Oregon Department of ENERGY

2025 Oregon Energy Efficiency Specialty Code

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ODOE Codes & Standards

March 6 & 13, 2025

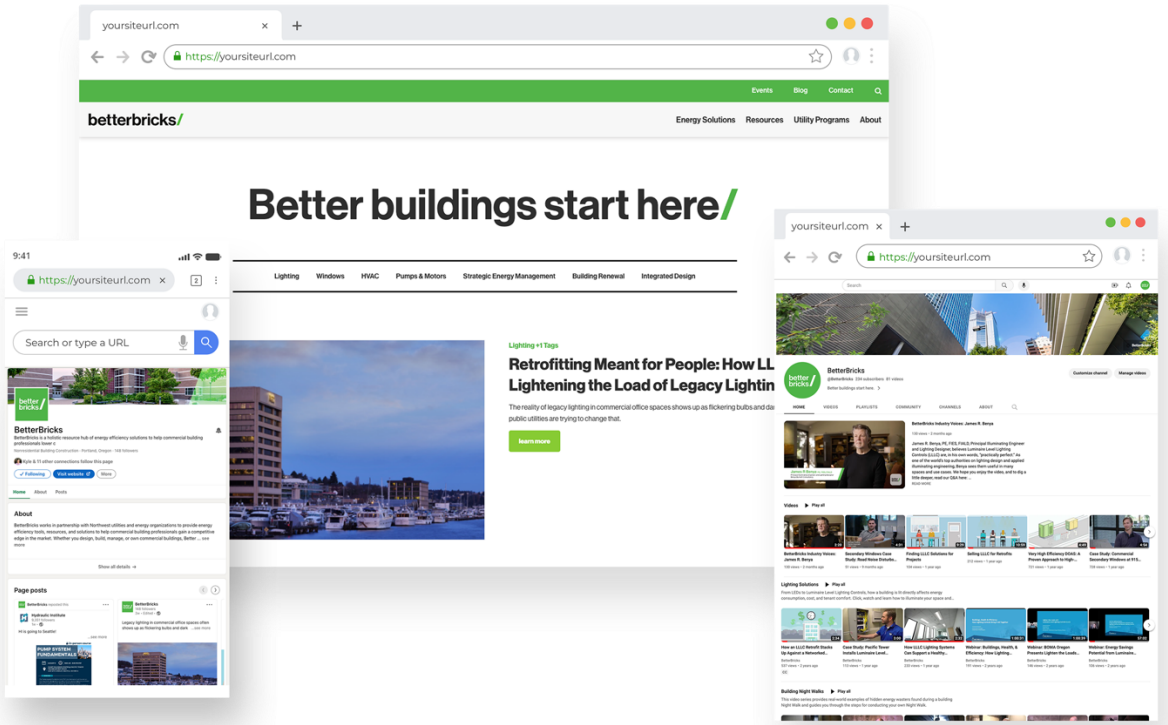
50 YEARS of SERVICE OREGON DEPARTMENT OF ENERGY

Acknowledgements

BetterBricks Tools and Resources

- Whether you design, build, manage or operate a commercial building, BetterBricks has the tools and resources to help you incorporate efficient products and practices that lead to more resilient, healthy, and humane buildings.

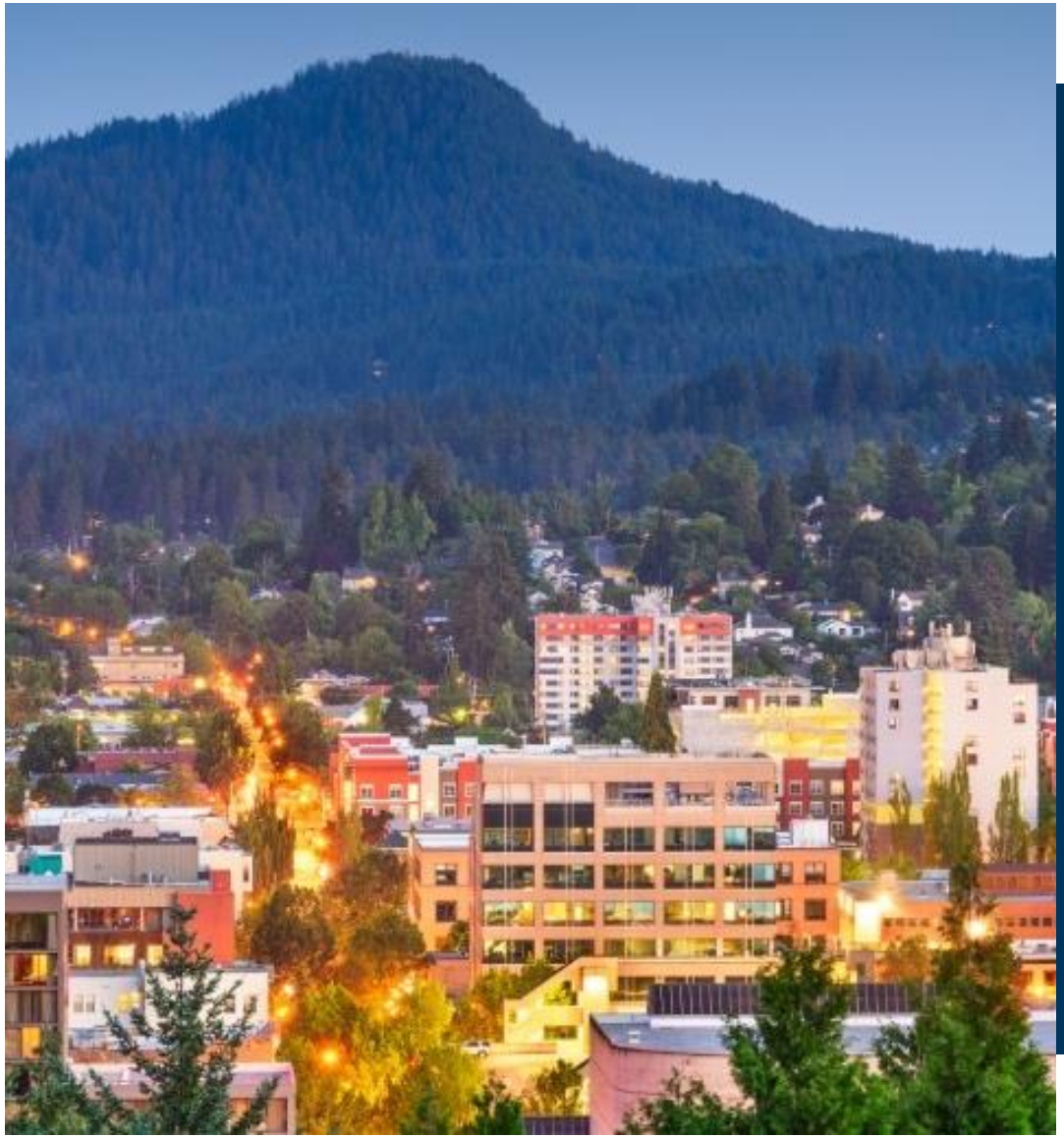
- **betterbricks.com**
- **LinkedIn/YouTube: @BetterBricks**



