Clean Buildings Standard in Washington State
Be Prepared!

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Washington State University Energy Program

Washington State Department of Commerce

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Today's Goals

- Gain an understanding of:
  - The intention of the Clean Buildings Standard
  - Fundamental process for compliance
  - Energy Manager's role
  - What you can start doing now

Agenda

- The Clean Building Standard – why, what, how, who, when
- Early Adoption Program
- Cast and roles
- Energy Manager
- Compliance
- EUI
- Failure to comply
- What you can do now
- Rulemaking

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

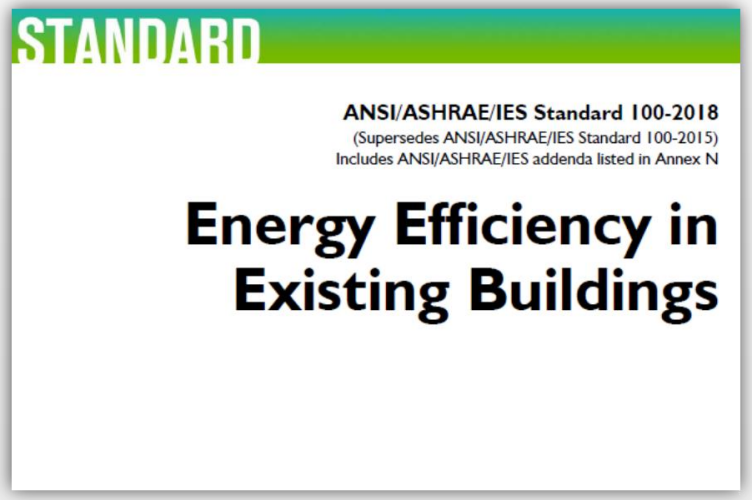
RCW 19.27 – The Clean Buildings Standard

- "[Commerce] must establish by rule a state energy performance standard for covered commercial buildings."

- Objective:
  Lower costs and pollution from fossil fuel consumption in the state's existing buildings maximize reductions of greenhouse gas emissions from the building sector.

What is the Standard?

- A continuous maintenance and improvement standard
- Performance based
- Based on ASHRAE Standard 100-2018 Energy Efficiency in Existing Buildings
- Uses energy use intensity as the unit of measurement



How to Meet Compliance

- Comply by reporting and providing documentation to demonstrate one of the following:
  - Weather normalized energy use intensity is less than or equal to EUIt
  - Building has received conditional compliance
  - Building is exempt from standard
- Meet all other provisions and administrative requirements in the law

Which Buildings Have to Comply?

- Covered commercial buildings
  - Nonresidential buildings, hotels, motels, and dormitories
  - Sum of their floor areas exceeds 50,000 gross SF
  - Excludes parking garages and other unconditioned spaces

Mandatory Compliance Reporting Deadlines

- Buildings with more than 220,000 SF – June 1, 2026
- Buildings with more than 90,000 SF and less than 220,001 SF – June 1, 2027
- Buildings with more than 50,000 SF and less than 90,001 SF – June 1, 2028

These are deadlines. Start now!

Early Adoption Incentive Program Requirements

- Building type
  - Covered Building
  - Multifamily apartment exceeding 50,000 SF (Early Adoption Incentive Program only)
- Baseline energy use intensity exceeds target by at least fifteen (15) units
- At least one utility company participates in incentive program
- Incentive received once you've complied with all elements of the standard and your building meets the EUIt

Early Adoption Incentive Program Timeline

- Applications must be submitted
  - Buildings with more than 220,000 SF

    July 1, 2021 through June 1, 2025
  - Buildings with between 90,000 SF and 220,001 SF

    July 1, 2021 through June 1, 2026
  - Buildings with between 50,000 SF and 90,001 SF

    July 1, 2021 through June 1, 2027

“Cast” Members

- Building Owner
  - Responsible for compliance
  - Designates an energy manager
  - Reviews and signs the energy management plan
- Energy Manager
  - Develops and maintains energy management plan
- Qualified Energy Auditor
  - Conducts level 2 audit if needed

Other Roles

- Dept of Commerce
  - Authority having jurisdiction (AHJ)
  - Develops rules and administers program
  - Contacts owners who must comply
- WSU Energy Program
  - Customer support for technical and administrative questions
  - Lots more to come to support you!

