcan Real Estate Washington State University WA Healthcare Climate Alliance Western Washington University WSDA Washington State Department of Transportation	Washington State Hospital Association Willdan Group Washington Utilities & Transportation Commission Washington State Housing Finance Commission Washington Environmental Council Whidbey Health Washington REALTORS Washington Office of Superintendents of Public Instructions ZGF Architects 2050 Partners 43rd District Democrats Environmental Caucus

SECTION 7:

Identify the estimated number of jobs that will be created or lost as the result of compliance with the proposed rule.

As noted in the preceding sections, the exact cost of compliance is not certain. Therefore, because of the lack of data, Commerce cannot estimate the number of jobs that could be created or lost. However, the proposed rules, exempt and not exempt from the RFA, would have the potential to create job gains for small businesses and large businesses.

During the initial stages of compliance, many building owners would perform a level 2 energy audit, while new building owners would demonstrate compliance by recommissioning their buildings. Energy audits and recommissioning would not

only help meet our climate planning goals but also accelerate economic growth due to demand for services, products, and skilled technicians, creating an estimated 5 to 15 jobs per $1 million invested.[5]

Energy audits require professionals such as engineers, architects, or other certified energy professionals. Building owners of buildings larger than 50,000 sq. ft, may decide to hire an energy manager or operations and maintenance staff full-time or invest in the education of existing staff. Implementing the proposed rules over time will require trades such as general contractors, carpenters, electricians, HVAC specialist, lighting designers, thermal envelope technicians, and any other specialized trades to install EEM. All building owners that comply with the law will support the contracting businesses as whole.

The public may obtain a copy of the small business economic impact statement or the detailed cost calculations by contacting:

Name: Annalyn Bergin
Address: Washington State Department of Commerce
1011 Plum Street SE
Olympia, WA 98501
Phone: (360) 584-6905
Fax:
TTY:
Email: buildings@commerce.wa.gov
Other:

Date: 8/18/20	**Signature:** 
Name: Dave Pringle	
Title: Rules Coordinator	

[5] National Action Plan for Energy Efficiency. Rapid Deployment Energy Efficiency Toolkit: Planning & Implementation Guides. (2009). Prepared by P. Lemoine, T. Huebner, D. Pickles, B. Prindle, and N. Buehler of ICF International. www.epa.gov/cleanenergy/documents/suca/rdee_toolkit.pdf.

Chapter 194-50 WAC
WASHINGTON STATE DEPARTMENT OF COMMERCE ADOPTION AND AMENDMENT OF ASHRAE STANDARD 100, 2018

NEW SECTION

WAC 194-50-001 Foreword. ***Foreword not adopted.***

Foreword to Washington State Amendments to ASHRAE Standard 100.

Standard 100 (##WAC) is adopted by the Washington state department of commerce pursuant to RCW 19.27A.200, 19.27A.210, and 19.27A.220. This standard has been adopted by reference and modified to implement the requirements covered commercial buildings as directed by the Washington state legislature. The legislature delegated the responsibility of adoption and amendment of this standard to the Washington state department of commerce.

The Washington state administrative requirements for this standard are included in Normative Annex Z. For building owners that must comply with this standard, reading Normative Annex Z first allows the owner to put the rest of the standard in context. Multiple compliance options are available and should be reviewed prior to beginning implementation of this standard.

NEW SECTION

WAC 194-50-010 ASHRAE Standard 100, 2018—Section 1—Purpose.

1.1 This standard provides criteria that will result in reduced energy consumption through improved energy efficiency and performance in existing *buildings*. In adopting this standard by rule, Washington state department of commerce shall seek to maximize reductions of greenhouse gas emissions from the building sector.

NEW SECTION

WAC 194-50-020 ASHRAE Standard 100, 2018—Section 2—Scope. This standard is mandatory for all *covered commercial buildings* located in the state of Washington. This standard is also applied as a voluntary standard for applicable to a multifamily residential buildings seeking early adopter incentives consistent with RCW 19.27A.220.

NEW SECTION

WAC 194-50-030 ASHRAE Standard 100, 2018—Section 3—Definitions.

3.1 General

Agricultural structure: A structure designed and constructed to house farm implements, hay, grain, poultry, livestock, or other horticultural products, and is not a place used by the public or a place of human habitation or employment where agricultural products are processed, treated, or packaged.

Applicable building codes: The Washington state building codes as adopted by the Washington state building code council, and as modified by local government amendments.

Authority having jurisdiction (AHJ): Washington state department of commerce.

Building owner: An individual or entity possessing title to a building.

Baseline energy use intensity: A building's weather normalized energy use intensity measured for twelve consecutive months within two years prior to making an application for an incentive under RCW 19.27A.220

Campus: A campus is a collection of buildings and served by a campus district heating, cooling, water reuse and/or power system owned by the same building owner.

Campus district heating and/or cooling system: Is a district heating and/or cooling system that serves a campus and is owned by the building owner.

Certified commissioning professional: A person who is certified by an ANSI/ISO/IEC 17024:2012 accredited organization to lead, plan, coordinate, and manage commissioning teams and implement the commissioning process and with experience commissioning at least two projects of similar size and of similar equipment to the current project, and at least one in the last three years. This experience includes the writing and execution of verification checks and functional test plans.

Complex: A group of *buildings* interconnected by conditioned spaces on contiguous property.

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.

Conditioned space: An area, room or space that is enclosed within the building's thermal envelope and is directly heated or cooled or is indirectly heated or cooled. Spaces are indirectly heated or cooled where they communicate through openings with conditioned spaces, where they are separated from conditioned spaces by uninsulated walls, floors or ceilings, or where they contain uninsulated ducts, piping or other sources of heating or cooling. (also see, semi-heated space).

Covered commercial building: A building where the sum of nonresidential, hotel, motel, and dormitory floor areas exceeds fifty thousand gross square feet, excluding the parking garage area.

Discounted payback: The time when the accumulated savings achieved by an investment, discounted by the appropriate discount rate, equals the initial cost of the investment.

District heating and/or cooling system: Is a system that provides heating or cooling to multiple buildings through a distributed system providing steam, hot water or cool water to buildings.

Energy use intensity (EUI): 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 a thousand British thermal units per square foot per year.

Energy target (EUI_t): Not adopted.

Energy use intensity 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.

Gross floor area: The total number of square feet measured between the exterior surfaces of the enclosing fixed walls of a building, including all supporting functions such as offices, lobbies, restrooms, equipment, storage areas, mechanical rooms, break rooms, crawl spaces and elevator shafts. Gross floor area does not include outside bays or docks.

Gross floor area for residential buildings: Not adopted.

Gross floor area for nonresidential buildings: Not adopted.

More recently built buildings: Are buildings or additions greater than fifty thousand square feet in conditioned floor area permitted for construction based on the application permit date of July 1, 2016, or later. For example, buildings permitted to the 2015 edition of the Washington State Building Code, chapter 51-50 WAC.

Qualified commissioning authority: Not adopted.

Qualified energy auditor: A person acting as the auditor of record having training, expertise and three years professional experience in building energy auditing and any one of the following:

(a) A licensed professional architect or engineer.

(b) An *energy auditor*/assessor/analyst certified by ASHRAE or the Association of Energy Engineers (AEE) for all *building* types.

Qualified person: A person having training, expertise and three years professional experience in *building* energy-use analysis and any of the following:

(a) A licensed professional architect or engineer in the jurisdiction where the project is located;

(b) A person with Building Operator Certification (BOC) Level II by the Northwest Energy Efficiency Council;

(c) A *certified commissioning professional;*

(d) A *qualified energy auditor;*

(e) A certified energy manager (CEM) in current standing, certified by the Association of Energy Engineers (AEE).

Recommissioning: An application of the commission process requirements to a project that has been delivered using the commissioning process.

Residential building: Not adopted.

Savings-to-investment ratio: The ratio of the total present value savings to the total present value costs of a bundle of an energy or wa-

ter 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 nonwater 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.

Semi-heated space: An enclosed space within a building, including adjacent connected spaces separated by an uninsulated component (e.g., basements, utility rooms, garages, corridors) which:

(a) Is heated but not cooled, and has a maximum installed heating system output capacity of 3.4 Btu/(h-ft^2) but not greater than 8 Btu/(h-ft^2);

(b) Is not a walk-in or warehouse cooler or freezer space.

Service life: See *useful life*.

Simple payback (years): The estimated initial cost of an EEM divided by the estimated annual cost savings of the measure expressed in years. The cost savings may include energy cost savings and incremental routine operations and maintenance costs or savings.

State equipment standards: Appliance and equipment standards listed in chapter 19.260 RCW, Energy efficiency.

Useful life: Useful life is the expected remaining service life of building systems or equipment. Used interchangeably with *service life*.

Weather normalized: A method for modifying the measured building energy use in a specific weather year to energy use under normal weather conditions.

Weather normalized energy utilization index (WNEUI): Means a measurement that normalizes a building's site energy use relative to its size based on the buildings weather normalized site energy use. A building's energy use intensity is calculated by dividing the total net weather normalized energy consumed in one year by the gross floor area of the building, excluding the parking garage. Weather normalized energy use intensity is reported as a value of a thousand British thermal units per square foot per year.

3.2 Abbreviations and acronyms

AEE Association of Energy Engineers.
AHJ authority having jurisdiction.
DDC direct digital control.
EEM energy efficiency measure.
EM energy manager.
EUI energy-use intensity.
IRR internal rate of return.
O&M operations and maintenance.
WNEUI *Weather normalized* energy utilization index.

NEW SECTION

WAC 194-50-040 ASHRAE Standard 100, 2018—Section 4—Compliance.

4.1.1.1 A *building* or *complex* of *buildings* whose majority of gross floor area has activities in Table 7-1 shall comply with the requirements of Sections 4.2 and 4.3.

4.1.1.2 The *qualified person* determining compliance shall:

1. Determine whether or not the *building* seeking compliance has an *energy use intensity target (EUI_t)* according to Section 7;

2. Establish the *energy use intensity target (EUI_t)* according to Section 7;

3. Submit forms as specified in Normative Annex Z to the AHJ.

4.1.2 Residential Building - Not adopted.

4.1.3 Buildings with residential and nonresidential activities - Not adopted

4.3.2 Buildings with energy targets. Buildings with energy targets must meet all the criteria for developing an energy target in Section 7.2 Determining energy use intensity target (EUI_t) and provide energy use data as specified by Section 5.2 Building energy monitoring. All other buildings shall comply with Section 4.3.3, Buildings without energy targets.

4.3.2.2 Building does not meet the energy use intensity target (EUI_t). A qualified energy auditor shall complete an energy audit according to Section 8, and EEMs that will reduce energy use to meet the energy target shall be implemented according to Section 9. Upon completion of the implementation of all required EEMs, a building shall be granted conditional compliance.

Exceptions to 4.3.2.2:

1. *More recently built buildings*: For buildings that exceed the target developed in accordance with Section 7.2.1.1, but do not exceed the target developed in accordance with Section 7.2.1, the owner may demonstrate compliance by recommissioning the building using the existing-building commissioning process as described in ASHRAE Guideline 0.2-2015 Commissioning Process for Existing Systems and Assemblies and ASHRAE Guideline 1.2-2018 Technical Requirements for the Commissioning Process for Existing HVAC&R Systems and Assemblies. The commissioning process and the following:

a. A certified commissioning professional shall implement the building commissioning process specified by the most recent edition of the Washington state energy code. The energy code commissioning process shall be modified by the certified commissioning professional for recommissioning purposes.

b. Washington state energy code (WSEC) exceptions based on mechanical system or service water heating capacity shall not be applied when developing the scope for commissioning. For example, the 2018 WSEC, Section C408.1 General, exceptions 1 and 2 or the exception to Section C408.2.

c. All deficiencies found during the commissioning process shall be resolved including corrections and retesting.

d. Building owners may omit capital expenditures identified by the commissioning process that are not cost effective, as documented using the procedures in Normative Annex X.

2. No individual requirement need be met that would compromise the historical integrity of a building or part of a building designated by a government body for long-term preservation in its existing

state, such as historical monuments. Documentation of historic significance must be provide to the AHJ by submitting Form G in accordance with Normative Annex Z.

4.3.2.3 Verification of compliance. Within fifteen months after the completion of Section 4.3.2.2, the weather normalized *EUI* shall be recalculated by the *energy manager* (*EM*) from twelve consecutive months of measured energy use, and Form A shall be resubmitted to the *AHJ*. If the *building*'s post implementation measured *EUI* is less than or equal to the *energy target*, the *building* complies with the standard. If the *building*'s post implementation measured *EUI* is greater than the *energy target*, the *building* does not comply with the standard and the *conditional compliance* is suspended until either.

a. Additional EEMs have been implemented that reduce the subsequently measured EUI to below the energy target and a new Form A is submitted to the AHJ; or

b. The AHJ revokes conditional compliance.

4.3.3 Buildings without energy targets.

Exception to 4.3.3.2: No individual requirement need be met that would compromise the historical integrity of a *building* or part of a *building* designated by a government body for long-term preservation in its existing state, such as historical monuments. Documentation of historic significance must be provide to the AHJ by submitting Form G in accordance with Normative Annex Z.