2025 Oregon Energy Efficiency Specialty Code

AGENDA

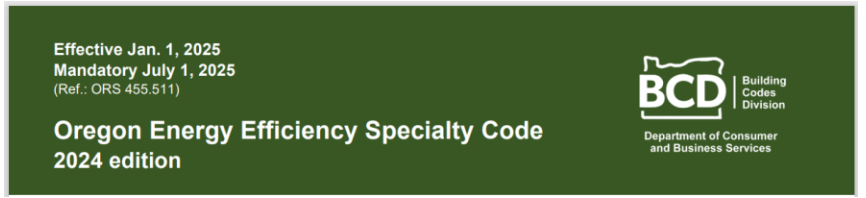
- 2025 OEESC Background
- OEESC/ASHRAE 90.1 Compliance Paths
- OEESC/ASHRAE 90.1 Energy Credits
- OEESC/ASHRAE 90.1 Measure Updates



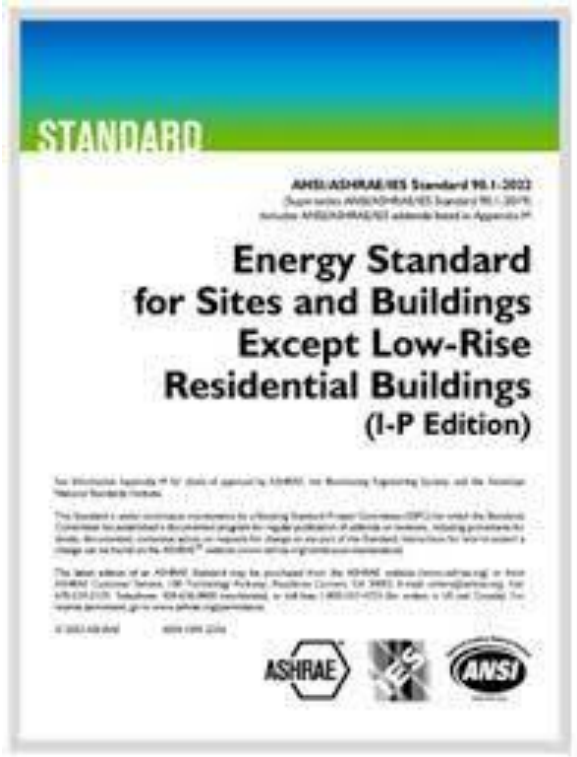
2025 OEESC Background

What is OEESC?

- Oregon's energy code for commercial buildings



- Based on ASHRAE 90.1 energy code
  - One of two major building energy codes, 90.1 and IECC
  - Developed collaboratively by industry experts
  - Extensive oversight, vetting, correction, and update
  - Periodic updates, 90.1 updates every 3 years
  - Notable title change in 2022, now for Sites and Buildings

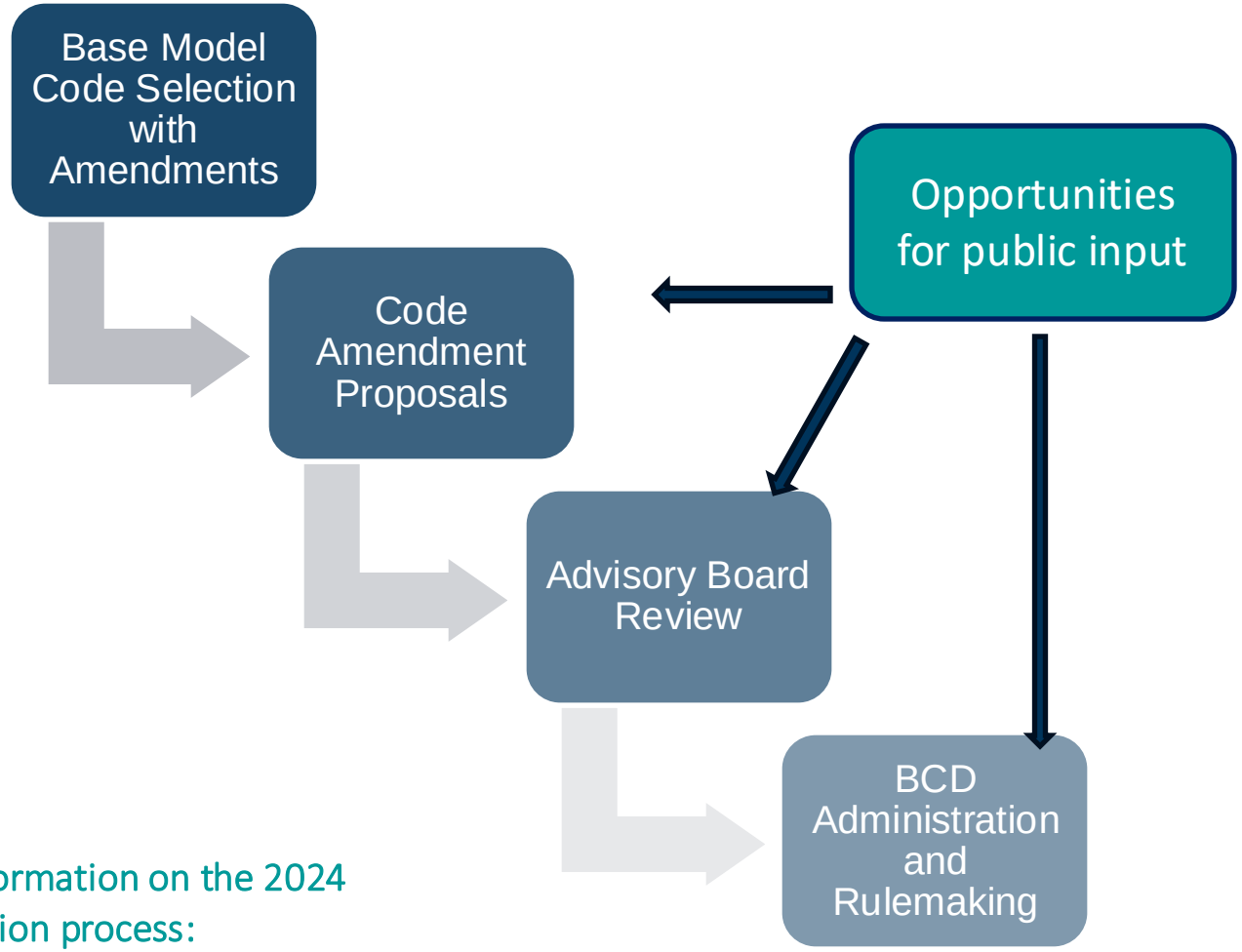


- ASHRAE 90.1-2019 was basis for 2021 OEESC

- ASHRAE 90.1-2022 is basis for ~~*2024*~~2025 OEESC
  - New OEESC was held up by the need for a COMcheck update
  - 2025 OEESC effective in Oregon as of January 1, 2025
  - 2025 OEESC is mandatory in Oregon starting July 1, 2025