The Energy Manager

- Develop and implement energy efficiency plan (EMP).
- Implement the results of energy audits and EEMs outlined in the EMP.
- Track energy consumption, occupancy, and building changes.
- Review building O&M procedures for optimal energy management.
- Review EUI and compare with energy targets
- Educate occupants on energy efficiency and building use
- Conduct technical, policy-related planning related to energy efficiency.
- Evaluate energy efficiency of proposed new construction, facility expansion, remodeling, or new equipment purchases.
- Adhere to energy codes and standards.
- Report regularly to management and other stakeholders.

Meet Compliance – EUI

Comply by reporting and providing documentation to demonstrate one of the following:

- Weather normalized energy use intensity is less than or equal to EUIt
- Building has received conditional compliance
- Building is exempt from standard

Energy Use Intensity

- Energy use intensity (EUI)
  - Site energy use per square foot of floor area per year
  - Btu/SF/year
  - Normalizes a building's site energy use relative to its size
- Weather normalized energy use intensity
  - Normalizes a building’s site energy use relative to its size based on weather normalized site energy use.

NOTE: Energy tracked is site energy, not source energy

Energy Use Intensity Target

- Energy Use Intensity Target (EUIt) is the net energy use intensity of a covered commercial building that has been established for the purposes of complying with the standard
- They will be no greater than the average energy use intensity for the covered commercial building occupancy type
- Adjustments for unique energy using features
- Regional and local building energy utilization data considered
- EUIt will be developed for two climate zones
- EUIt will be representative of energy use in a normal weather year

Building Types

- May be selected from ASHRAE Standard 100 or Energy Star Portfolio Manager
- Building types will be aligned

Portfolio Manager - Office

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

ASHRAE Standard 100 - Office

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

Meet Compliance – Conditional

Comply by reporting and providing documentation to demonstrate one of the following:

- Weather normalized energy use intensity is less than or equal to EUIt
- Building has received conditional compliance
  - **Buildings that exceed EUI Targets and Buildings without EUI Targets**
- Building is exempt from standard

Conditional Compliance

- Buildings that exceed EUI Targets and Buildings without EUI Targets
  - Energy audit requirements
    - Level 2 Energy Audit
  - Implementation and verification requirements
    - Developed to meet EUI target
      - OR
    - Developed to adopt all cost-effective measures

Steps & Compliance Timeline

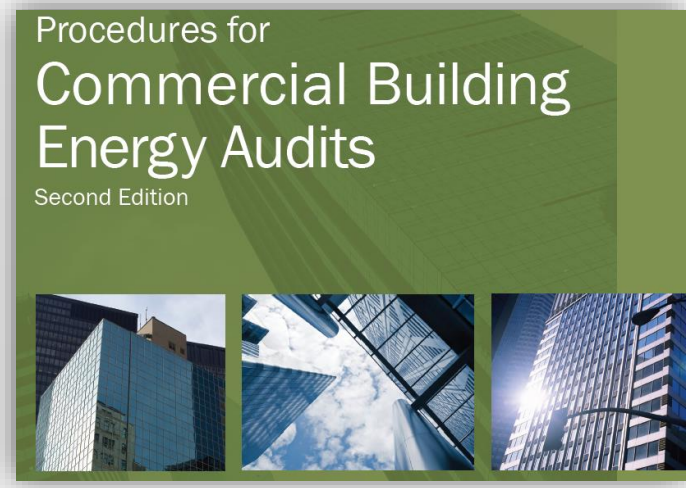
Step 1	Determine (a) the building's measured energy-use intensity (EUI) and (b) the building's energy target.	Time 0	Sections 4.3.1
Step 2	If building's measured EUI is equal to or less than its energy target, go to Step 9. If the building's measured EUI is greater than its energy target, continue to Step 3.	Time 0	Sections 4.3.1.1 and 4.3.1.2
Step 3	Carry out an energy audit.	0 to 4 months	Sections 4.3.1.2 and 8.2.2
Step 4	Identify a package of energy efficiency measures (EEMs) and, assuming their implementation, calculate an adjusted EUI for the building that is equal to or lower than its energy target.	2 to 6 months	Section 8.2.2
Step 5	Implement the selected package of EEMs.	3 months to 1 year	Sections 8.2.2 and 9.1.1.1