4.4.1 Administrative requirements. Building owners shall demonstrate compliance with the standard by following the administrative requirements in Normative Annex Z, including:

Normative Annex Z, Washington state reporting requirements.

Building owner notifications by the AHJ and building owner response.

Z1 Notification to building owners of covered commercial buildings by the AHJ

Z2 Building owner response to notifications

Washington state reporting requirements for building owners.

Z3 General Compliance

Z4 Documentation of compliance with the standard

Z5 Violations, assessment of administrative penalties, mitigation and review of penalty decisions

Z6 Compliance Forms

Z7 Section 7 tables as modified by Washington state.

4.4.2 Alternative energy targets (EUI_t) - Not adopted.

NEW SECTION

WAC 194-50-050 ASHRAE Standard 100, 2018—Section 5—Energy.

Exception to 5.1.1 - Not adopted.

5.1.2.1 Energy accounting in accordance with Section 5.2.

5.1.2.2 In the initial year of compliance, the building's weather normalized energy use intensity (WNEUI) and energy-use intensity (EUI).

5.1.2.3 Annual updates of the net energy use, WNEUI and EUI.

5.1.2.4 Annual comparison of the net WNEUI and EUI to the energy target.

5.1.2.5 Documentation of original, current, and changes in number of occupants, weekly operating hours, or time of day scheduled for occupancy, production rates, and energy using equipment that would have caused change in the measured WNEUI and EUI.

5.1.2.14 Operations and Maintenance Plan including:

1. An operations and maintenance (O&M) program as defined in Section 6.
2. An O&M implementation plan as specified in Normative Annex L.
3. Implementation documentation as specified in L2.2.5 Documentation.

5.2.1 Provide measured *net energy* consumption data for each *building*, including all forms of imported and exported energy from at least twelve consecutive months of data monitored in a period not to exceed two years prior to the reporting deadline specified in Normative Annex Z. The *net energy* concept is illustrated in Figure 5-1 and Table 5-1 and is calculated in accordance with Section 5.2.4 as follows:

$$\textit{Net energy use} = (1a + 1b + 1c + 1d) - (3a + 3b + 3c + 3d + 3e)$$

where 1a, 1b, 1c, and 1d are metered energy supplies that are used in the *building* (this includes bulk energy sources), and 3a, 3b, 3c, 3d, and 3e are metered energy excesses that are supplied to another *building,* vehicle or grid as useful energy.

5.2.2 Energy-use data for each type of energy imported into and exported from the building shall be collected from utility or energy delivery bills (that must include the quantity of energy or fuel delivered) or by monitoring local energy meters (either utility or owner-provided meters). Owner provided energy meters shall meet the metering accuracy, tolerances and testing requirements of Title 480 WAC.

5.2.3 Energy conversion factors. The site energy content of different forms of purchased energy shall be converted from the purchased unit to the standard site energy unit using the conversation factors incorporated in Energy Star portfolio manager.

5.2.4 The energy accounting system shall be Energy Star Portfolio Manager as specified in Normative Annex Z.

5.2.4.1 - Not adopted.

5.2.4.2 - Not adopted.

5.2.4.3 - Not adopted.

5.2.4.4 - Not adopted.

Table 5-2a Site Energy Conversion Factors - Table not adopted.

Table 5-2b Primary Energy Conversion Factors - Table not adopted.

NEW SECTION

WAC 194-50-060 ASHRAE Standard 100, 2018—Section 6—Maintenance and operation.

6.3 Operation and maintenance (O&M) Implementation. The O&M program shall be implemented in accordance with Normative Annex L.

Exception to 6.3: O&M programs developed and implemented by the building's serving utility or local government and approved as equivalent or more stringent by the *AHJ* may be used as an alternate to this requirement. Where local government programs are more stringent, local government programs shall be selected over utility programs.

6.6.1 When HVAC, domestic hot-water heating, or refrigeration equipment or appliances are replaced, the replacement equipment shall meet the most stringent energy efficiency requirements in the federal equipment standards, state equipment standards, and the applicable building code.

Exception to 6.6.1 - Not adopted.

6.6.2.1 When lighting equipment is replaced, the replacement equipment shall meet the most stringent energy efficiency requirements in the federal equipment standards, state equipment standards and in the applicable building code. Implementation of more efficient equipment shall be evaluated and included as specified for the capital management plan, Section 5.1.2.10.

NEW SECTION

WAC 194-50-070 ASHRAE Standard 100, 2018—Section 7—Energy-use analysis and target requirements.

7.1.1 Building type. Buildings are divided into types or activities as shown in Table 7-1 Normative Annex Z. Building type definitions are based on Energy Star portfolio manager, unless modified by the notes to Table 7-1.

7.1.2 Energy targets - Energy targets for each building type are listed in Table 7.2a, Normative Annex Z.

7.2.1 The *qualified person* shall determine the *energy use intensity target (EUI$_t$)* according to Section 7.2.2 for single-type/activity *buildings* and Section 7.2.3 for mixed-use *buildings*, and shall complete Form B.

7.1.3 Building operating shifts normalization factors - Building operating shifts normalization factors for each building type are listed in Table 7-3, Normative Annex Z.

Exception to 7.2.1: EUI$_t$ programs developed and implemented by the building's local government and approved as equivalent or more stringent by the AHJ may be used as an alternate to this requirement.

7.2.1.1 Additional target for more recently built buildings: In addition to the requirements of section 7.2.1, more recently built build-

ings shall create a second EUI_t that is 15% less than the target developed for compliance with section 7.2.1. This shall be the building EUI_t and shall be included on Form B.

7.2.2 *Energy targets* for *buildings* with a single activity shall be calculated as follows:

$$(EUI_t) = S \times (EUI_t 1)$$

where (EUI_{t1}) is the *building* activity *energy target* value in Table 7-2a for the appropriate *building* activities/types and climate, and *S* is the *building* operating shifts normalization factor in Table 7-3.

Exceptions to 7.2.3: The *energy use intensity target* (EUI_t) of a building may be modified using the following exceptions. None of these exceptions may be used to change the total gross floor area as it applies to Normative Annex Z, Reporting schedule.

1. Spaces where more than 75% of the gross floor area has a single *building* activity listed in Table 7-1 shall be reported as a single-use *building* or as a multiuse *building* in accordance with either Section 7.2.2 or Section 7.2.3.

2. Spaces less than 10% of the gross floor area with *building* activity listed in Table 7-1 can combine their floor area with the floor area within the *building* that has a similar *building* activity and similar EUI_t as determined by the *qualified person*.

3. Spaces in *buildings* with multiple activities that are not listed in Table 7-1 and have a total combined area $\Sigma A_{nontarget}$ comprising less than 10% of the *building* gross floor area A_{gross} can be excluded from *building energy target* calculations if the energy use of such space is metered separately and the nontarget spaces comply with Sections 4.1 and 4.2. The *energy target* for the remaining part of the *building* shall be calculated after deducting the unlisted *building* type floor area from the *building* gross floor area ($A_{gross} - \Sigma A_{nontarget}$). Nontarget spaces shall be limited to the floor area occupied by the nontarget activity and shall not include supporting spaces such as corridors, common areas or other space types listed in Table 7-1.

4. Spaces in *buildings* with multiple activities that are not listed in Table 7-1 and have a total combined area $\Sigma A_{nontarget}$ comprising less than 50% of the *building* gross floor area A_{gross} can be excluded from *building energy target* calculations if the energy use of such space is metered separately and the nontarget spaces comply with Sections 4.1, 4.2, 4.3.1, and 4.3.3. The *energy target* for the remaining part of the *building* shall be calculated after deducting the unlisted *building* type floor area from the *building* gross floor area ($A_{gross} - \Sigma A_{nontarget}$). Nontarget spaces shall be limited to the floor area occupied by the nontarget activity and shall not include supporting spaces such as corridors, common areas or other activity types listed in Table 7-1.

Exemption to Section 7.2.4 Vacant buildings. If the building did not have physical occupancy by owner or tenant for at least fifty percent of the conditioned floor area throughout the consecutive twelve month period prior to the building compliance date, the building owner may apply for an exemption as specified in Normative Annex Z.

7.2.4.1 The energy target for vacant spaces shall be based on its pre-vacancy activity if the intended use of the building will be unchanged.

7.2.4.2 If the total floor area of a nonheated, noncooled, and nonilluminated vacant part of a building is smaller than 30% of the gross floor area, then it shall be excluded from the gross floor area, and the energy target shall be determined based on the remainder of the building as described in Section 7.2.3. This allowance may not be used to change the total gross floor area as it applies to Normative Annex Z 3.1, Reporting schedule.

7.2.4.3 If the vacant part of a *building* is heated and/or cooled and the *building* energy-use data for twelve consecutive month period when the *building* was occupied within two years prior to the compliance date is not available, compliance of this part of the *building* will be determined after it becomes occupied and energy-use data become available for 12 consecutive months.

Table 7-1 Commercial and Residential Building Types/Activities
Table 7-1 adopted as modified and published in Section Z7
Table 7-2a Building Activity Site Energy Targets (EUI_t1) (I-P Units)
Table 7-2a adopted as modified and published in Section Z7
Table 7-2a Building Activity Site Energy Targets (EUI_t1) (SI Units) - Not adopted
Table 7-2b Building Activity Source Energy Targets (EUI_t1) (I-P Units) - Not adopted
Table 7-2b Building Activity Source Energy Targets (EUI_t1) (SI Units) - Not adopted
Table 7-2c Building Activity Electricity Site Energy Use Targets (ELUIt1) (I-P Units) - Not adopted
Table 7-2c Building Activity Electricity Site Energy Use Targets (ELUIt1) (SI Units) - Not adopted
Table 7-2d Building Activity Fossil Fuel Site Energy Use Targets (FEUIt1) (I-P Units) - Not adopted
Table 7-2d Building Activity Fossil Fuel Site Energy Use Targets (FEUIt1) (SI Units) - Not adopted
Table 7-3 Building Operating Shifts Normalization Factor
Table 7-3 adopted as modified and published in Section Z7.

NEW SECTION

WAC 194-50-080 ASHRAE Standard 100, 2018—Section 8—Audits.

8.1 The *qualified energy auditor* shall complete Form D and submit to the *authority having jurisdiction* (*AHJ*). If an energy audit is required within this section, a copy of the audit summary results shall be included in the compliance documentation in a format specified in Normative Annex Z. Compliance with this standard shall be achieved by adopting *energy efficiency measures* (*EEMs*) that collectively will reduce annual *building* energy use.

8.2 Energy audit requirements for buildings without energy targets.

8.2.1 Overall process. An energy audit shall be conducted for all *buildings* not having an *energy target*. The energy audit and the associated energy audit report shall be completed by a *qualified energy auditor* practicing within their field of competency. The energy audit shall be a Level 2 audit (as defined in Section 8.4.2).

Exception to 8.2.1: Buildings that have completed an energy audit within the previous three years may use the results of the previous audit, provided that the scope of the energy audit meets the requirements of this section and that there have been minimal changes to the systems within the audit scope. The energy audit must be evaluated consistent with the investment criteria in Normative Annex X.

8.2.2 The scope of the energy audit shall include the following required end uses as applicable to the *building*:

- Envelope
- Lighting
- Cooling
- Heating
- Ventilation and exhaust systems
- Air distribution systems
- Heating, chilled, condenser, and domestic water systems
- Refrigeration except for food processing refrigeration
- Power generation equipment
- Uninterruptible power supplies and power distribution units
- People-moving systems
- The scope of the energy audit may include *campus district heating and/or cooling systems* when the *campus district heating and/or cooling system* serves the building being audited.

8.3.2 Buildings that do not meet their energy targets overall process. An energy audit shall be conducted, and an associated energy audit report shall be provided, for all *buildings* that do not meet their *energy target*. The energy audit shall be completed by a *qualified energy auditor* practicing within their field of competency. The energy audit shall be at an audit level specified by the *qualified energy auditor* to be sufficient to identify and evaluate the *EEMs* that, if implemented, would result in the *building* meeting its *energy target*. The *qualified energy auditor* may refer to the list of potential *EEMs* in Informative Annex E.

After the completion of the audit and the selection of *EEMs* to be implemented, the applicant must calculate an adjusted *energy-use intensity* (*EUI*) for the *building* based on the estimated energy savings from the selected *EEMs* and the historical energy use of the *building*. This adjusted *EUI* is then compared to the *energy target* for the *building*. If the adjusted *EUI* is less than the *energy target*, the applicant shall proceed with implementation as specified in Section 9. If the adjusted *EUI* is greater than the *energy target*, a more rigorous energy audit investigation is required to identify additional *EEMs*. This process is repeated until the *building's* adjusted *EUI* is less than its *energy target*.

Calculation of the adjusted *EUI* is shown in the following equation:

$$EUI_{adj} = (\text{Energy}_{hist} - \text{Energy}_{saved})/\text{GFA}$$

Where:

Energy_{hist} = Historical annual energy use, kBtu

Energy_{saved} = Estimated annual energy savings, kBtu

GFA = Gross floor area, ft^2

Following the completion of an energy audit that has identified *EEMs* sufficient to meet the *building's energy target*, the applicant shall implement those *EEMs* per the requirements of Section 9.

8.4.1 Level 1 Audit. Buildings shall perform a Level 1 audit (walk-through analysis) as defined in ANSI/ASHRAE/ACCA Standard 211-2018 Standard for Commercial Building Energy Audits, Section 5.3[12].