Oregon's Code Adoption Process

- OEESC is based on ASHRAE 90.1
  - 90.1 updates every 3 years,
  - most recently in 2022
- 2025 OEESC
  - Based on 90.1-2022, OR is 1st in nation to adopt this update
  - Became effective 1-1-2025,
  - mandatory 7-1-2025
  - Minor modifications to 90.1 in OEESC to reflect Oregon's needs

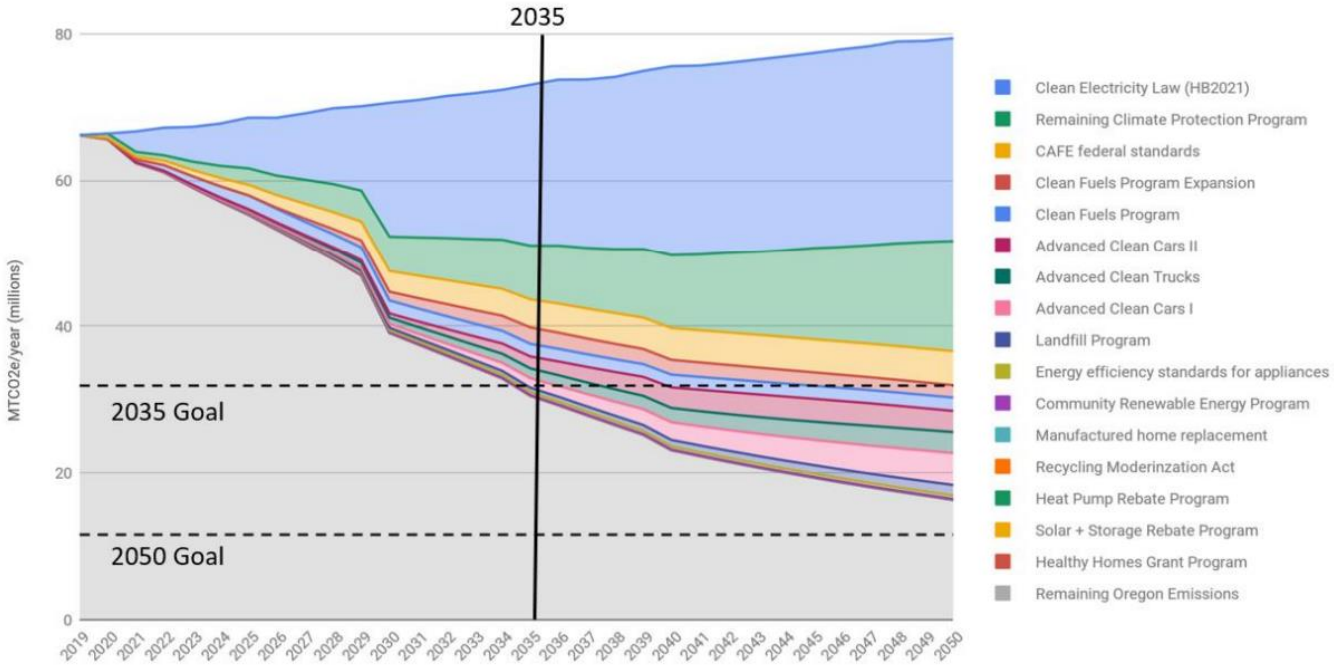


For more information on the 2024 OEESC adoption process: https://www.oregon.gov/bcd/codes-stand/Pages/oeesc-adoption.aspx

Why Are Energy Code Updates Important?

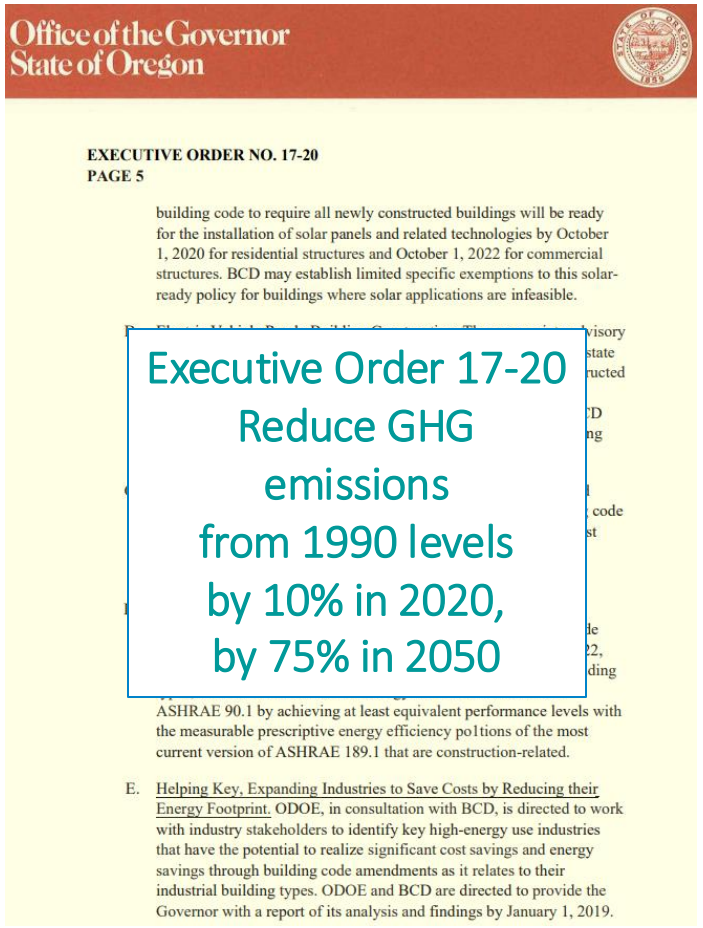
- Critical piece of broader GHG reduction goals
- Work with energy generation, demand side efficiency, and renewable energy initiatives to reduce GHG emissions
- Improve energy efficiency and reduce GHG emissions of new building stock
- OEESC - Oregon Energy Efficiency Specialty Code commercial & multifamily buildings
- ORSC - Oregon Residential Specialty Code residential buildings

Figure 3: GHG Reduction Wedges from Programs and Regulations Adopted



1. Transformational Integrated Greenhouse Gas Emissions Reduction Project Report Informing the Oregon Climate Action Roadmap to 2030