Steps & Compliance Timeline

Step 6	Apply for conditional compliance ← Approved Before Compliance Date	At completion of Step 5.	Section 4.3.1.2 a
Step 7	Measure the building's energy use for 12 months and determine its post-EEM energy-use intensity.	12 to 15 months after completion of Step 5.	Section 4.3.1
Step 8	If the building's measured EUI is equal to or less than its energy target, go to Step 9. If the building's measured EUI is greater than its energy target, return to Step 4, identify additional EEMs, and calculate a new adjusted EUI that is equal to or lower than the building's energy target.	12 to 15 months after completion of Step 5.	
Step 9	Apply for compliance	12 to 15 months after completion of Step 5.	Section 4.3.1.3 and Form A

Compliance Requirements

- All Buildings
  - Energy management plan
  - Operations and maintenance requirements
  - Energy-use analysis and target requirements
- Buildings that exceed EUI Targets and Buildings without EUI Targets
  - Energy audit requirements
  - Implementation and verification requirements
    - Developed to meet EUI target
      - OR
    - Developed to adopt all cost-effective measures



Meet Compliance – Exemptions

Comply by reporting and providing documentation to demonstrate one of the following:

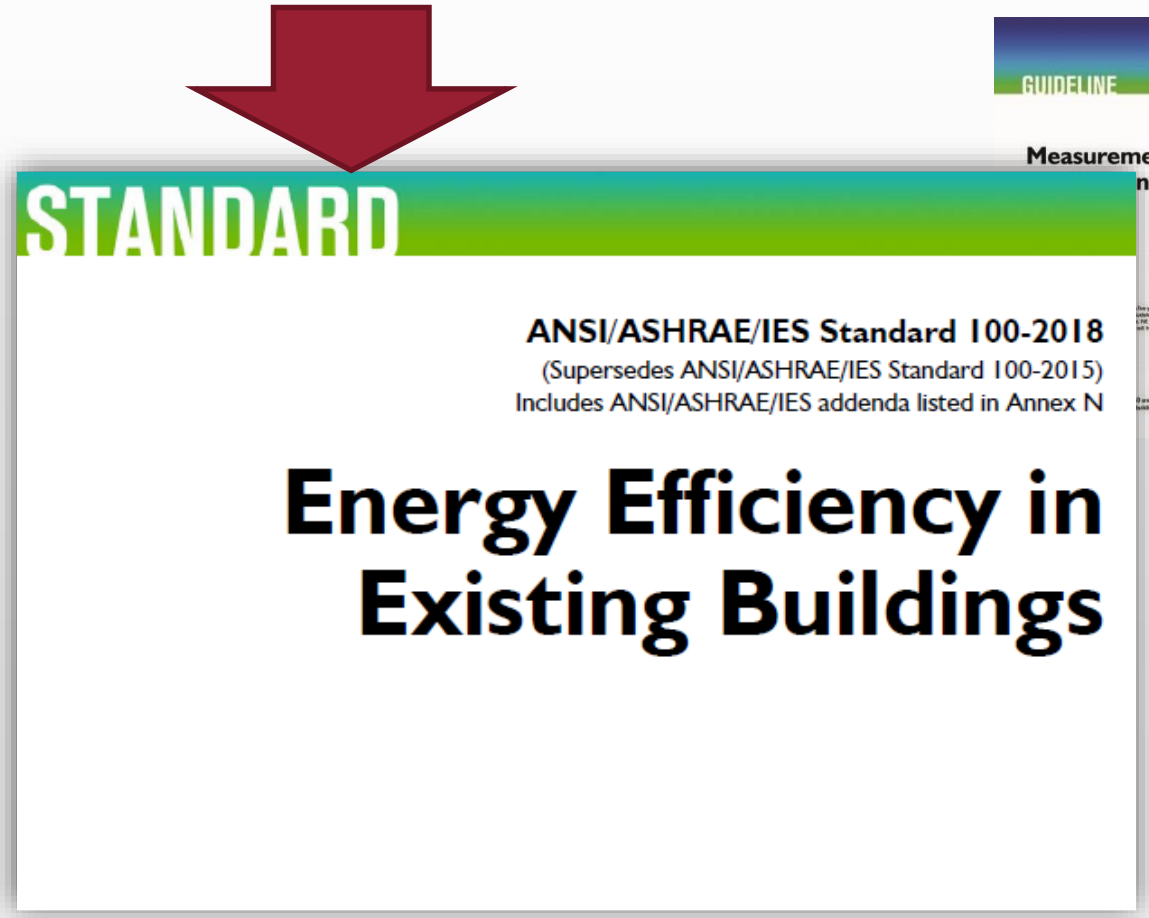
- Weather normalized energy use intensity is less than or equal to EUIt
- Building has received conditional compliance
- Building is exempt from standard