8.4.2 Level 2 Audit. *Buildings* shall perform a Level 2 Audit (energy survey and engineering analysis) as defined in *ANSI/ASHRAE/ACCA Standard 211-2018 Standard for Commercial Building Energy Audits*, Section 5.4[12].

8.5.1 Audit results. The energy audit report shall define the actions necessary for the *building owner* to achieve the energy and cost savings that are recommended in the report.

Energy audit results shall be presented in a summary table that includes, at a minimum, an estimate of each of the following:

• A list of recommended *EEMs* that, if implemented, will either meet the *energy target* for the *building* if it has a target or, if it does not have an *energy target*, will meet the economic criteria set by the standard in Section 9.

• The estimated energy savings and peak demand savings associated with each recommended *EEM*, expressed in the cost units used on the *building owner's* energy bills, and the units used for comparison with the *energy target*.

• The estimated (modeled) *energy cost* savings associated with each recommended *EEM*.

• The estimated cost of implementation for each recommended *EEM*. The costs of implementation shall include the required monitoring of energy savings per the requirements of Section 9.

The economic evaluation of measures are required by Normative Annex X.

8.5.2 Interactive effects. Energy savings analysis shall include interactive effects of all selected EEMs. When considering multiple EEMs with interactive effects, the order of analysis shall start with load reduction measures and proceed through distribution systems and associated equipment efficiencies and then plant and heat-rejection systems. Any interactive effects on equipment sizing and part load performance of equipment shall be accounted for due to reduced loads on subsequent systems.

8.5.4.1 Nonfederal facilities. The minimum financial criteria required for reporting is specified in Normative Annex X.

8.5.4.2 U.S. Federal Facilities - Not adopted.

8.5.5 End-use analysis. The energy audit shall include an end-use analysis that compares the estimated energy use of the facility after implementation of all selected *EEMs* to historical utility consumption. The intent of this requirement is to ensure that estimates of the base-case end-use energy estimates and potential energy-savings estimates in the energy audit report are reasonable.

8.5.5.2 Requirements for Level 2 Audits. The *energy auditor* is required to estimate the energy use of all end uses that individually comprise more than 5% of total historical *building* energy use. The energy estimates for these end uses shall be summed and compared to historical energy consumption for the facility. The sum of the base-case end-use energy estimates must be between 90% and 100% of the historical energy use at the site.

This comparison shall be conducted separately for each fuel type, such as electricity, natural gas, or fuel oil, for which *EEMs* are identified. On-site energy sources such as solar, photovoltaic, geothermal, and wind shall be included.

Correction for historical weather for the base year versus average weather used in *baseline* estimates may be used.

The same energy-use estimates that comprise the end-use analysis shall also be used as the basis for energy savings calculations. The *qualified energy auditor* shall verify that each *EEM* savings estimate is reasonable in comparison to the historical energy consumption of that end use based on energy consumption survey data or experience with similar sites.

The *qualified energy auditor* shall verify that the combined savings from multiple *EEMs* shall take into account *interactive effects* among measures.

Miscellaneous plug loads may be estimated on average equipment power density and *building* area. (See Form D in Normative Annex Z.)

NEW SECTION

WAC 194-50-090 ASHRAE Standard 100, 2018—Section 9—Requirements.

9.1.1 Requirements. *Buildings* that have an *energy target* shall comply with the requirements of Section 9.1.1.1. *Buildings* that do not have an *energy target* shall comply with the requirements of Section 9.1.1.2. All *buildings* shall implement an energy management plan as described in Section 5. The energy management plan shall be integrated into the *building's capital management plan* as described in Section 5. The energy management plan shall include the elements listed in Section 5.

9.1.1.1 Buildings with energy targets. For buildings having energy targets, energy efficiency measures (EEMs) identified from the energy audit shall be implemented in order to meet the building's energy target. Develop a written plan for maintaining the building's energy-use intensity (EUI) at or below the energy target.

Exceptions to Section 9.1.1.1:

1. Buildings may demonstrate compliance by implementing all of the EEM's that achieve the investment criteria in Normative Annex X.

2. Implementation of *EEMs* to *campus district heating and/or cooling system(s)* in lieu of *EEMs* implemented directly to campus *buildings* is acceptable provided the energy audit demonstrates the energy savings from the *campus district heating and/or cooling system EEMs* will be greater than the *EEMs* identified for the buildings. Energy savings shall be measured as a reduction in Btu per year.

9.1.1.2 Buildings without energy targets. *Buildings* that do not have an *energy target* shall implement all of the *EEMs* that achieve the investment criteria in Normative Annex X.

Exception to 9.1.1.2: Implementation of *EEMs* to *campus district heating and/or cooling system(s)* in lieu of *EEMs* implemented directly to campus buildings is acceptable provided the energy audit demonstrates the energy savings from the *campus district heating and/or cooling system EEMs* will be greater than the *EEMs* identified for the buildings. Energy savings shall be measured as a reduction in Btu per year.

9.1.1.2.1 - Not adopted.

9.1.1.2.2 - Not adopted.

9.1.2.1 Training of Building Staff. An ongoing written training plan shall be implemented. *Building* occupants and staff shall be trained, at a minimum, as established by the operations and maintenance (O&M) program defined in Section 6.

9.1.2.3 Implementation and commissioning of EEMs. *EEMs* shall be implemented and commissioned in accordance with the Washington State Energy Code. The *qualified energy auditor* or *qualified person* shall review the commissioning report and certify that the *EEMs* are functioning as intended.

***Informative Note*:** For guidance on commissioning protocols, refer to ASHRAE Guideline 0, *The Commissioning Process*, and ASHRAE Guideline 1.1, *HVAC&R Technical Requirements for the Commissioning Process*.

9.1.2.4 Energy efficiency sequencing. Implementation of *EEMs* shall be prioritized to take advantage of the life cycle of *building* systems and to minimize the disruption of *building* occupants. Delayed implementation shall be evaluated using the methodology included in Normative Appendix X and reported in the energy management plan.

9.2.2 Verification of implemented EEMs for Buildings without Energy Targets. Upon implementation of *EEMs*, the affected end-use systems shall be monitored for one year to verify *EEM* energy savings. The *qualified energy auditor* or *qualified person* shall review the results of the *EEM* energy monitoring and certify that the energy savings of the package of *EEMs* meets or exceeds 75% of the energy savings projected in the energy audit as required. For *buildings* unable to meet the requirements of Section 5.2 Building energy monitoring, the *qualified energy auditor* or *qualified person* shall provide verification using the methods of the *International Performance Measurement & Verification Protocol*[11] options A through D.

9.3 Compliance. The *qualified person* shall complete the compliance documentation as required in Normative Annex Z.

ASHRAE Standard 100, 2018—Section 10 - Not adopted.

NEW SECTION

WAC 194-50-110 ASHRAE Standard 100, 2018—Section 11—References. 1. ASHRAE. 2010. *Performance Measurement Protocols for Commercial Buildings*. Atlanta: ASHRAE.

2. ASHAE. 2013. ANSI/ASHRAE/IES Standard 90.1, *Energy Standard for Buildings Except Low-Rise Residential Buildings*. Atlanta: ASHRAE.

3. ASHRAE. 2007. ANSI/ASHRAE Standard 90.2, *Energy-Efficient Design of Low-Rise Residential Buildings*. Atlanta: ASHRAE.

4. IES. 2011. *Lighting Handbook*, 10th Edition. New York: Illuminating Engineering Society.

5. ASHRAE. 2011. *Procedures for Commercial Building Energy Audits*, 2nd Edition. Atlanta: ASHRAE.

6. ACCA. 2007. ANSI/ACCA Standard 4, *Maintenance of Residential HVAC Systems*. Arlington, VA: Air Conditioning Contractors of America.

7. AHRI. 2009. AHRI Guideline X, *Induced Draft Furnace Heat Exchanger Inspection*. Arlington, VA: Air Conditioning, Heating and Refrigeration Institute.

8. ASHRAE. 2013. ANSI/ASHRAE Standard 55, *Thermal Environmental Conditions for Human Occupancy*. Atlanta: ASHRAE.

9. ASHRAE. 2013. ANSI/ASHRAE Standard 62.1, *Ventilation for Acceptable Indoor Air Quality*. Atlanta: ASHRAE.

10. IEA. 2009. IEA ECBCS Annex 46: Energy Process Assessment Protocol. International Energy Agency, Paris, France.

11. International Performance Measurement & Verification Protocol Concepts and Options for Determining Energy and Water Savings Volume I Revised March 2002 DOE/GO-102002-1554. International Performance Measurement & Verification Protocol Committee. www.ipmvp.org

12. *ANSI/ASHRAE/ACCA Standard 211-2018 Standard for Commercial Building Energy Audits*, Section 5.3.

13. ASHRAE Guideline 0.2-2015 Commissioning Process for Existing Systems and Assemblies.

14. ASHRAE Guideline 1.2-2018 Technical Requirements for the Commissioning Process for Existing HVAC&R Systems and Assemblies.

Normative Annex A - Not adopted.

Informative Annex B - Not adopted.

NEW SECTION

WAC 194-50-120 Normative Annex C Forms. For Washington State Compliance Normative Annex C forms adopted as modified and published in Normative Annex Z, Section Z7

Informative Annex F Standard 100 Compliance Flow Chart - Not adopted.

NEW SECTION

WAC 194-50-130 Normative Annex L—Operations and maintenance implementation.

L2 Operations and maintenance program.

Each *building* system shall have an O&M program that, at a minimum, preserves the condition of the system and its elements in a manner that enables the system to provide the intended thermal and visual comfort, energy efficiency, and helps to achieve the intended indoor environmental quality required for the *building*.

At a minimum, the O&M program shall contain an inventory of equipment, systems and controls to be inspected and maintained and a maintenance plan describing the goals, objectives, and execution of the systems maintenance program.

L2.2.3 Inspection and maintenance tasks. Inspection and maintenance tasks for inventoried equipment, systems and controls shall be established. Inspection shall include the physical assessment of system components and may include measurement of operating parameters and data provided by sensors or a *building* management system (BMS). Maintenance tasks shall include adjustment, service, or replacement of inventoried equipment and systems. Control systems settings including, but not limited to, set points, schedules and sequence of operations shall be inspected and maintained.

L2.2.4 Inspection and maintenance task frequencies. Frequency of inspection and maintenance tasks for inventoried equipment, systems and controls shall be established. If unacceptable condition indicators or unacceptable performance is found during two successive inspections, the owner or owner's designated representative shall investigate and analyze possible causes. At a minimum, the following possible causes shall be investigated:

- *Poor field practices.* Review inspection documentation and/or technician execution to ensure maintenance tasks are performed correctly.
- *Insufficient time budgeted for tasks.* Review time budgeted to the technician to ensure that reasonable time has been given to perform the tasks.
- *Component repairs noted/pending/not made.* Inspect documentation to determine that repair or component replacement has been undertaken.
- *Design issues.* Determine whether underlying design issues are causing successive failures
- *Obsolete equipment or components.* Determine whether the equipment or component has been in service beyond its useful life.
- *Conditions outside of the building system causing failure.* Investigate whether water leaks, vandalism, a problem in the *building* envelope, a problem with the power supplied to the *building*, or some other external factor is causing the problem.

Based on the analysis, the inspection frequency or the maintenance task shall be modified to resolve the deficiency.

If acceptable condition indicators or acceptable performance is found during three successive inspections, the inspection frequency for that task may be reduced from the existing frequency. The reduced frequency shall be based on the specific findings and shall be documented.

Frequency may be adjusted for climate related or operational reasons. Each adjusted frequency shall be documented, including the reason for the adjustment.

Informative Note: Examples include the following:

• **Cooling tower shutdown during the winter.** Inspection and maintenance may be suspended during the shutdown period.

• **A new chiller is installed and the old chiller is retained as a backup.** Inspection and maintenance of the backup unit may be adjusted to reflect fewer operating hours.

• **A new lighting fixture and lamp is installed with a much longer life expectancy.** Inspection and *lamp* replacement frequency may be extended to reflect the new device.

L2.2.5 Documentation. A minimum inspection and maintenance documentation package shall consist of the following items:

1. Listings of *building* systems and system components with associated performance criteria pertinent to the facility
2. Inspection and maintenance tasks and the method of tracking (automated or manual).
3. Identify building systems or components operating beyond their useful life.
4. Sufficient record detail and verification (written or electronic) to demonstrate implementation of the maintenance plan.

The inspection and maintenance document directory shall provide easy access and be well organized and clearly identified. Emergency information shall be immediately available and shall include emergency staff and/or agency notification procedures.

Informative Annex M Guidance on Building Type Definitions - Not adopted.

Informative Annex N Addenda Description Information - Not adopted.

NEW SECTION

WAC 194-50-140 Normative Annex X—Investment criteria. X1 Demonstrating compliance with the investment criteria. Buildings seeking compliance using the exception to Section 9.1.1.1 or 9.1.1.2 shall demonstrate compliance with the financial investment criteria of this annex. The investment criteria shall be documented using level 2 energy audit and by performing the life cycle cost analysis (LCCA) as per X2.2.

X1.1 General guidance on cost and benefits for the base case and alternative case.