Oregon Legislation & Executive Orders



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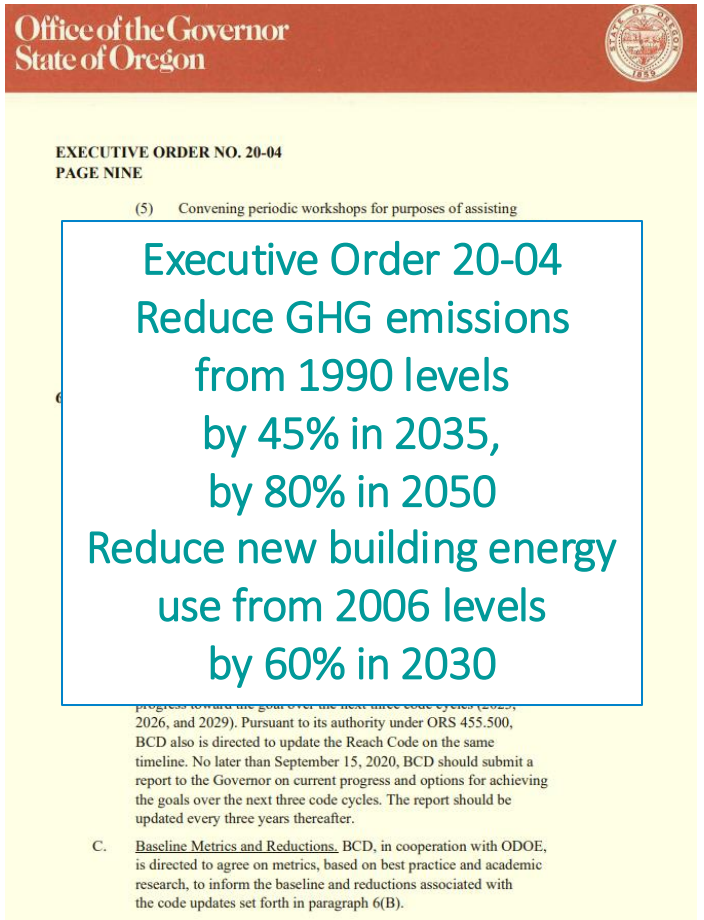
EXECUTIVE ORDER NO. 17-20
PAGE 5

building code to require all newly constructed buildings will be ready for the installation of solar panels and related technologies by October 1, 2020 for residential structures and October 1, 2022 for commercial structures. BCD may establish limited specific exemptions to this solar-ready policy for buildings where solar applications are infeasible.

ASHRAE 90.1 by achieving at least equivalent performance levels with the measurable prescriptive energy efficiency po1tions of the most current version of ASHRAE 189.1 that are construction-related.

E. Helping Key, Expanding Industries to Save Costs by Reducing their Energy Footprint. ODOE, in consultation with BCD, is directed to work with industry stakeholders to identify key high-energy use industries that have the potential to realize significant cost savings and energy savings through building code amendments as it relates to their industrial building types. ODOE and BCD are directed to provide the Governor with a report of its analysis and findings by January 1, 2019.

Executive Order 17-20
Reduce GHG emissions
from 1990 levels
by 10% in 2020,
by 75% in 2050



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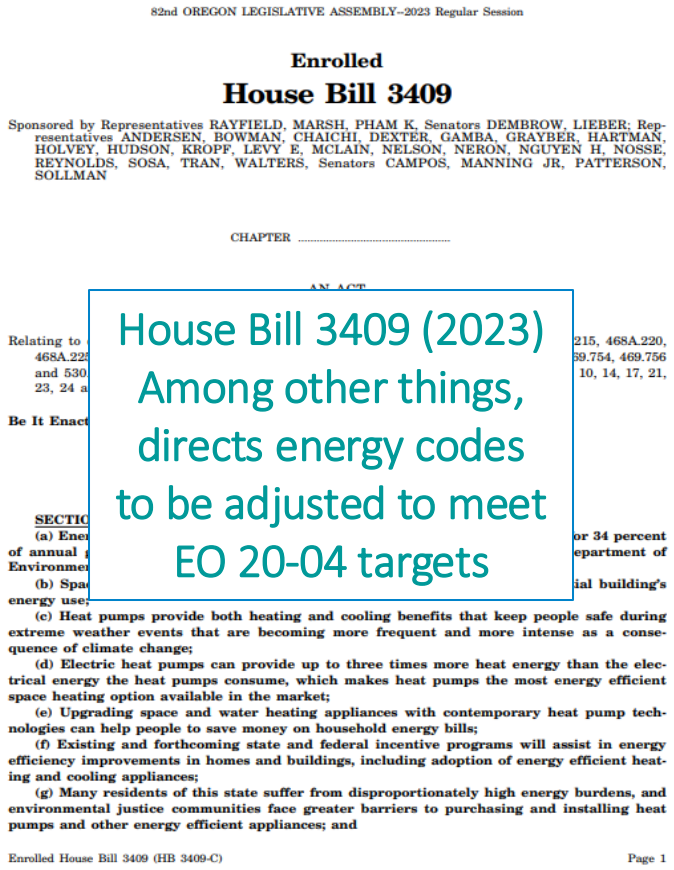
EXECUTIVE ORDER NO. 20-04
PAGE NINE

(5) Convening periodic workshops for purposes of assisting

2026, and 2029). Pursuant to its authority under ORS 455.500, BCD also is directed to update the Reach Code on the same timeline. No later than September 15, 2020, BCD should submit a report to the Governor on current progress and options for achieving the goals over the next three code cycles. The report should be updated every three years thereafter.

C. Baseline Metrics and Reductions. BCD, in cooperation with ODOE, is directed to agree on metrics, based on best practice and academic research, to inform the baseline and reductions associated with the code updates set forth in paragraph 6(B).

Executive Order 20-04
Reduce GHG emissions
from 1990 levels
by 45% in 2035,
by 80% in 2050
Reduce new building energy
use from 2006 levels
by 60% in 2030



82nd OREGON LEGISLATIVE ASSEMBLY--2023 Regular Session

Enrolled

House Bill 3409

Sponsored by Representatives RAYFIELD, MARSH, PHAM K, Senators DEMBROW, LIEBER; Representatives ANDERSEN, BOWMAN, CHAICHI, DEXTER, GAMBA, GRAYBER, HARTMAN, HOLVEY, HUDSON, KROPF, LEVY E, MCLAIN, NELSON, NERON, NGUYEN H, NOSSE, REYNOLDS, SOSA, TRAN, WALTERS, Senators CAMPOS, MANNING JR, PATTERSON, SOLLMAN

CHAPTER .....