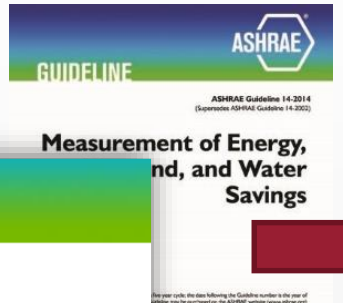
Exemptions to Compliance

Includes buildings that

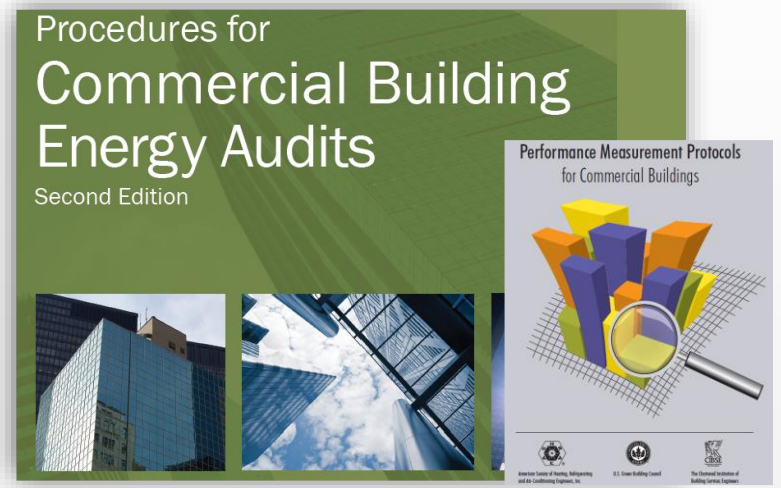
- Meet one of six defined financial hardships
- Averaged fewer than 50% physical occupancy in a certain year
- Did not have certificate of occupancy for all 12 months prior
- Certain factory or high hazard purposes

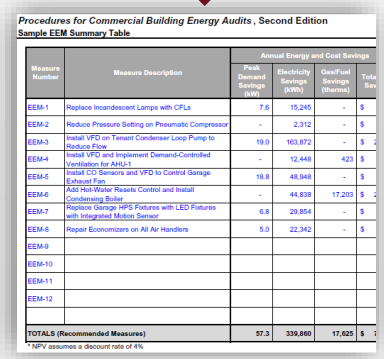
RCW 19.27a.210 & standard 100





Direct reference




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

Measure Number	Measure Description	Annual Energy and Cost Savings			
		Peak Demand Savings (kW)	Electricity Savings (kWh)	Gas/Fuel Savings (therms)	Total Savings
EEM-1	Replace Incandescent Lamps with CFLs	7.6	15,245	-	$
EEM-2	Reduce Pressure Setting on Pneumatic Compressor	-	2,312	-	$
EEM-3	Install VFD on Tenant Condenser Loop Pump to Reduce Flow	19.0	163,872	-	$
EEM-4	Install VFD and Implement Demand-Controlled Ventilation for AHU-1	-	12,448	423	$
EEM-5	Install CO Sensors and VFD to Control Garage Exhaust Fan	18.8	48,948	-	$
EEM-6	Add Hot-Water Resets Control and Install Condensing Boiler	-	44,838	17,203	$
EEM-7	Replace Garage HPS Fixtures with LED Fixtures with Integrated Motion Sensor	6.8	29,854	-	$
EEM-8	Repair Economizers on All Air Handlers	5.0	22,342	-	$
EEM-9					
EEM-10					
EEM-11					
EEM-12					
TOTALS (Recommended Measures)		57.3	339,860	17,625	$