The life cycle cost analysis is a process which compares the base case of the existing building to the alternative case that implements EEMs proposed by the energy audit. Total life cycle cost of each case are produced by the analysis, but the resulting cost and benefits of interest are the incremental life cycle cost difference between each case. Measures and bundles of measures demonstrating positive life cycle cost compared to the base case are to be implemented in accordance with chapter 9.

The base case will include all cost for energy, operations and maintenance and other related cost scheduled in the analysis period. This may include replacement of existing equipment upon failure with code compliant equipment. All these cost are captured in the base case.

The alternate case captures all cost and benefits associated with implementing additional efficiency features. All cost and all benefits of implementing EEMs required by Section 9 should be captured by the analysis. All documented cost may be considered.

Extended implementation periods are allowed by this standard. This allows more EEM to be considered at time of failure resulting in much of the cost of implementation being attributed to the base case. This requires including the implementation timing of the measure in the extended compliance period. Ultimately this reduces cost of the alternative case and will likely make EEM that are not cost effective as an early replacement cost effective as a replacement upgrade.

X2 Energy audits and investment criteria pathway.

X2.1 Buildings qualifying under the investment criteria must complete a LCCA and implement an optimized bundle of energy efficiency measures that provide maximum energy savings without resulting in a savings-to-investment ratio of less than one.

Exception: Building owners may demonstrate compliance with this section by completing the Level 2 energy audit and implementing all EEMs determined to have a simple payback that is less than the EEMs expected useful life.

X2.2 The procedures for developing the investment criteria shall be based on ANSI/ASHRAE/ACCA Standard 211 Section 5.5.2 and Section 5.5.3 Life-Cycle Cost Analysis (LCCA) as modified by section X2. The LCCA shall also follow, and consider the findings of, the Level 2 Audit as defined by ANSI/ASHRAE/ACCA Standard 211 Section 5.4.

X2.3 Investment criteria chronological process.

X2.3.1 Level 2 audit. Evaluate a comprehensive list of individual EEMs using simple payback as a screening criteria. Individual EEMs determined to have a simple payback that is less than the EEMs useful life may be excluded from further consideration.

X2.3.2 Life cycle cost assessment. Identify an optimized bundle of EEMs that provides maximum energy savings without resulting in a savings-to-investment ratio of less than one. The optimized bundle of measures shall be implemented based on the schedule established within the energy management plan.

X2.3.2.1 Life cycle cost assessment on individual measures. Individual measures that do not meet the life cycle cost test may be excluded from the implementation plan if they are not integral to the implementation of other cost effective measures in the bundle.

X2.3.2.2 Phased implementation. The LCCA and energy management 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.

X3 Included LCCA costs and savings.

X3.1 The costs and savings to be included within the life cycle cost analysis shall be based on ANSI/ASHRAE/ACCA Standard 211 Sections 5.4.8.1, 5.5.2 and 5.5.3 as modified by the following:

X3.1.1 Cost for implementation of EEM, as required by Section 9.

Estimate EEM Costs (based on Standard 211 Sections 5.4.8).

Estimate the total expected cost of implementation for each practical measure. Cost estimates shall include the following factors, as applicable:

1. Material costs
2. Labor costs, contracted or executed by employees
3. Design fees
4. Construction management, contracted or executed by employees
5. Site-specific installation factors
6. Permits
7. Temporary services
8. Testing, adjusting, and balancing
9. Utility service upgrades
10. Verification, as required in Section 9.2.2 only
11. Commissioning
12. Taxes
13. Profit
14. Any additional adjustments that significantly impact the cost estimate of the EEM.

***Informative Note*:** Multiple measures affecting the same building systems or end uses may be combined and their costs estimated as a group. Combining costs may improve the cost effectiveness of combined measures.

Hazardous material abatement (based on standard 211, 5.4.8.2). Estimation of hazardous material abatement costs is not required. If the possible presence of hazardous materials is apparent at the site, either through observation or as reported by others, the possible presence of the hazardous material shall be included in the report (see Standard 211 Section 6.2.5) as potentially affecting health and safety and installation costs.

Cost and cost savings of recommended EEMs (based on standard 211 Section 5.5.2).

Estimate the initial and recurring costs, energy cost savings, and nonenergy cost savings of each measure and each integrated group of measures. Cost estimates shall either be:

1. Obtained from a vendor at the quoted price; or
2. Based on quotations of similar projects within the last year; or
3. Based on labor cost estimates for employee labor.

Life-cycle cost analysis (LCCA) (based on standard 211 section 5.5.2). LCCA 7,8,9,10 of each recommended EEM shall be conducted for a time frame that spans, at a minimum, the life of the measure with the longest service useful life and shall include the following:

1. Initial costs (per Standard 211 Section 5.4.8.1);
2. Financing costs;
3. Annual energy costs;
4. Escalation rates as published by the AHJ citing the source within the energy audit report;
5. Discount rates as published by the AHJ citing the source within the energy audit report;
6. Tax credits and deductions;
7. Cash incentives, grants, and rebates;
8. Expected periodic replacements;

9. Estimated recurring nonenergy costs (maintenance, etc.), of each measure or set of measures. Such costs include annual maintenance and service labor costs, routine replacement of worn parts, or annual warranty fees from manufacturers;

10. Contingency funds not to exceed 5% of estimated EEM implementation cost; and

11. Water & sewer savings from EEM. EEMs that provide water and/or wastewater savings shall include the operations and maintenance savings resulting from implementation of the EEM.

X4 Life cycle cost analysis methodology, form and key variables.

X4.1 Life-cycle cost analysis completed for buildings qualifying under the investment Criteria shall follow the *National Institute of Standards and Technology (NIST) Life-Cycle Costing Manual Handbook 135* except as specified in this standard in Table X4.

Table X4 Life Cycle Cost Analysis Variables Independent Of NIST Handbook - 135 Methodology.

Public owner discount rate	A fixed annual rate based on the cost of borrowing through the Washington state treasurer, certificate of participation programs, the local program and the state lease-purchase program.
Private owner discount rate	Shall be the published *Wall Street Journal Prime Rate* for based on the average of the previous twelve months.
Financing	Applicants with documented costs of borrowing assuming one hundred percent of the EEM implementation costs are financed at an actual cost of borrowing and stated terms when the property being improved is listed as loan collateral.
Rate of inflation	A fixed annual rate, as published annually by the Washington state office of financial management.
Fuel escalation rate	Based on the most recent edition of *NIST Handbook – 135 Annual Supplement - Fuel Escalation Rates.*
Study period	Equal to the useful life of the longest-lived EEM within an optimized bundle. (STD 211, 5.5.3)

X4.2 Publication of analysis variables. The AHJ shall update the contents of Table X4 on an annual basis and incorporate the results in updates to the Normative Annex X - Investment Criteria form specified in Normative Annex Z.

NEW SECTION

WAC 194-50-150 Normative Annex Z— Washington state reporting requirements. Z1 Building owner notifications by the AHJ and building owner response.

Z1.1 Notification to building owners of covered commercial buildings by the AHJ. Based on records obtained from each county assessor and other available information sources, the *AHJ* must create a database of *covered commercial buildings* and *building owners* required to comply with the standard established in accordance with this section. The database may include buildings and *building complexes* presumed to meet the definition of *covered commercial building* and *multifamily buildings* greater than 50,000 square feet in floor area.

Z1.1.1 The database will contain information about buildings that may be subject to compliance, their owners, and information about multi-

family residential buildings eligible for incentives. The database will also contain information to assist tracking and reporting on building owner compliance, and incentive application and distribution. Commerce will create a method for tracking building owner notification responses. Each building or building complex will be assigned a unique building identifier.

Z1.2 By July 1, 2021, the AHJ must provide the owners of covered commercial buildings with notification of compliance requirements. Notifications will be mailed to the mailing addresses county assessors have on file.

Z1.3 Failure by the *AHJ* to provide the notification in Z1.2 does not release the *building owner* of the legal obligation to comply with this law.

Z1.4 By July 1, 2021, the AHJ must provide notifications to the building owners of multifamily residential building where the floor area exceeds fifty thousand gross square feet, excluding the parking garage area.

Z2 Building owner response to notifications.

Z2.1 Correction of errors. *Building owners* are responsible for reviewing the property and building information provided by the AHJ through notification including, but not limited to, *building* or *building complex* ownership details, *gross floor area*, and other information as identified by the *building owner*.

Z2.1.1 Correction of errors documentation form. Building owners who are notified in error may submit a correction form to the AHJ. The correction form will be used to document gross floor area (conditioned and unconditioned) and/or building type. Building owners that submit the correction form must also submit the documentation required to demonstrate an exception as required in Section Z4.1 prior to the compliance date if applicable.

Washington State Reporting Requirements for Building Owners.

Z3 General Compliance. The building owner of a *covered commercial building* must report compliance with the standard to the AHJ in accordance with the schedule established under Section Z3.1 and every five years thereafter. For each reporting date, the building owner must submit documentation to demonstrate that:

1. The weather normalized energy use intensity of the *covered commercial building* measured in a period not to exceed two years prior to the reporting deadline specified in Normative Annex Z3.1 is less than or equal to the energy use intensity target (buildings that meet their energy targets); or

2. The *covered commercial building* has received conditional compliance from the department based on energy efficiency actions prescribed by the standard; or

3. The *covered commercial building* is exempt from the standard by demonstrating that the building meets one of the criteria for an exemption.

Z3.1 Compliance schedule. The building owner of a covered commercial building must report the building owner's compliance with the standard to the department in accordance with the appropriate initial compliance date as follows and every five years thereafter.

1. For a building with more than two hundred twenty thousand gross square feet, June 1, 2026;

2. For a building with more than ninety thousand gross square feet but less than two hundred twenty thousand and one gross square feet, June 1, 2027; and

3. For a building with more than fifty thousand gross square feet but less than ninety thousand and one square feet, June 1, 2028.

Z3.1.2 Application for conditional compliance. Applications for conditional compliance must be submitted to the AHJ one hundred eighty days prior to the compliance date to receive conditional compliance approval prior to the compliance date.

Z3.1.3 Application for exemption. Building owners submitting an application for exemption as specified in Section Z4.1 must be submitted to the AHJ one hundred eighty days prior to the compliance date to receive exemption approval prior to the compliance date.

Z4 Documentation of compliance with the standard. Documentation of compliance shall be submitted to the AHJ demonstrating the building owner has complied with the standard through submission of documentation in accordance with Section Z4.1, Z4.2, Z4.3, Z4.4 or Z4.5. Additional requirements for continued reporting may be required as specified in Z4.6.

Z4.1 Documentation of compliance through exemption. *Building owners* seeking approval of exemption shall submit to the AHJ the Z6.7 Form H, Application for exemption certificate documenting the following:

1. The building qualifies for one of the following exemptions:

a. Compliance with the exemption must be verified by the owner based on the building as it is to be occupied and operating on the compliance date.

b. Applications for exemptions may be submitted no sooner than 1 year prior to the compliance date and submitted to the AHJ no later than one hundred eighty days prior to the compliance date.

c. Exemptions certificates are only valid for the current compliance review cycle.

2. Covered commercial buildings are not eligible for exemption from the standards unless they meet one of the following criteria:

a. The building did not have a certificate of occupancy or temporary certificate of occupancy for a consecutive twelve months period within two years prior to the compliance date.

b. The building did not have physical occupancy by owner or tenant for at least fifty percent of the *conditioned floor area* throughout the consecutive twelve month period prior to the building compliance date.

c. The sum of the *building's gross floor area* minus *unconditioned* and *semi-conditioned spaces*, as defined in the Washington State Energy Code, is less than fifty thousand square feet;

d. More than 50% of the gross floor area of the building is primarily used for manufacturing or other industrial purposes, as defined under the following use designations of the Washington state edition of the *International Building Code*:

i. Factory group F; or

ii. High hazard group H.

e. The building is an agricultural structure;

f. The building is vacant due to renovation or pending demolition; or

g. The building meets at least one of the following conditions of financial hardship:

i. The building had arrears of property taxes or water or wastewater charges that resulted in the building's inclusion, within the prior two years, on a city's or county's annual tax lien sale list;

ii. The building has a court appointed receiver in control of the asset due to financial distress;

iii. The building is owned by a financial institution through default by a borrower;

iv. The building has been acquired by a deed in lieu of foreclosure within the previous twenty-four months;

v. The building has a senior mortgage subject to a notice of default;

vi. The building owner has an immediate and heavy financial need which cannot be satisfied from other reasonable available resources and which are caused by events that are beyond their control.

h. The building is a *more recently built buildings* that obtained an original occupancy permit no more than three years prior to the initial compliance date specified in Z3.1.

3. After documents have been submitted and reviewed, the AHJ will send notification of approval or denial.

a. If the exemption is approved the AHJ shall notify the applicant stating the application has been approved and update the AHJ records for the building.

b. If the exemption is denied the AHJ shall notify the applicant stating the application has been denied and update the AHJ records for the building.

4. When an application for exemption is denied the building owner must proceed with the process to demonstrate compliance with one of the compliance options in Washington state reporting requirements for building owners, Z4.2-Z4.5.

Z4.2 Buildings that meet the EUI_t. *Building owners* must provide the following documentation to verify that the building *weather normalized* EUI is less than the building EUI_t and that the energy management plan is complete and being implemented.