AN ACT

Relating to

Be It Enact

(c) Heat pumps provide both heating and cooling benefits that keep people safe during extreme weather events that are becoming more frequent and more intense as a consequence of climate change;

(d) Electric heat pumps can provide up to three times more heat energy than the electrical energy the heat pumps consume, which makes heat pumps the most energy efficient space heating option available in the market;

(e) Upgrading space and water heating appliances with contemporary heat pump technologies can help people to save money on household energy bills;

(f) Existing and forthcoming state and federal incentive programs will assist in energy efficiency improvements in homes and buildings, including adoption of energy efficient heating and cooling appliances;

(g) Many residents of this state suffer from disproportionately high energy burdens, and environmental justice communities face greater barriers to purchasing and installing heat pumps and other energy efficient appliances; and

Enrolled House Bill 3409 (HB 3409-C) Page 1

House Bill 3409 (2023)
Among other things,
directs energy codes
to be adjusted to meet
EO 20-04 targets

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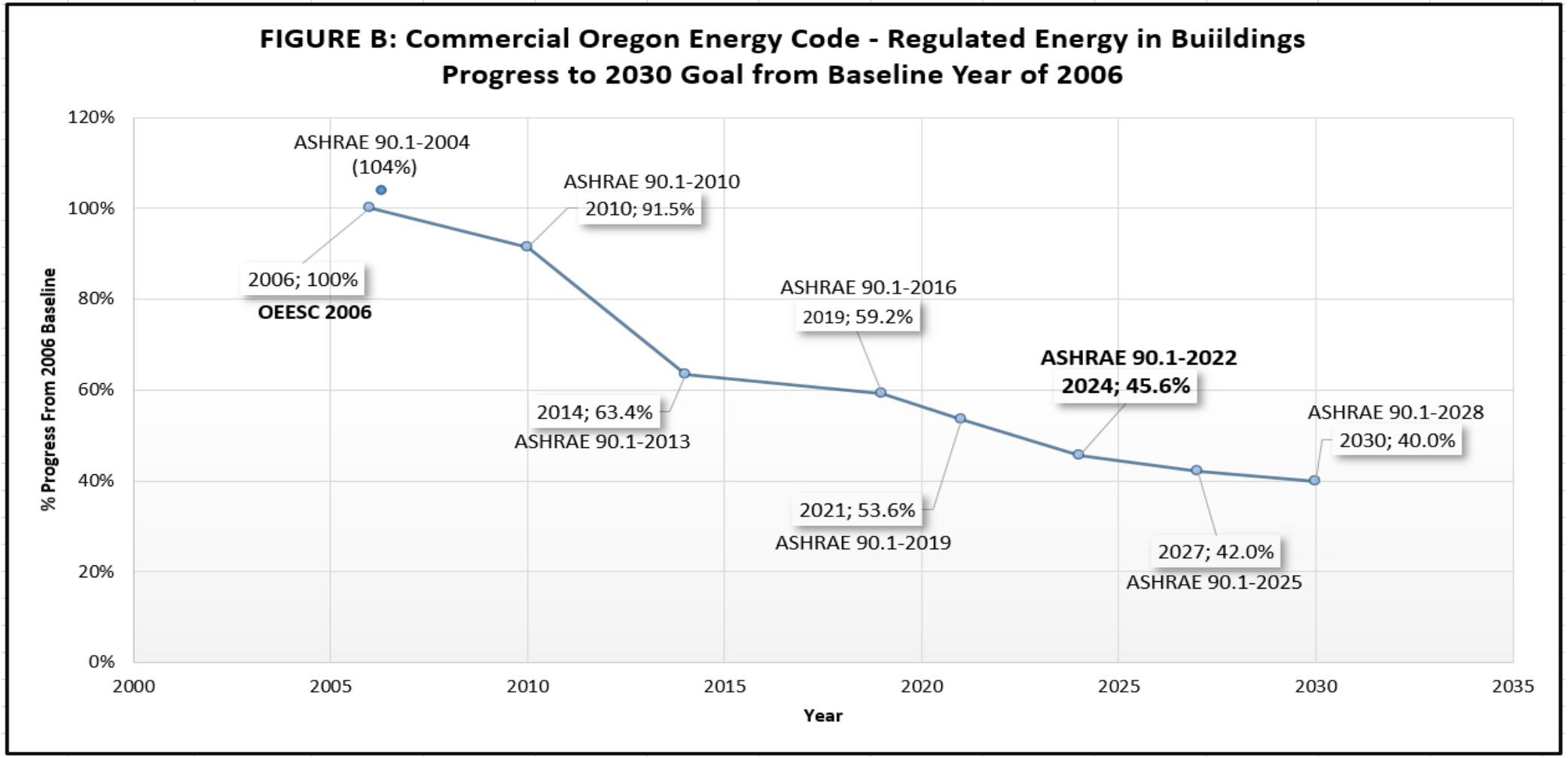
OEESC Efficiency Progress



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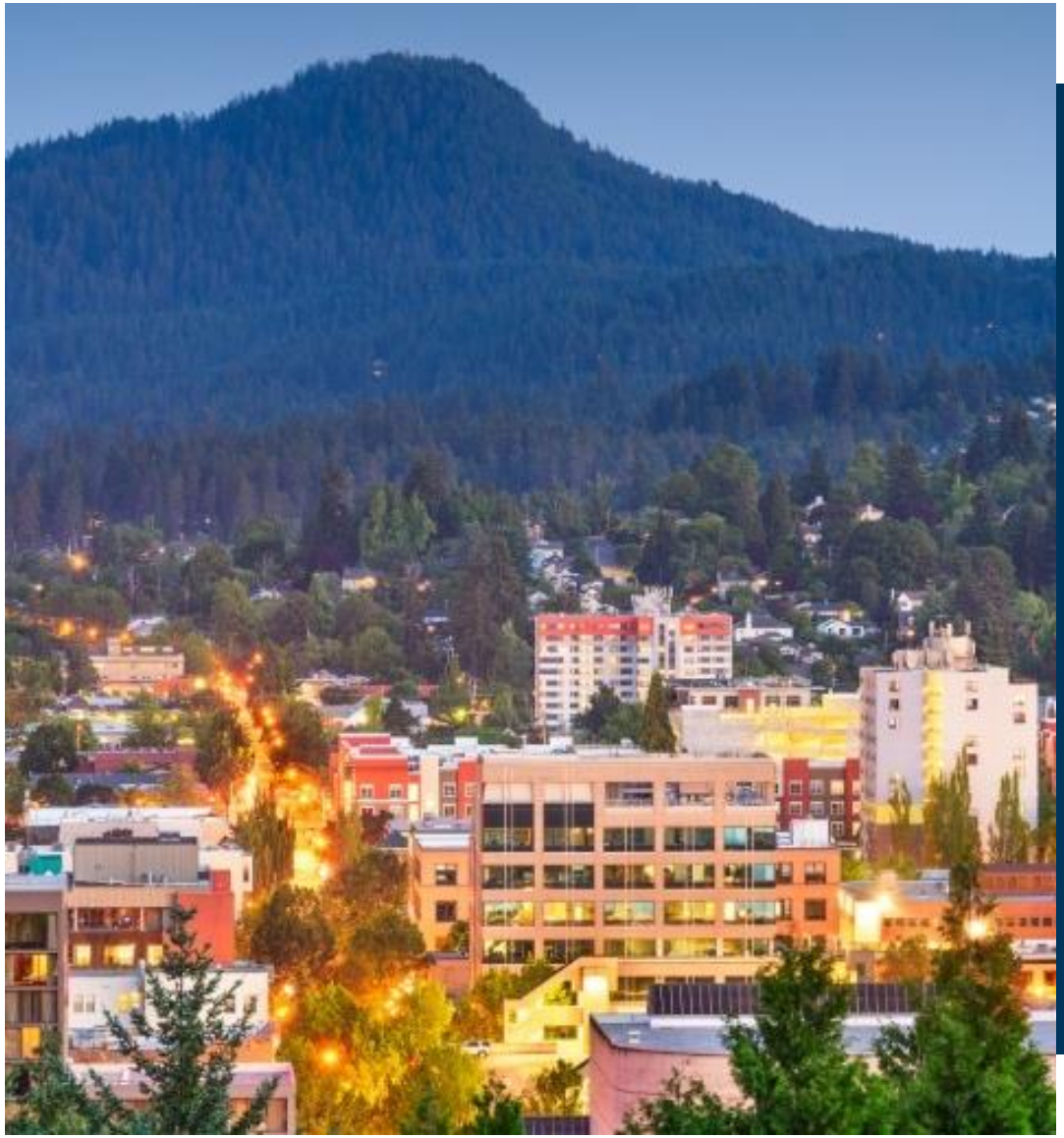