* NPV assumes a discount rate of 4%

Informative background and tools

Failure to Comply

- Administrative penalties may be imposed for failing to:
  - Receive an exception
  - Submit a compliance report
  - Complete procedures designated in the standard
    - Develop and implement and energy management plan
    - Develop and implement a O&M plan
    - Track energy use
    - Demonstrate performance (one of the following)
      - Meet the EUIt
      - Conduct audits and implement EEMs that will meet EUIt
      - Conduct audits, and implement all cost effective EEMs

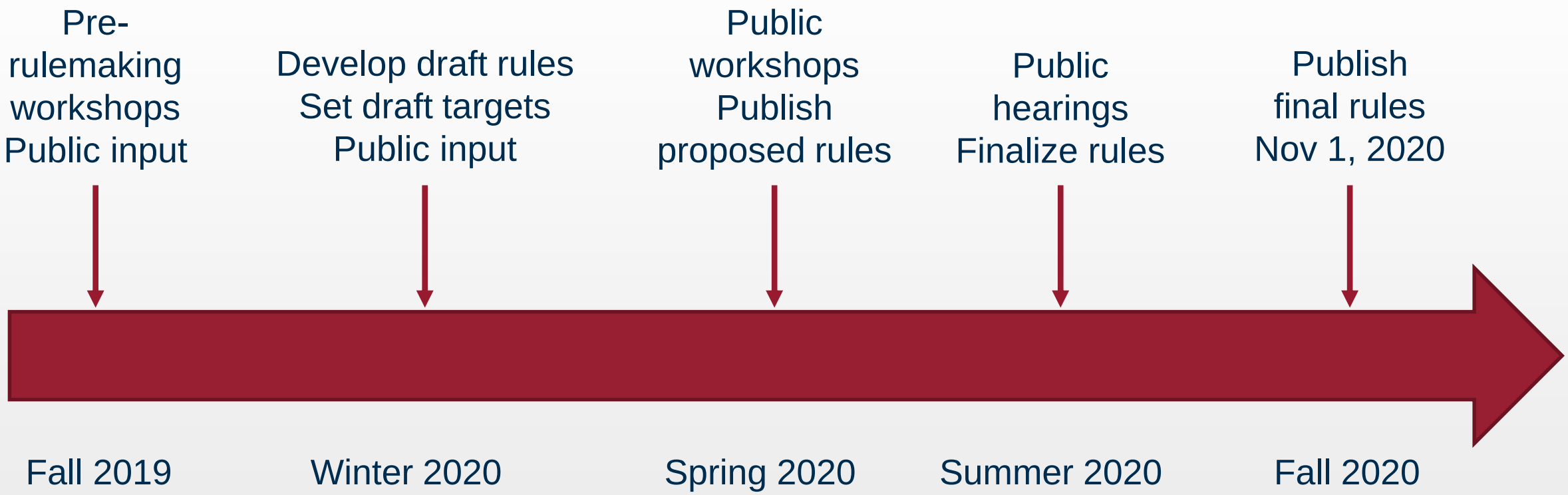
What Can You Do Today?

- Make sure your buildings benchmarked
- Understand energy use of your buildings
- Know the size and use of your large buildings
- Build your budget for EEMs
- Know the ASHRAE Standard, but expect a few changes
- Review the Clean Buildings website
- Sign up for Clean Buildings listserv