- Form A
- Form B
- Form C

Z4.3 Buildings that will meet the building investment criteria prior to the compliance date. Building owners must provide the following documentation to verify that the building has implemented all EEMs that meet the cost effectiveness criteria resulting from the energy audit and economic evaluation criteria from Normative Annex X. The energy management plan must be completed and implemented and all EEMs must be installed and commissioned prior to the compliance date.

- Form A
- Form B
- Form C, except buildings unable to meet Section 5.2, Building energy monitoring.
- Energy audit report.
  - Level 2 Energy audit
  - Normative Annex X – Investment Criteria Form.

Z4.4 Buildings that will meet the EUI_t through conditional compliance. *Building owners* must provide the following documentation to verify that the building *weather normalized* EUI is projected to be less than

the building EUI_t at the end of the measurement and verification period and that the energy management plan is complete and being implemented. EEMs required to meet the EUI_t must be installed and commissioned prior to the compliance date. Should the building fail to meet the EUI_t after the measurement and verification requirements required in Section 4.3.3.3, Verification of compliance have been completed, the building shall implement additional EEMs to and demonstrate the building EUI is less than the EUI_t.

- Form A
- Form B
- Form C
- Energy Audit Report
  - Level 2 Energy Audit
  - Normative Annex X - Investment Criteria Form
- Continued reporting until completion as specified in Section Z4.6.

Z4.5 Buildings that will meet the building investment criteria through conditional compliance. Building owners must provide the following documentation to verify that the building has implemented all EEMs that meet the cost effectiveness criteria resulting from the energy audit and economic evaluation criteria from Normative Annex X. The energy management plan must be completed and implemented and all EEMs must be installed and commissioned prior to the compliance date. Should the building fail to meet the EUI_t after the measurement and verification requirements required in Section 4.3.3.3, Verification of compliance have been completed, the building shall implement additional EEMs to meet the projected target.

- Form A
- Form B
- Form C, except buildings unable to meet Section 5.2 Building Energy Monitoring
- Energy audit report
  - Level 2 Energy audit
  - Normative Annex X - Investment Criteria Form
- Continued reporting until completion as specified in Section Z4.6.

Z4.5.1 Phased implementation. The building owner may include phased implementation of EEMs 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. System or equipment fitting this description shall be included in the energy audit and Normative Annex X - Investment Criteria submission with a schedule for replacement. Phased implementation shall be documented in the *energy management plan* and *capital management plan* required in Section 5.

Z4.6 Continued reporting until completion. Continued reporting is required as specified in Sections Z4.6.1 and Z4.6.2 until completion when: a) measurement and verification extends one year or more beyond the compliance date, or b) implementation is extended phased implementation.

Z4.6.1 Annual reporting. The following up to date reports shall be submitted to the AHJ annually, (date specific).

- Form A
- Form B

• Form C, except buildings unable to meet Section 5.2, Building energy.

Z4.6.2 Completion Reporting. The following up to date reports shall be submitted to the AHJ when all conditions of compliance have been verified and documented:

• Form A
• Form B
• Form C, except buildings unable to meet Section 5.2, Building energy monitoring. Buildings unable to meet Section 5.2 shall include the verification specified in Section 9.2.2 in the building *energy management plan*.

Z5 Violations, assessment of administrative penalties, mitigation and review of penalty decisions.

Z5.1 Authorization. The AHJ is authorized to impose administrative penalties upon building owners for failing to submit documentation demonstrating compliance with the requirements of this standard.

Failure to submit documentation demonstrating compliance by the scheduled reporting date will result in progressive penalties by legal notice.

Z5.2 Notice of violation and opportunity to correct (NOVC) (first notice).

Z5.2.1 The department may issue a NOVC when a building owner has failed to submit documentation that demonstrates compliance with this standard by the scheduled reporting date.

Z5.2.2 A NOVC may be issued for any of the following reasons:

1. Failure to submit a compliance report in the form and manner prescribed by the AHJ;
2. Failure to meet an energy use intensity target or failure to receive conditional compliance approval;
3. Failure to provide accurate reporting consistent with the requirements of the standard; and
4. Failure to provide a valid exemption certificate.

The AHJ will identify in the NOVC which section(s) of law, code, or the standard for which the *building owner* has failed to demonstrate compliance.

Z5.2.3 The NOVC will specify the time by which the building owner must cure the violation by submitting documentation that demonstrates compliance with the identified section(s) of law, code, or the standard. The AHJ will give the building owner at least seven calendar days to submit such documentation.

Z5.2.4 If sufficient documentation is not submitted by the date specified in the NOVC, the AHJ will issue a notice of violation and intent to assess administrative penalties (NOVI) and the *building owner* will be subject to administrative penalties.

Z5.3 Notice of violation and intent to assess administrative penalties (second notice).

Z5.3.1 If a *building owner* fails to respond to a NOVC by submitting documentation demonstrating compliance by the date specified in the NOVC, the AHJ will issue a notice of violation and intent to assess administrative penalties (NOVI).

Z5.3.2 The AHJ will identify in the NOVI which section(s) of law, code, or the standard for which the building owner has failed to demonstrate compliance. The NOVI will also include a description of how the penalties the AHJ intends to assess will be calculated.

Building owners must respond to a NOVI within thirty days by either:

1. Submitting an application for exemption in accordance with Section Z4.1 if applicable;

2. Submitting a noncompliance mitigation plan in accordance with Z5.7;

3. Submitting its intent to pay the penalties by using the form provided by the AHJ; or

4. Submitting a request for an administrative proceeding to challenge or mitigate the penalty.

Z5.3.3 If the *building owner* does not timely request a hearing or submit an application for exemption, the *building owner* waives its right to a hearing and the director or their designee may issue a final order assessing the penalties described in the NOVI. If the *building owner* has submitted a mitigation plan, the final order will only assess penalties from the scheduled compliance date until the date of an approval of compliance or conditional compliance.

Z5.3.4 Building owners who submit an application for exemption that is denied may request a hearing by submitting a request for a hearing within thirty days of issuance of the decision denying its application for exemption. If the building owner does not request a hearing within thirty days, the building owner waives its right to a hearing and the director or their designee may issue a final order assessing the penalties described in the NOVI.

Z5.4 Assessment of administrative penalties.

Z5.4.1 Failure to submit documentation demonstrating compliance with the standard by the date specified in a NOVC will result in the issuance of a NOVI and the assessment of administrative penalties at an amount not to exceed five thousand dollars plus an amount based on the duration of any continuing violation. The additional amount for a continuing violation may not exceed a daily amount equal to one dollar per year per gross square foot of floor area.

Z5.4.1.1 Penalties for building owners that submit a noncompliance mitigation plan. For building owners subject to a NOVI who respond within thirty days by submitting a noncompliance mitigation plan (Z5.7), fines shall be assessed on an annual basis or when the building owner achieves compliance or conditional compliance.

a. For applicants that submit a noncompliance mitigation plan and who submit documentation demonstrating completion, daily penalties will be assessed from the scheduled compliance date to the date of approval of compliance or conditional compliance. The penalty will be assessed at an amount not to exceed 30% of five thousand dollars plus a daily amount equal to $0.20 per gross square foot of floor area per year.

b. For applicants that submit a noncompliance mitigation plan but fail to submit documentation demonstrating completion, if the building does not comply with the standard by the next compliance date, the building owner will be assessed the maximum penalty of five thousand dollars plus a daily amount equal to $1.00 per gross square foot of

floor area per year not to exceed a value greater than eighteen months of accrued penalty.

The AHJ may by rule increase the penalty rates to adjust for the effects of inflation.

Z5.4.2 When assessed penalties are not paid within one hundred eighty days of the date of a final order assessing penalties, the AHJ may assess further penalties. Total penalties assessed will not exceed five thousand dollars plus a daily amount equal to $1.00 per gross square foot of floor area per year.

Z5.4.3 Interest will accrue on civil penalties pursuant to RCW 43.17.240 if and when the debt becomes past due.

Z5.5 Due date and collection of penalties.

Z5.5.1 Penalties shall become due and payable on the later of:

1. Thirty days after receipt of the final order imposing the penalty; or

2. The date specified in the final order imposing the penalty.

Z5.5.2 If a penalty has not been paid by the due date, the AHJ may assign the debt to a collection agency as authorized by RCW 19.16.500 or take other action to pursue collection as authorized by law. If referred to a collection agency, the AHJ may add a reasonable fee, payable by the debtor, to the outstanding debt for the collection agency fee.

Z5.5.3 For building owners that are implementing a noncompliance mitigation plan but have not yet complied, the AHJ may assess the accumulated daily fine on June 1st of each year or shortly thereafter.

Z5.6 Payment of administrative penalties.

A check or money order payable in U.S. funds to the Washington state department of commerce can be mailed to:

Washington State Department of Commerce
Re: Clean Buildings Initiative, Energy Division
P.O. Box 42525
Olympia, WA 98504-2525

Z5.7 Noncompliance mitigation plan. Owners of covered commercial buildings that are out of compliance by the scheduled compliance date and have not corrected the violation by the date noted in a NOVC may reduce possible penalties by demonstrating that they are taking action to achieve compliance with the standard. To begin the process of mitigating noncompliance, a building owner must submit to the AHJ the noncompliance mitigation plan form selecting one of the following actions within thirty days of the date of a NOVI to avoid immediate issuance of penalty in accordance with Z5.4.1.

1. Compliance with the standard in accordance with Z4.2.

2. Conditional compliance with the standard in accordance with Z4.4.

3. Conditional compliance with the standard in accordance with Z4.5.

Z5.7.1 Mitigation completion. To demonstrate completion, the building owner shall complete all of the requirements of this standard and submit documentation as required by Section Z4.2, Z4.4 or Z4.5. Upon completion, the AHJ shall issue a final order assessing the reduced penalty as specified by Z5.4.1.1(a).

Z5.8 Administrative hearings.

Z5.8.1 Requesting a hearing. A *building owner* may request an administrative hearing after receiving an NOVI or after the denial of its application for an exemption by submitting a request within thirty days of the date of a NOVI or the denial of a timely application for exemption. All requests must be made in writing and filed at the address specified on the NOVI. For convenience, the AHJ will attach a form titled request for hearing to the NOVI that may be used to request an administrative hearing.

Requests for hearing must be accompanied by the following:

1. Washington State Building ID;
2. Submit Annex Z Forms A, B, and C.

Z5.8.2 Hearing process. The AHJ may refer matters to the office of administrative hearings (OAH). Administrative hearings will be conducted in accordance with chapter 34.05 WAC, Administrative Procedure Act, chapter 10-08 WAC, Model rules of procedure, and the procedural rules adopted in this chapter. In the case of a conflict between the model rules of procedure and the procedural rules adopted in this section, the procedural rules adopted in this section take precedence.

Z5.8.3 Initial orders to become final orders. Initial orders issued by the presiding officer will become final without further agency action unless, within twenty days:

1. The director determines that the initial order should be reviewed; or
2. A party to the proceeding files a petition for administrative review of the initial order. Upon occurrence of either event, notice shall be given to all parties to the proceeding.

Z5.8.4. Judicial review. A final order entered pursuant to this section is subject to judicial review pursuant to RCW 34.05.510 through 34.05.598.

Z5.8.5 Collected penalties. The AHJ will deposit all penalties collected and received by the department under this section into the low-income weatherization and structural rehabilitation assistance account created in RCW 70.164.030.

Z6 Compliance forms. The following section replace Normative Annex C Forms in Standard 100 and provide additional forms specified by rule Building owners are required to submit the applicable forms and the required supporting information to demonstrate compliance with the standard. These forms replace all referenced forms in this standard. The AHJ will make these forms available in an electronic format for submission to the AHJ.

Z6.1 Compliance with Standard 100 (Form A)

1. Building identification:
a. WA state building ID;
b. County;
c. County parcel number(s);
d. Portfolio manager property ID number;
e. Property name;
f. Parent property name;
g. Address 1 (street);
h. Address 2;
i. City;
j. State; and
k. Postal code.

2. Contact information:
a. *Building owner* name(s);
b. Contact name;
c. Address 1 (street);
d. Address 2;
e. City;
f. State/Province;
g. Country;
h. Postal code;
i. Telephone number;
j. Email address.
3. Qualified person:
a. Qualified person name;
b. Address 1 (street);
c. Address 2;
d. City;
e. State;
f. Postal code;
g. Telephone number;
h. Email address;
i. Licensed, certified (select all that apply);
ii. Licensure or certifying authority;
4. *Energy manager* (if different than the qualified person):
a. Energy manager name;
b. Address 1 (street);
c. Address 2;
d. City;
e. State/Province;
f. Postal code;
g. Country;
h. Telephone number;
i. Email address.
5. This compliance report is for:
a. Building that meets the EUI_t.
b. Building that meets the building investment criteria prior to the compliance date.
c. Building that will meet the EUI_t through conditional compliance.
d. Building that will meet the building investment criteria through conditional compliance.
e. Annual reporting
f. Completion reporting
6. Summary data:
a. Energy utilization index target (EUI_t) (KBtu/ft^2 yr) based on completed Z6.2 Form B.
b. Measured site EUI (kBtu/ft^2) for the compliance year for this building based on Z6.3 Form C.
c. Measured weather normalized site EUI (kBtu/ft^2) for the compliance year based on Z6.3 Form C.
d. List the months/year of the collected data (mm/yyyy - mm/yyyy) for the compliance year for this building from Z6.3 Form C.
e. Buildings unable to comply with Section 5.2, Building energy monitoring and complete Z6.3 Form C shall provide a reason statement.
7. Have the energy management requirements of Section 5 been met? [ ] Yes [ ] No
• Upload energy management plan as specified by the AHJ.