OEESC/ASHRAE 90.1 Compliance Paths

ASHRAE 90.1 Compliance Paths

- Must comply with Mandatory Requirements (Sections xx.4)
- Choose to follow: Simplified / Prescriptive / Alternative
  (Section xx.3 / Sections xx.5 / Section xx.6)
  methods for each code component
  plus earn Energy Credits
  OR
  Energy Cost Budget, Section 12 (performance-based whole-building compliance method, building must stay within an energy budget based on minimum equipment requirements)
  OR
  Energy Performance Ratio, Appendix G (performance-based whole-building energy modeling, building must perform a specified amount better than a 90.1-2004 building)

  – Code Components: Section 5. Building Envelope, Section 6. Heating Ventilating & Air Conditioning (HVAC), Section 7. Service Water Heating (SWH), Section 8. Power, Section 9. Lighting, Section 10. Other Equipment

- New Section 11. Additional Efficiency Requirements
  – Must now earn Energy Credits when following any of the Simplified/Prescriptive/Alternative paths
  – Energy Cost Budget is also adjusted based on Energy Credits

ASHRAE 90.1 & OEESC Compliance Paths

New 90.1-2022 compliance options; ~~***options not adopted by 2025 OEESC;***~~ **2025 OEESC options that supersede 90.1**

	MANDATORY		SIMPLIFIED		PRESCRIPTIVE		ALTERNATIVE		COST ALTERNATIVE		ENERGY ALTERNATIVE
5. Building Envelope	5.4 Mandatory Requirements	AND	***Unofficial*** **OEESC Simplified Building Envelope Method**		5.5 Prescriptive Building Envelope Path	OR	5.6 Building Envelope Trade-Off Path		12. Energy Cost Budget **Budget target adjusted by earned Energy Credits** **Follow OEESC E301.7 for Energy Credit requirements**	OR	Appendix G Performance Rate Method Performance Cost Index (PCI) target is adjusted by Building Performance Factor (BPF) **BPF lowered for 90.1-2022**
6. Heating, Ventilating and Air-Conditioning	6.4 Mandatory Requirements	AND	6.3 Simplified Approach (basic systems only, many mandatory requirements waived)	OR	6.5 Prescriptive Path	~~*OR*~~	6.6 ~~***6.6.1 Computer Room Systems Path***~~ **OEESC E301.3(h) Data Center Rooms System Path** ~~***> 10 kW***~~ **> 100 kW & 20 W/sf must follow 90.4** **6.6.2 Mechanical System Performance Path**				
7. Service Water Heating	7.4 Mandatory Requirements	AND	--		7.5 Prescriptive Path		--				
8. Power	8.4 Mandatory Requirements ~~*8.4.1 Voltage Drop*~~	AND	--		--		8.6 ~~*Computer Room Systems*~~ **OEESC E301.4(f) Data Center Rooms System Path** ~~***> 10 kW***~~ **> 100 kW & 20 W/sf must follow 90.4**	OR			
9. Lighting	9.4 Mandatory Requirements	AND	9.3 Simplified Buildng Method (no mandatory requirements)	OR	9.5 Building Area Method OR Space by Space Method	OR	9.6 Alternative Method				
10. Other Equipment	10.4 Mandatory Requirements ~~***10.4.6 Compressed Air Systems***~~	AND	--		~~***10.5 Renewable Energy Resources***~~		--				
11. Additional Efficiency Requirements	--		--		**11.5 Additional Efficiency Requirements** ~~***11.5.1(e)***~~ **OEESC E301.7**						

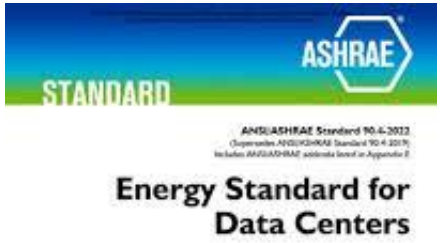
OEESC Adjustments to Compliance Paths

- Must comply with Mandatory Requirements
  - Except for 8.4.1 Voltage Drop and 10.4.6 Compressed Air Systems which were not adopted for Oregon
- Choose to follow: Simplified / Prescriptive / Alternative plus earn Energy Credits
  OR Energy Cost Budget OR Energy Performance Ratio
- *Unofficial* Simplified Building Envelope Method developed by BCD
  - Simplified submission document, while other simplified methods are officially laid out in 90.1
- OEESC also did not adopt:
  - ASHRAE's new 10.5 Renewable Energy Resources - renewables not mandatory in Oregon
- OEESC made important changes to Computer Room Systems Paths > 10 kW
  - Data Center Rooms Systems Path for > 100 kW and 20 W/SF must follow ASHRAE 90.4
- OEESC made changes to the number of Energy Credits required in 90.1-2022
  - Adjusts credits for equal code application, given that renewables can't be installed everywhere