Primary Rulemaking Subjects

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

2019-2020 Rule Making Schedule



Thank You

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ADDITIONAL SLIDES

EUIt Development - newer buildings

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

Utility Role

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

Investment Criteria

- Enough to meet the EUIt

OR

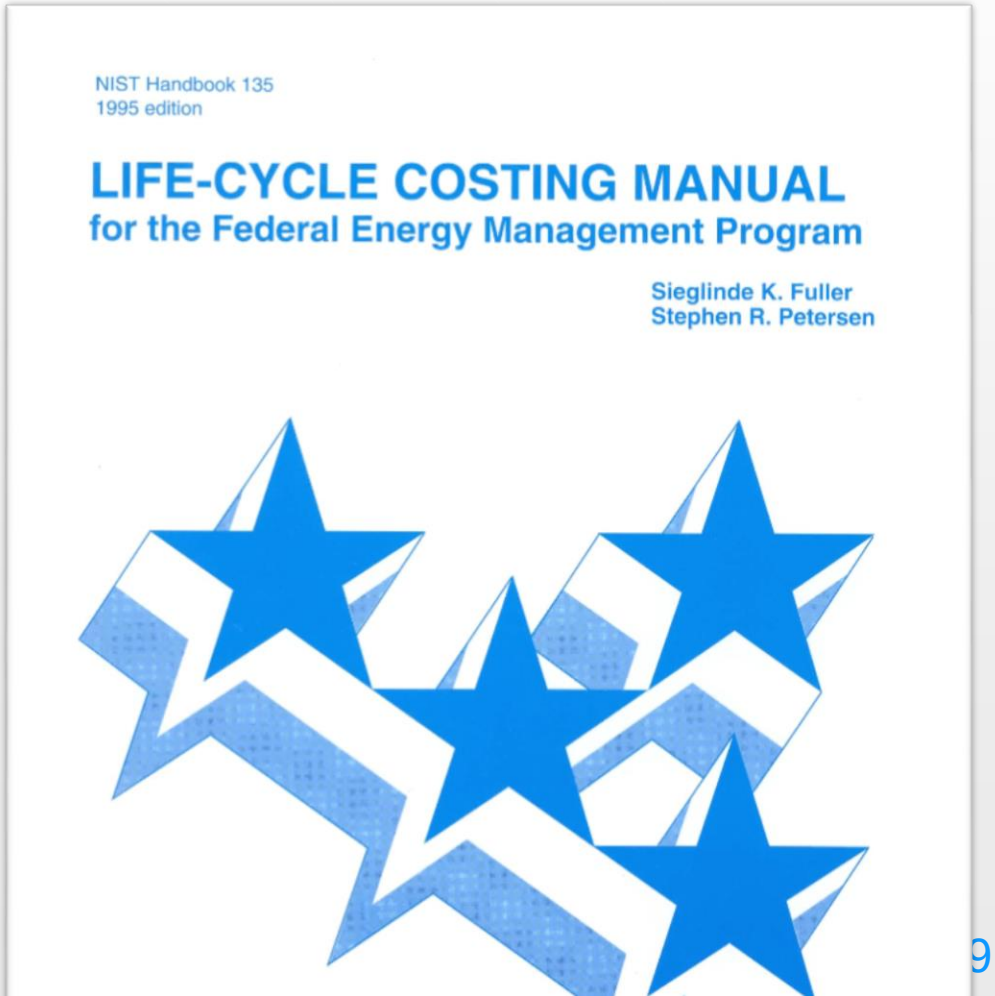
- implement an optimized bundle of energy efficiency measures that provides maximum energy savings without resulting in a savings-to-investment ratio of less than 1.0,
  - life-cycle cost analysis accounts for the period during which a bundle of measures will provide savings
  - The building owner's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

SIR - Definition

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

NIST Standard 135

- Grounding Reference
- Other information will be provided



Energy Use Intensity Targets (EUIt)

- Performance based
- EUI=Btu/SF/year
- State Specific EUIt shall be

No.	Commercial Building Type	EUIs by Building Type by Climate Zone (kBtu/ft²-yr)											
		ASHRAE Climate Zone											
		1A	2A	2B	3A	3B Coast	3B Other	3C	4A	4B	4C	5A	5B
1	Admin/professional office	39	40	39	42	33	39	33	46	40	40	48	42
2	Bank/other financial	55	57	56	59	46	55	47	65	56	57	68	59
3	Government office	49	50	49	52	41	48	42	57	49	50	60	52
4	Medical office (nondiagnostic)	33	34	33	35	28	33	28	39	34	34	41	36
5	Mixed-use office	45	46	45	48	38	45	39	53	46	47	56	48
6	Other office	38	39	38	40	32	37	32	44	38	39	47	40
7	Laboratory	178	176	171	175	147	165	159	194	173	179	209	187

Large Office