8. Have the operation and maintenance requirements of Section 6 been met? [ ] Yes [ ] No

• Upload operation and maintenance implementation documentation as specified by the AHJ.

9. Date the audit and economic evaluation was completed (N/A if none required).

• Upload audit reports as specified by Z6.4 Form D.

10. Have all EEMs required by Section 8 been implemented? [ ] Yes [ ] No

11. Have the requirements of Section 9 been completed? [ ] Yes [ ] No

12. We state that this building complies with ANSI/ASHRAE/IES Standard 100 as amended by the AHJ to conform with RCW 19.27A.210:

a. Signature of building owner:

• Date:

b. Signature of qualified person:

• Date:

c. Signature of energy manager:

• Date:

d. Signature of authority having jurisdiction:

• Conditional or final compliance

• Date:

Z6.2 Building activity and *energy use intensity target* (EUI_t)(Form B). - Complete form provided by the AHJ with the following information:

1. Building identification:

a. Washington state building ID;

b. County;

c. County parcel number(s);

d. Portfolio manager property ID number;

e. Property name;

f. Parent property name;

g. Address 1 (street);

h. Address 2;

i. City;

j. State; and

k. Postal code.

2. List the building location climate zone, 4C or 5B. Determine the climate zone using ASHRAE climate zone as found on the map in Informative Annex G. Buildings located in Climate Zone 6 shall use Climate Zone 5B.

3. The gross floor area in square feet shall be reported as defined in Section 3.

4. If entire building is single activity/type not listed in Table 7-1, it should be listed as "building without target" on Z6.1 form. List "energy target" as "N/A" on Z6.2 Form B and Z6.2 Form B is considered complete.

5. Fill in fraction of gross floor area (A)i for each activity. For single-activity buildings this is 1.0.

6. Fill in the operating shifts normalization factor (S)i from Table 7-3 for each activity that has an area entered from Step 6.

7. Fill in the activity energy target (EUI_t1)i from Table 7-2 (or table from AHJ) for each activity that has an area entered from Step 6.

8. Calculate weighted space EUI target (A × S × EUI_t1)i for each activity that has an area entered from Step 6.

9. Add up fraction of floor area and enter sum in "Total fraction of floor area with target," and add up all weighted space EUI targets and enter sum as the "energy target" on Z6.2 and Z6.1 Forms B and A.

10. If more than 50% of gross floor area has no target, it should be listed as "building without target" on Z6.1 Form A. List "energy target" as "N/A" on Z6.2 Form B.

For single-activity *buildings* this is 1.0.

Z6.3 Energy-Use intensity Calculations (Form C).

Energy Use Intensity Calculations shall be reported via the U.S. EPA's ENERGY STAR Portfolio Manager (www.energystar.gov/benchmark). The *energy manager* is responsible for creating Energy Star portfolio manager record for each building.

Exception to Z6.3: Buildings unable to comply with Section 5.2, Building energy monitoring shall demonstrate compliance through Z4.3 or Z4.5.

The Energy Star portfolio manager building record shall be identical to the building activity/type, fraction floor area, operating shifts (hours of operation) and gross floor area of the building as reported on Form B. All inputs shall be up to date prior to reporting as required in Section Z4 and annually as required in Section 5.1.2.3, Annual updates of the *net energy* use and *EUI*.

Prior to submitting reports run the Energy Star portfolio manager data quality checker and make all corrections required to complete the report.

The energy manager shall use the EPA's Energy Star portfolio manager share properties feature and share the property data with the AHJ by enabling the read only access and exchange data feature.

For each report submitted under Section Z4, the energy manager shall create and submit a report documenting the required data fields listed (below) and other fields deemed necessary by the AHJ for the reporting period. This shall be submitted using the Washington state report specified in Energy Star portfolio manager.

Report fields shall include:

- Portfolio manager property ID;
- Portfolio manager parent property ID;
- Property name;
- Parent property name;
- Address 1;
- Address 2;
- City;
- County;
- State/Province;
- Postal Code;
- Primary property type - Self-selected;
- Primary property type - EPA calculated;
- List of all property use types at property;
- Property GFA - Self-reported (ft^2);
- Property GFA - EPA calculated (buildings and parking) (ft^2);
- Property GFA - EPA calculated (buildings) (ft^2);
- Property GFA - EPA calculated (parking) (ft^2);
- Largest property use type;
- Largest property use type - Gross floor area (ft^2);
- 2nd Largest property use type
- 2nd Largest property use - Gross floor area (ft^2);

- 3rd Largest property use type;
- 3rd Largest property use type - Gross floor area (ft^2);
- Year built;
- Occupancy;
- Property notes;
- Property data administrator;
- Property data administrator - Email;
- Last modified date - Property;
- Last modified date - Electric meters;
- Last modified date - Gas meters;
- Last modified date - Nonelectric nongas energy meters;
- Local standard ID(s) Washington state building standard;
- Data center - Energy estimates applied;
- Electricity use - Grid purchase and generated from on-site renewable systems (kWh);
- Electricity use - Grid purchase (kWh);
- Electricity use – Generated from on-site renewable systems and used on-site (kWh);
- Natural gas use (therms);
- Fuel oil #1 use (kBtu);
- Fuel oil #2 use (kBtu);
- Fuel oil #4 use (kBtu);
- Fuel oil #5 and 6 use (kBtu);
- Diesel #2 use (kBtu);
- Kerosene use (kBtu);
- Propane use (kBtu);
- District steam use (kBtu);
- District hot water use (kBtu);
- District chilled water use (kBtu);
- Coal - Anthracite use (kBtu);
- Coal - Bituminous use (kBtu);
- Coke use (kBtu);
- Wood use (kBtu);
- Other use (kBtu);
- Default values;
- Temporary values;
- Estimated data flag - Electricity (grid purchase);
- Estimated data flag - Natural gas;
- Alert - Data center does not have an IT meter;
- Alert - Gross floor area is 0 ft^2;
- Alert - Property has no uses;
- Data quality checker - Date run;
- Data quality checker run - ?
- Alert - Energy meter has less than 12 full calendar months of data;
- Alert - Energy meter has gaps;
- Alert - Energy meter has overlaps;
- Alert - Energy - No meters selected for metrics;
- Alert - Energy meter has single entry more than sixty-five days;
- Estimated values - Energy;
- Energy Star score;
- National median site energy use (kBtu);
- Site energy use (kBtu);
- Site EUI ($kBtu/ft^2$);
- Weather normalized site energy use (kBtu);

• Weather normalized site EUI (kBtu/ft^2);
• Weather normalized site electricity (kWh);
• Weather normalized site electricity intensity (kWh/ft^2);
• Weather normalized site natural gas use (therms);
• Weather normalized site natural gas intensity (therms/ft^2) energy current date;
• Electricity use - Generated from on-site renewable systems (kWh);
• Electricity use – Generated from on-site renewable systems and exported (kWh);
• Electricity Use - Grid purchase and generated from on-site renewable systems (kBtu);
• Electricity use - Grid purchase (kBtu);
• Electricity use - Generated from on-site renewable systems and used on site (kBtu);
• Natural gas use (kBtu);
• Percent of total electricity generated from on-site renewable systems;
• Cooling degree days (CDD) (°F);
• Heating degree days (HDD) (°F);
• Weather station name;
• Weather station ID.

Z6.4 End-use analysis requirements. Building owners shall demonstrate compliance with Form D by providing the documentation required by section Z6.4.1.

Z6.4.1 Energy Audit Forms (Form D). The energy audit form shall be provided electronically by completing the energy audit form included in the U.S. Department of Energy, Energy Asset Score Tool, or an equivalent tool provided by the AHJ. This form shall be completed in compliance with the level 2 energy audit, as published in ASHRAE Standard 211, Standard for commercial building energy audits.

Form E - Not adopted.

Z6.5 Annex X, Investment criteria tool (Form F).

Z6.5.1 To demonstrate compliance with the investment criteria of Normative Annex X, building owners shall complete and submit Form F.

Z6.5.2 Form F shall be developed by the AHJ. Form F shall be a life cycle cost evaluation tool compliant the NIST Standard 135 and capable of supporting the evaluation criteria required by Normative Annex X.

Z6.6 Documentation of a building of historic significance (Form G).

Energy efficiency measure exemptions for historic buildings. No individual energy efficiency measure identified by energy efficiency audits need to be implemented if it would compromise the historical integrity of a building or part of a building. Building owners seeking this exception shall provide the following documentation. Certified historic buildings are not exempt from the other requirements of this standard.

Plan for compliance. The owner of a qualifying historic building shall have the plan for compliance evaluated by a qualified historic preservationist, as defined in 36 C.F.R., Part 61, identifying any energy efficiency requirement that may compromise the historic integrity of the building or part of the building. Any element of the plan identified to compromise the historic integrity of the building or part of

the building shall be omitted from the compliance plan. Evidence of this evaluation must be submitted to the AHJ for approval.

Documentation of a historic building. Building owners must provide documentation to the AHJ that proves its historic identification or eligibility. Valid documentation from any existing programs listed below is acceptable.

1. Examples of existing programs that verify historic property include:

a. The National Register of Historic Places;

b. The Washington heritage register;

c. Properties that are identified by the department of archaeology and historic preservation (DAHP) to be eligible for listing in either one of these registers; and

d. Properties which are listed in a local register of historic places; or

2. Other documentation approved by the AHJ.

Z6.7 Application for Exemption Certificate (Form H).

Apply for an exemption certificate by submitting the following documentation to the building owner in the form specified by the AHJ. The application must include:

1. Building identification

a. Washington state building ID;

b. County;

c. County parcel number(s);

d. Portfolio manager property ID number;

e. Property name;

f. Parent property name;

g. Address 1 (street);

h. Address 2;

i. City;

j. State; and

k. Postal code.

2. Contact information:

a. Building owner name(s);

b. Contact name;

c. Address 1 (street);

d. Address 2;

e. City;

f. State/Province;

g. Country;

h. Postal code;

i. Telephone number; and

j. Email address.

3. Building information:

a. Primary building activity from Table 7-1, or a description of the nonlisted building type;

b. Building gross floor area;

c. Building gross conditioned floor area.

4. Reason for exemption: Based on exemptions listed in Section Z4.1(2).

A list all of documents enclosed and any facts in support of this application. Provide at least two of the acceptable documents listed below:

a. Municipal or county records;

b. Documents from a qualified person;

c. Construction permit;

d. Certificate of occupancy or application for certificate of occupancy;

e. Demolition permit;

f. Financial statements such as statement of assets; liabilities, capital, and surplus, statement of revenue and expenses; or statement of case flow;

g. A letter from the building owner stating facts and explaining financial hardships;

h. More recently built buildings that obtained an original occupancy permit no more than three years prior to the compliance date specified in Z3.1; or

i. Approved documents by the AHJ.

5. Signature and statement of *building owner* stating that the authorized representative of the building, affirm and attest to the accuracy, truthfulness and completeness of the statements of material fact provided in this form.

Z7 Section 7—Tables as modified by Washington state.