OEESC Data Centers vs Computer Rooms

- 2025 OEESC new definitions
  - computer room: a room whose primary function is to house ITE for the processing and storage of electronic data
  - data center: a computer room (or series of computer rooms that share data center systems) serving a total ITE load greater than 100 kW and 20 W/SF of conditioned floor area

- 2025 OEESC E301.3 (h) creates 90.1-2022 6.6 Data Center Rooms Systems
  - Replaces 90.1-2022 6.6.1 Computer Rooms Systems Path
  - Design of HVAC systems serving data center rooms must follow ASHRAE 90.4-2019 Energy Standard for Data Centers
  - Following ASHRAE 90.4 for HVAC systems serving a computer room is optional



- OEESC E301.3 (h) creates 90.1-2022 8.6 Data Center Room Systems
  - Replaces 90.1-2022 8.6.1 Computer Rooms Systems
  - Design of power distribution systems and equipment serving a data center must follow ASHRAE 90.4-2019 Energy Standard for Data Centers

Supplementary Compliance Forms

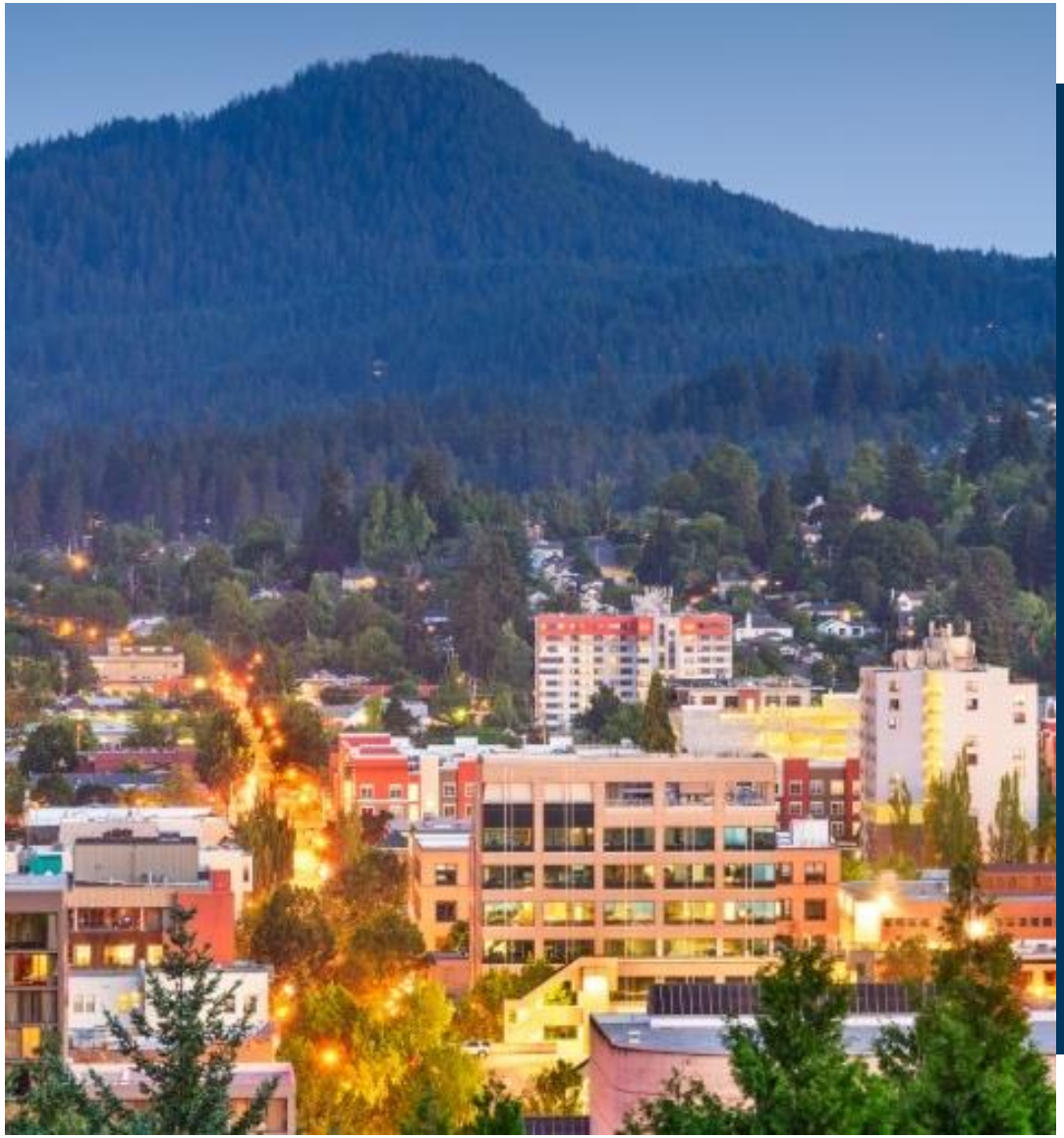
Oregon's Building Codes Division (BCD) developed "Simplified Building Method" forms

- Buildings less than 25,000 sf *and*
- 2-stories or fewer, *and/or*
- Other requirements

Building Codes Division : Commercial energy code compliance, training, and resources : Codes and standards : State of Oregon

Supplementary compliance forms

- Measured air leakage reporting (blower door results)
- Simplified building method - Building envelope compliance
- Simplified building method - Lighting compliance
- Simplified building method - HVAC compliance
- Prescriptive solar photovoltaic installation checklist



OEESC/ASHRAE 90.1 New Energy Credits

New Energy Credit Requirement

- New 90.1-2022 Section 11. Additional Efficiency Requirements
  - Must now earn energy credits in addition to other requirements
  - Unless you follow the Performance Ratio Method / Appendix G
  - Also need the energy credit tally to follow Energy Cost Budget Path
- Variety of energy credit measures with varying numbers of credits
  - 25 energy efficiency measures } at least 40% of ECs
  - 1 renewable energy measure
  - 7 load management measures } max of 60% of ECs
- 1 energy credit = 0.1% energy efficiency increase
  - 50 Points = 5% energy cost reduction

OEESC Energy Credit Requirements

OEESC energy credits adjusted to reflect that not all buildings can apply renewables

Table 11.5.1-1 Energy Credit Requirements by Building Use Type

Building Use Type [a]	4B	4C	5A	5B	5C	6A	6B	7	8
Multifamily [b]	50	46	50	50	49	50	50	50	50
Health care [c]	46	50	50	50	50	50	50	50	50
Hotel/motel	50	50	47	46	47	49	46	50	50
Office [d]	50	50	50	50	50	50	50	50	50
Restaurant [e]	50	50	50	50	50	50	50	50	50
Retail	50	50	49	50	47	48	45	42	46
Education [f]	50	50	50	50	50	50	50	50	46
Warehouse [g]	50	50	50	50	50	50	50	50	50
Other [h]	32	30	29	31	30	29	30	29	29