Table 7-1 Commercial Building Types/Activities

	Building Activity Type[1,2]			
No.	**Portfolio Manager Types**	**Portfolio Manager Sub-Types**	**Sub-Types: Detailed**	**Notes**
1	Banking/financial services	Bank Branch		
2	Banking/financial services	Financial Office		
3	Education	Adult Education		
4	Education	College/University		
5	Education	K-12 School	Elementary/middle school	
6	Education	K-12 School	High school	
7	Education	Preschool/Daycare		
8	Education	Vocational School		
9	Education	Other - Education		
10	Entertainment/public assembly	Aquarium		
11	Entertainment/public assembly	Bar/Nightclub		
12	Entertainment/public assembly	Bowling Alley		
13	Entertainment/public assembly	Casino		
14	Entertainment/public assembly	Convention Center		
15	Entertainment/public assembly	Fitness Center/Health Club/Gym		
16	Entertainment/public assembly	Ice/Curling Rink		
17	Entertainment/public assembly	Indoor Arena		
18	Entertainment/public assembly	Movie Theater		
19	Entertainment/public assembly	Museum		
20	Entertainment/public assembly	Performing Arts		
21	Entertainment/public assembly	Race Track		
22	Entertainment/public assembly	Roller Rink		
23	Entertainment/public assembly	Social/Meeting Hall		
24	Entertainment/public assembly	Stadium (Closed)		
25	Entertainment/public assembly	Stadium (Open)		
26	Entertainment/public assembly	Swimming Pool		
27	Entertainment/public assembly	Zoo		

	Building Activity Type[1,2]			
No.	**Portfolio Manager Types**	**Portfolio Manager Sub-Types**	**Sub-Types: Detailed**	**Notes**
28	Entertainment/public assembly	Other - Entertainment/Public Assembly	Entertainment/culture	
29	Entertainment/public assembly	Other - Entertainment/Public Assembly	Library	
30	Entertainment/public assembly	Other - Entertainment/Public Assembly	Other public assembly	
31	Entertainment/public assembly	Other - Entertainment/Public Assembly	Recreation	
32	Entertainment/public assembly	Other - Entertainment/Public Assembly	Social/meeting	
33	Entertainment/public assembly	Other - Recreation		
34	Entertainment/public assembly	Other - Stadium		
35	Food sales and service	Bar/Nightclub		
36	Food sales and service	Convenience Store with Gas Station		
37	Food sales and service	Convenience Store without Gas Station		
38	Food sales and service	Fast Food Restaurant		
39	Food sales and service	Food Sales	Grocery/food market	
40	Food sales and service	Food Sales	Convenience store with gas	
41	Food sales and service	Food Sales	Convenience store	
42	Food sales and service	Food Sales	Other food sales	
43	Food sales and service	Food Service	Fast food	
44	Food sales and service	Food Service	Restaurant/cafeteria	
45	Food sales and service	Food Service	Other food service	
46	Food sales and service	Restaurant		
47	Food sales and service	Supermarket/Grocery Store		
48	Food sales and service	Wholesale Club/Supercenter		
49	Food sales and service	Other - Restaurant/Bar		
50	Healthcare	Ambulatory Surgical Center		
51	Healthcare	Hospital (General Medical & Surgical)*		
52	Healthcare	Medical Office		3
53	Healthcare	Outpatient Rehabilitation/ Physical Therapy		
54	Healthcare	Residential Care Facility		
55	Healthcare	Senior Care Community		
56	Healthcare	Urgent Care/Clinic/Other Outpatient		
57	Healthcare	Other - Specialty Hospital		
58	Lodging/residential	Barracks		
59	Lodging/residential	Hotel	Hotel	
60	Lodging/residential	Hotel	Motel or inn	
61	Lodging/residential	Multifamily Housing		
62	Lodging/residential	Prison/Incarceration		
63	Lodging/residential	Residence Hall/Dormitory		
64	Lodging/residential	Residential Care Facility		
65	Lodging/residential	Senior Care Community		

	Building Activity Type[1,2]			
No.	**Portfolio Manager Types**	**Portfolio Manager Sub-Types**	**Sub-Types: Detailed**	**Notes**
66	Lodging/residential	Other - Lodging/Residential		
67	Mixed use	Mixed Use Property		4
68	Office	Medical Office		3
69	Office	Office	Admin/professional office	
70	Office	Office	Bank/other financial	
71	Office	Office	Government office	
72	Office	Office	Medical office (diagnostic)	3
73	Office	Office	Other office	
74	Office	Veterinary Office		
75	Office	Other - Office		
76	Public services	Courthouse		
77	Public services	Fire Station		
78	Public services	Library		
79	Public services	Mailing Center/Post Office		
80	Public services	Police Station		
81	Public services	Prison/Incarceration		
82	Public services	Social/Meeting Hall		
83	Public services	Transportation Terminal/Station		
84	Public services	Other - Public Service		
85	Religious worship	Worship Facility		
86	Retail	Automobile Dealership		
87	Retail	Convenience Store with Gas Station		
88	Retail	Convenience Store without Gas Station		
89	Retail	Enclosed Mall		5
90	Retail	Lifestyle Center	Enclosed mall	5
91	Retail	Lifestyle Center	Other retail	
92	Retail	Lifestyle Center	Retail store	
93	Retail	Lifestyle Center		4
94	Retail	Retail Store		
95	Retail	Strip Mall		4
96	Retail	Supermarket/Grocery Store		
97	Retail	Wholesale Club/Supercenter		
98	Retail	Other - Retail/Mall	Enclosed mall	5
99	Retail	Other - Retail/Mall		4
100	Technology/science	Data Center		6
101	Technology/science	Laboratory		
102	Technology/science	Other - Technology/Science	Other service	
103	Services	Personal Services (Health/ Beauty, Dry Cleaning, etc.)		
104	Services	Repair Services (Vehicle, Shoe, Locksmith, etc.)	Repair shop	
105	Services	Repair Services (Vehicle, Shoe, Locksmith, etc.)	Vehicle service/repair shop	

	Building Activity Type[1,2]			
No.	**Portfolio Manager Types**	**Portfolio Manager Sub-Types**	**Sub-Types: Detailed**	**Notes**
106	Services	Repair Services (Vehicle, Shoe, Locksmith, etc.)	Vehicle storage/maintenance	
107	Services	Other - Services		
108	Utility	Energy/Power Station		7
109	Utility	Other - Utility		7
110	Warehouse/storage	Self-Storage Facility		
111	Warehouse/storage	Distribution Center		
112	Warehouse/storage	Nonrefrigerated Warehouse		
113	Warehouse/storage	Refrigerated Warehouse		

Notes: 1. Select the most specific building activity type that applies.
2. For building type definitions see Energy Star portfolio manager definitions except as follows:
• Data center: Is an activity space designed and equipped to meet the needs of high density computing equipment, such as server racks, used for data storage and processing, including dedicated uninterruptible power supplies and cooling systems and require a constant power load of 75 kW or more. Gross floor area shall only include space within the building including raised floor computing space, server rack aisles, storage silos, control console areas, battery rooms and mechanical rooms for dedicated cooling equipment. Gross floor area shall not include a server closet, telecommunications equipment closet, computer training area, office, elevator, corridors, or other auxiliary space.
• Urgent care center/clinic/other outpatient office means the buildings used to diagnose and treat patients, usually on an unscheduled, walk-in basis, who have an injury or illness that requires immediate care but is not serious enough to warrant a visit to an emergency department. Includes facilities that provide same-day surgical, diagnostic and preventive care.
3. All medical offices considered to be diagnostic type.
4. Must use of Section 7.2.3 method for mixed use buildings.
5. Suggest considering use of Section 7.2.3 method for mixed use buildings.
6. This is a building or activity without an energy target. Included to provide definition only.
7. This is a building or activity without an energy target. This may be exempt from the standard, see Section Z4.1 2, d.

Table 7-2a Building Activity Site Energy Targets (EUIt1) (I-P Units)

	Building Activity Type[1,2]				Climate Zone 4C	Climate Zone 5B
No.	**Portfolio Manager Types**	**Portfolio Manager Sub-Types**	**Sub-Types: Detailed**	**Notes**	**EUI_t**	**EUI_t**
1	Banking/financial services	Bank Branch			69	71
2	Banking/financial services	Financial Office			69	71
3	Education	Adult Education			49	51
4	Education	College/University			102	102
5	Education	K-12 School	Elementary/middle school		49	50
6	Education	K-12 School	High school		48	49
7	Education	Preschool/Daycare			59	59
8	Education	Vocational School			49	51
9	Education	Other - Education			49	51
10	Entertainment/public assembly	Aquarium			55	59
11	Entertainment/public assembly	Bar/Nightclub			55	59
12	Entertainment/public assembly	Bowling Alley			73	78
13	Entertainment/public assembly	Casino			55	59
14	Entertainment/public assembly	Convention Center			50	52
15	Entertainment/public assembly	Fitness Center/Health Club/Gym			73	78

	Building Activity Type[1,2]				Climate Zone 4C	Climate Zone 5B
No.	Portfolio Manager Types	Portfolio Manager Sub-Types	Sub-Types: Detailed	Notes	EUI_t	EUI_t
16	Entertainment/public assembly	Ice/Curling Rink			73	78
17	Entertainment/public assembly	Indoor Arena			67	70
18	Entertainment/public assembly	Movie Theater			67	70
19	Entertainment/public assembly	Museum			67	70
20	Entertainment/public assembly	Performing Arts			55	59
21	Entertainment/public assembly	Race Track			67	70
22	Entertainment/public assembly	Roller Rink			73	78
23	Entertainment/public assembly	Social/Meeting Hall			50	52
24	Entertainment/public assembly	Stadium (Closed)			67	70
25	Entertainment/public assembly	Stadium (Open)			67	70
26	Entertainment/public assembly	Swimming Pool			73	78
27	Entertainment/public assembly	Zoo			55	59
28	Entertainment/public assembly	Other - Entertainment/ Public Assembly	Entertainment/culture		67	70
29	Entertainment/public assembly	Other - Entertainment/ Public Assembly	Library		56	59
30	Entertainment/public assembly	Other - Entertainment/ Public Assembly	Other public assembly		55	59
31	Entertainment/public assembly	Other - Entertainment/ Public Assembly	Recreation		73	78
32	Entertainment/public assembly	Other - Entertainment/ Public Assembly	Social/meeting		50	52
33	Entertainment/public assembly	Other - Recreation			73	78
34	Entertainment/public assembly	Other - Stadium			67	70
35	Food sales and service	Bar/Nightclub			361	378
36	Food sales and service	Convenience Store with Gas Station			244	253
37	Food sales and service	Convenience Store without Gas Station			260	269
38	Food sales and service	Fast Food Restaurant			427	454
39	Food sales and service	Food Sales	Grocery/food market		191	198
40	Food sales and service	Food Sales	Convenience store with gas		260	269
41	Food sales and service	Food Sales	Convenience store		244	253
42	Food sales and service	Food Sales	Other food sales		184	189

	Building Activity Type[1,2]				Climate Zone 4C	Climate Zone 5B
No.	**Portfolio Manager Types**	**Portfolio Manager Sub-Types**	**Sub-Types: Detailed**	**Notes**	**EUI_t**	**EUI_t**
43	Food sales and service	Food Service	Fast food		427	454
44	Food sales and service	Food Service	Restaurant/cafeteria		361	378
45	Food sales and service	Food Service	Other food service		293	308
46	Food sales and service	Restaurant			361	378
47	Food sales and service	Supermarket/Grocery Store			191	198
48	Food sales and service	Wholesale Club/ Supercenter			68	75
49	Food sales and service	Other - Restaurant/Bar			361	378
50	Healthcare	Ambulatory Surgical Center			90	96
51	Healthcare	Hospital (General Medical & Surgical)*			215	215
52	Healthcare	Medical Office		3		
53	Healthcare	Outpatient Rehabilitation/Physical Therapy			90	96
54	Healthcare	Residential Care Facility			78	82
55	Healthcare	Senior Care Community			78	82
56	Healthcare	Urgent Care/Clinic/ Other Outpatient			90	96
57	Healthcare	Other - Specialty Hospital			196	196
58	Lodging/residential	Barracks			88	90
59	Lodging/residential	Hotel	Hotel		68	72
60	Lodging/residential	Hotel	Motel or inn		74	77
61	Lodging/residential	Multifamily Housing			32	33
62	Lodging/residential	Prison/Incarceration			101	106
63	Lodging/residential	Residence Hall/ Dormitory			88	90
64	Lodging/residential	Residential Care Facility			78	82
65	Lodging/residential	Senior Care Community			78	82
66	Lodging/residential	Other - Lodging/ Residential			71	74
67	Mixed use	Mixed Use Property		4		
68	Office	Medical Office		3	60	65
69	Office	Office	Admin/professional office		63	66
70	Office	Office	Bank/other financial		69	71
71	Office	Office	Government office		66	69
72	Office	Office	Medical office (diagnostic)	3	60	65
73	Office	Office	Other office		66	68
74	Office	Veterinary Office			90	96
75	Office	Other - Office			66	68
76	Public services	Courthouse			101	106

	Building Activity Type[1,2]				Climate Zone 4C	Climate Zone 5B
No.	Portfolio Manager Types	Portfolio Manager Sub-Types	Sub-Types: Detailed	Notes	EUI_t	EUI_t
77	Public services	Fire Station			65	68
78	Public services	Library			56	59
79	Public services	Mailing Center/Post Office			51	54
80	Public services	Police Station			65	68
81	Public services	Prison/Incarceration			101	106
82	Public services	Social/Meeting Hall			50	52
83	Public services	Transportation Terminal/ Station			55	59
84	Public services	Other - Public Service			66	69
85	Religious worship	Worship Facility			39	42
86	Retail	Automobile Dealership			59	66
87	Retail	Convenience Store with Gas Station			260	269
88	Retail	Convenience Store without Gas Station			244	253
89	Retail	Enclosed Mall		5	58	64
90	Retail	Lifestyle Center	Enclosed mall	5	58	64
91	Retail	Lifestyle Center	Other retail		55	62
92	Retail	Lifestyle Center	Retail store		68	75
93	Retail	Lifestyle Center		4		
94	Retail	Retail Store			68	75
95	Retail	Strip Mall		4		
96	Retail	Supermarket/Grocery Store			191	198
97	Retail	Wholesale Club/ Supercenter			68	75
98	Retail	Other - Retail/Mall	Enclosed mall	5	58	64
99	Retail	Other - Retail/Mall		4		
100	Technology/science	Data Center		6		
101	Technology/science	Laboratory			237	249
102	Technology/science	Other - Technology/ Science	Other service		66	69
103	Services	Personal Services (Health/Beauty, Dry Cleaning, etc.)			66	69
104	Services	Repair Services (Vehicle, Shoe, Locksmith, etc.)	Repair shop		36	39
105	Services	Repair Services (Vehicle, Shoe, Locksmith, etc.)	Vehicle service/repair shop		60	64
106	Services	Repair Services (Vehicle, Shoe, Locksmith, etc.)	Vehicle storage/ maintenance		41	44
107	Services	Other - Services			66	69
108	Utility	Energy/Power Station		7		

	Building Activity Type[1,2]				Climate Zone 4C	Climate Zone 5B
No.	Portfolio Manager Types	Portfolio Manager Sub-Types	Sub-Types: Detailed	Notes	EUI_t	EUI_t
109	Utility	Other - Utility		7		
110	Warehouse/storage	Self-Storage Facility			36	44
111	Warehouse/storage	Distribution Center			36	44
112	Warehouse/storage	Nonrefrigerated Warehouse			36	44
113	Warehouse/storage	Refrigerated Warehouse			121	126

Notes: 1. Select the most specific building activity type that applies.
2. For building type definitions see Energy Star portfolio manager definitions except as follows:
• Data center: Is an activity space designed and equipped to meet the needs of high density computing equipment, such as server racks, used for data storage and processing, including dedicated uninterruptible power supplies and cooling systems and require a constant power load of 75 kW or more. Gross floor area shall only include space within the building including raised floor computing space, server rack aisles, storage silos, control console areas, battery rooms and mechanical rooms for dedicated cooling equipment. Gross floor area shall not include a server closet, telecommunications equipment closet, computer training area, office, elevator, corridors, or other auxiliary space.
• Urgent care center/clinic/other outpatient office means the buildings used to diagnose and treat patients, usually on an unscheduled, walk-in basis, who have an injury or illness that requires immediate care but is not serious enough to warrant a visit to an emergency department. Includes facilities that provide same-day surgical, diagnostic and preventive care.
3. All medical offices considered to be diagnostic type.
4. Must use of Section 7.2.3 method for mixed use buildings.
5. Suggest considering use of Section 7.2.3 method for mixed use buildings.
6. This is a building or activity without an energy target. Included to provide definition only.
7. This is a building or activity without an energy target. This may be exempt from the standard, see Section Z4.1 2, d.

Table 7-3 Building Operating Shifts Normalization Factor

	Building Activity Type[1,2]				Weekly Hours[1,2]		
No.	Portfolio Manager Types	Portfolio Manager Sub-Types	Sub-Types: Detailed	Notes	50 or less	51 to 167	168
1	Banking/financial services	Bank Branch		3	0.8	1.0	1.5
2	Banking/financial services	Financial Office		3	0.8	1.0	1.5
3	Education	Adult Education		4	0.9	1.1	1.9
4	Education	College/University		4	0.9	1.1	1.9
5	Education	K-12 School	Elementary/middle school	4	0.9	1.1	1.9
6	Education	K-12 School	High school	4	0.9	1.1	1.9
7	Education	Preschool/Daycare		4	0.9	1.1	1.9
8	Education	Vocational School		4	0.9	1.1	1.9
9	Education	Other - Education		4	0.9	1.1	1.9
10	Entertainment/public assembly	Aquarium		4	0.6	1.1	1.6
11	Entertainment/public assembly	Bar/Nightclub		4	0.6	1.1	1.6
12	Entertainment/public assembly	Bowling Alley		4	0.6	1.1	1.6
13	Entertainment/public assembly	Casino		4	0.6	1.1	1.6
14	Entertainment/public assembly	Convention Center		4	0.6	1.1	1.6
15	Entertainment/public assembly	Fitness Center/Health Club/Gym		4	0.6	1.1	1.6
16	Entertainment/public assembly	Ice/Curling Rink		4	0.6	1.1	1.6

	Building Activity Type[1,2]				Weekly Hours[1,2]		
No.	Portfolio Manager Types	Portfolio Manager Sub-Types	Sub-Types: Detailed	Notes	50 or less	51 to 167	168
17	Entertainment/public assembly	Indoor Arena		4	0.6	1.1	1.6
18	Entertainment/public assembly	Movie Theater		4	0.6	1.1	1.6
19	Entertainment/public assembly	Museum		4	0.6	1.1	1.6
20	Entertainment/public assembly	Performing Arts		4	0.6	1.1	1.6
21	Entertainment/public assembly	Race Track		4	0.6	1.1	1.6
22	Entertainment/public assembly	Roller Rink		4	0.6	1.1	1.6
23	Entertainment/public assembly	Social/Meeting Hall		4	0.6	1.1	1.6
24	Entertainment/public assembly	Stadium (Closed)		4	0.6	1.1	1.6
25	Entertainment/public assembly	Stadium (Open)		4	0.6	1.1	1.6
26	Entertainment/public assembly	Swimming Pool		4	0.6	1.1	1.6
27	Entertainment/public assembly	Zoo		4	0.6	1.1	1.6
28	Entertainment/public assembly	Other - Entertainment/ Public Assembly	Entertainment/culture	4	0.6	1.1	1.6
29	Entertainment/public assembly	Other - Entertainment/ Public Assembly	Library	4	0.6	1.1	1.6
30	Entertainment/public assembly	Other - Entertainment/ Public Assembly	Other public assembly	4	0.6	1.1	1.6
31	Entertainment/public assembly	Other - Entertainment/ Public Assembly	Recreation	4	0.6	1.1	1.6
32	Entertainment/public assembly	Other - Entertainment/ Public Assembly	Social/meeting	4	0.6	1.1	1.6
33	Entertainment/public assembly	Other - Recreation		4	0.6	1.1	1.6
34	Entertainment/public assembly	Other - Stadium		4	0.6	1.1	1.6
35	Food sales and service	Bar/Nightclub		4	0.6	1.1	1.5
36	Food sales and service	Convenience Store with Gas Station		4	0.5	0.9	1.3
37	Food sales and service	Convenience Store without Gas Station		4	0.5	0.9	1.3
38	Food sales and service	Fast Food Restaurant		4	0.6	1.1	1.5
39	Food sales and service	Food Sales	Grocery/food market	4	0.5	0.9	1.3
40	Food sales and service	Food Sales	Convenience store with gas	4	0.5	0.9	1.3
41	Food sales and service	Food Sales	Convenience store	4	0.5	0.9	1.3
42	Food sales and service	Food Sales	Other food sales	4	0.5	0.9	1.3
43	Food sales and service	Food Service	Fast food	4	0.6	1.1	1.5
44	Food sales and service	Food Service	Restaurant/cafeteria	4	0.6	1.1	1.5
45	Food sales and service	Food Service	Other food service	4	0.6	1.1	1.5

	Building Activity Type[1,2]				Weekly Hours[1,2]		
No.	Portfolio Manager Types	Portfolio Manager Sub-Types	Sub-Types: Detailed	Notes	50 or less	51 to 167	168
46	Food sales and service	Restaurant		4	0.6	1.1	1.5
47	Food sales and service	Supermarket/Grocery Store		4	0.5	0.9	1.3
48	Food sales and service	Wholesale Club/ Supercenter		4	0.6	1.0	1.5
49	Food sales and service	Other - Restaurant/Bar		4	0.6	1.1	1.5
50	Healthcare	Ambulatory Surgical Center		4,7	0.8	1.1	1.3
51	Healthcare	Hospital (General Medical & Surgical)*			1.0	1.0	1.0
52	Healthcare	Medical Office		4,7	0.8	1.0	1.5
53	Healthcare	Outpatient Rehabilitation/Physical Therapy		4,7	0.8	1.1	1.3
54	Healthcare	Residential Care Facility			1.0	1.0	1.0
55	Healthcare	Senior Care Community			1.0	1.0	1.0
56	Healthcare	Urgent Care/Clinic/ Other Outpatient		4,7	0.8	1.1	1.3
57	Healthcare	Other - Specialty Hospital			1.0	1.0	1.0
58	Lodging/residential	Barracks			1.0	1.0	1.0
59	Lodging/residential	Hotel	Hotel		1.0	1.0	1.0
60	Lodging/residential	Hotel	Motel or inn		1.0	1.0	1.0
61	Lodging/residential	Multifamily Housing			1.0	1.0	1.0
62	Lodging/residential	Prison/Incarceration			1.0	1.0	1.0
63	Lodging/residential	Residence Hall/ Dormitory			1.0	1.0	1.0
64	Lodging/residential	Residential Care Facility			1.0	1.0	1.0
65	Lodging/residential	Senior Care Community			1.0	1.0	1.0
66	Lodging/residential	Other - Lodging/ Residential			1.0	1.0	1.0
67	Mixed use	Mixed Use Property		6			
68	Office	Medical Office		4,7	0.8	1.1	1.3
69	Office	Office	Admin/professional office	3	0.8	1.0	1.5
70	Office	Office	Bank/other financial	3	0.8	1.0	1.5
71	Office	Office	Government office	3	0.8	1.0	1.5
72	Office	Office	Medical office (diagnostic)	4	0.8	1.1	1.3
73	Office	Office	Other office	3	0.8	1.0	1.5
74	Office	Veterinary Office		3	0.8	1.1	1.3
75	Office	Other - Office		3	0.8	1.0	1.5
76	Public services	Courthouse		4	0.8	0.8	1.1
77	Public services	Fire Station		3	0.8	0.8	1.1
78	Public services	Library		4	0.6	1.1	1.6

	Building Activity Type[1,2]				Weekly Hours[1,2]		
No.	Portfolio Manager Types	Portfolio Manager Sub-Types	Sub-Types: Detailed	Notes	50 or less	51 to 167	168
79	Public services	Mailing Center/Post Office		3	0.8	1.2	1.3
80	Public services	Police Station		3	0.8	0.8	1.1
81	Public services	Prison/Incarceration			1.0	1.0	1.0
82	Public services	Social/Meeting Hall		4	0.6	1.1	1.6
83	Public services	Transportation Terminal/Station		4	0.6	1.1	1.6
84	Public services	Other - Public Service		4	0.8	1.2	1.3
85	Religious worship	Worship Facility		5	0.9	1.7	1.7
86	Retail	Automobile Dealership		4	0.6	1.0	1.5
87	Retail	Convenience Store with Gas Station		4	0.5	0.9	1.3
88	Retail	Convenience Store without Gas Station		4	0.5	0.9	1.3
89	Retail	Enclosed Mall		4	0.6	1.0	1.5
90	Retail	Lifestyle Center	Enclosed mall	4	0.6	1.0	1.5
91	Retail	Lifestyle Center	Other retail	4	0.6	1.0	1.5
92	Retail	Lifestyle Center	Retail store	4	0.6	1.0	1.5
93	Retail	Lifestyle Center					
94	Retail	Retail Store		4	0.6	1.0	1.5
95	Retail	Strip Mall					
96	Retail	Supermarket/Grocery Store		4	0.5	0.9	1.3
97	Retail	Wholesale Club/ Supercenter		4	0.6	1.0	1.5
98	Retail	Other - Retail/Mall	Enclosed mall	4	0.6	1.0	1.5
99	Retail	Other - Retail/Mall					
100	Technology/science	Data Center					
101	Technology/science	Laboratory		3	1.0	1.0	1.0
102	Technology/science	Other - Technology/ Science	Other service	3	0.8	1.2	1.3
103	Services	Personal Services (Health/Beauty, Dry Cleaning, etc.)		4	0.8	1.2	1.3
104	Services	Repair Services (Vehicle, Shoe, Locksmith, etc.)	Repair shop	4	0.8	1.2	1.3
105	Services	Repair Services (Vehicle, Shoe, Locksmith, etc.)	Vehicle service/repair shop	4	0.8	1.2	1.3
106	Services	Repair Services (Vehicle, Shoe, Locksmith, etc.)	Vehicle storage/ maintenance	4	0.8	1.2	1.3
107	Services	Other - Services		4	0.8	1.2	1.3
108	Utility	Energy/Power Station					
109	Utility	Other - Utility					
110	Warehouse/storage	Self-Storage Facility		4	0.8	1.0	1.4
111	Warehouse/storage	Distribution Center		3	0.8	1.0	1.4

	Building Activity Type[1,2]				Weekly Hours[1,2]		
No.	**Portfolio Manager Types**	**Portfolio Manager Sub-Types**	**Sub-Types: Detailed**	**Notes**	**50 or less**	**51 to 167**	**168**
112	Warehouse/storage	Nonrefrigerated Warehouse		3	0.8	1.0	1.4
113	Warehouse/storage	Refrigerated Warehouse		3,8	1.0	1.0	1.4

Notes: 1. Do not count the hours when the property is occupied only by maintenance, security, the cleaning crew, or other support personnel. Do not count the hours when the property is occupied only by maintenance staff.
2. Working hours are based on the average use over the twelve month period selected to document energy use in form C.
3. The weekly hours are the total number of hours per week where the majority of workers are present. If there are two or more shifts of workers, add the hours. When developing targets using Section 7.2.3 for mixed use buildings, use the hours each separate activity, the hours per week the majority of workers are present.
4. The weekly hours are the hours that be majority of the building is open to serve the public. When developing targets using Section 7.2.3 for mixed use buildings, the hours each separate activity is open to the public.
5. The weekly hours the facility is open for operation, which may include worship services, choir practice, administrative use, committee meetings, classes, or other activities.
6. Must use of Section 7.2.3 method for mixed use buildings.
7. Health care buildings may use other weekly hours if they are required to operate building systems additional hours to protect patient safety. Provide documentation of the requirement in the energy management plan.
8. Refrigerated warehouse greater than 167 hours assumes the workers on shift are loading and/or unloading vehicles.