Table 11.5.1-1

Energy Credit Requirements by Building Use Type (Adjusted)

Building Use Type [a]	Climate Zone	
	4C	5B
Multifamily [b]	32	41
Health care [c]	47	47
Hotel/motel	42	34
Office [d]	43	42
Restaurant [e]	49	49
Retail	38	36
Education [f]	41	39
Warehouse [g]	30	30
Other [h]	23	23

OEESC Energy Credit Requirements

- 100% of energy credits required for:
  - New construction or additions over 2,000 square feet
  - Alterations over 5,000 square feet with replacement of two or more of:
    - HVAC for ≥ 50% space; Lighting for ≥ 50% space; ≥ 25% of building envelope
  - Total credits under separate core & shell and initial build out permits
- 50% of energy credits required for:
  - Separately permitted core & shell with central HVAC or SWH
  - Separately permitted initial build-out with HVAC generation
- 33% of energy credits required for:
  - Separately permitted core & shell without central HVAC or SWH
- 25% of energy credits required for:
  - Separately permitted initial build-out with heating or cooling from core & shell

Earning Energy Credits

- Thirty-three measures currently eligible for energy credits
  - Listed in ASHRAE 90.1-2022 11.5.2
  - Includes measure requirements and any calculations
  - Two placeholder measures (H01: HVAC System Performance Improvement and L01: Lighting System Performance Improvement)

- Each measure is assigned "Base" energy credits
  - Base credits vary with building type and climate zone
  - Base credit Tables 11.5.3-1 thru -9
  - Not every energy credit applies to every building type

- Energy credits might be adjusted up or down from base credit
  - Presumably the base credit represents the most typical measure installation
  - COMcheck makes these calculations (but you must choose them)
  - It's helpful to understand how adjustments are made

Base Energy Credits – CZ 4C

Base Energy Credits	Multifamily	Health Care	Hotel/Motel	Office	Restaurant	Retail	Education	Warehouse	Other
E01: Improved Envelope Performance	5	5	5	5	5	5	5	5	5
H02: Heating Efficiency	2	3	-	2	4	5	3	8	4
H03: Cooling Efficiency	2	5	3	3	1	2	5	-	3
H04: Residential HVAC Controls	7	-	-	-	-	-	-	-	-
H05: Ground-Source Heat Pump	6	11	4	7	11	16	11	-	10
H06: DOAS/Fan Controls	-	13	-	8	-	15	13	-	-
H07: Guideline 36 Sequences	1	2	2	1	1	2	2	2	2
L02: Lighting Dimming and Tuning	1	7	2	7	3	5	8	-	5
L03: Increase Occupancy Sensor	-	2	5	7	2	5	6	7	5
L04: Increase Daylight Area	-	-	-	9	-	5	9	17	10
L05: Residential Light Controls	10	-	-	-	-	-	-	-	10
L06: Light Power Reduction	2	10	3	9	3	9	10	17	7
P01: Energy Monitoring	2	3	2	3	1	6	3	6	3
Q01: Efficient Elevator Equipment	6	2	4	6	1	5	6	6	5
Q02: Efficient Kitchen Equipment	-	-	-	-	30	-	-	-	-
Q03: Fault Detection and Diagnostics	1	2	2	1	1	2	2	2	2
W01: SHW Preheat Recovery	24	2	8	2	12	8	3	3	8
W02: Heat-Pump Water Heater	39	1	13	2	9	3	2	1	9
W03: Efficient Gas Water Heater	29	1	10	3	14	4	4	2	8
W04: SWH Pipe Insulation	3	1	2	2	-	-	1	-	2
W05: Point-of-Use Water Heaters	-	-	-	3	-	-	3	-	3
W06: Thermostatic Balancing Valves	1	1	1	1	1	1	1	1	1
W07: SHW Submeters	8	-	-	-	-	-	-	-	-
W08: SHW Distribution Sizing	25	-	9	-	-	-	-	-	-
W09: Shower Drain Heat Recovery	22	-	7	-	-	-	2	-	10
R01: On-Site Renewable Energy	14	5	10	14	2	13	16	45	15
G01: Lighting Load Management	-	-	-	7	-	12	4	9	8
G02: HVAC Load Management	-	-	-	14	-	3	6	-	8
G03: Shading Load Management	6	-	1	16	1	2	16	-	7
G04: Electric Energy Storage	13	12	11	31	3	9	18	42	17
G05: HVAC Cooling Energy Storage	9	7	12	12	1	9	22	4	10
G06: SHW Thermal Storage	21	1	31	7	19	5	8	4	12
G07: Building Mass/Night Flush	-	-	-	20	7	20	20	20	20
Total Base Credits in CZ 4C	**259**	**96**	**147**	**202**	**132**	**171**	**209**	**201**	**209**
Total Credits Required in CZ 4C	**32**	**47**	**42**	**43**	**49**	**38**	**41**	**30**	**23**

Base Energy Credits – CZ 5B

Base Energy Credits	Multifamily	Health Care	Hotel/Motel	Office	Restaurant	Retail	Education	Warehouse	Other
E01: Improved Envelope Performance	5	5	5	5	5	5	5	5	5
H02: Heating Efficiency	2	3	1	3	5	6	4	13	5
H03: Cooling Efficiency	4	5	5	4	3	5	7	1	4
H04: Residential HVAC Controls	11	-	-	-	-	-	-	-	-
H05: Ground-Source Heat Pump	9	10	6	10	15	18	13	-	12
H06: DOAS/Fan Controls	-	14	-	10	-	17	14	-	-
H07: Guideline 36 Sequences	2	3	2	2	2	3	3	3	3
L02: Lighting Dimming and Tuning	1	7	2	6	3	4	7	-	4
L03: Increase Occupancy Sensor	-	1	4	6	2	4	6	6	4
L04: Increase Daylight Area	-	-	-	8	-	5	8	15	9
L05: Residential Light Controls	9	-	-	-	-	-	-	-	9
L06: Light Power Reduction	2	9	2	8	4	8	9	14	6
P01: Energy Monitoring	2	3	3	3	2	6	3	6	4
Q01: Efficient Elevator Equipment	5	2	4	5	1	5	6	5	4
Q02: Efficient Kitchen Equipment	-	-	-	-	27	-	-	-	-
Q03: Fault Detection and Diagnostics	2	3	2	2	2	3	3	3	3
W01: SHW Preheat Recovery	22	2	8	2	11	7	3	3	7
W02: Heat-Pump Water Heater	36	1	12	2	9	2	2	1	8
W03: Efficient Gas Water Heater	27	1	9	3	13	4	4	2	8
W04: SWH Pipe Insulation	3	1	2	1	-	-	1	-	2
W05: Point-of-Use Water Heaters	-	-	-	1	-	-	3	-	2
W06: Thermostatic Balancing Valves	1	1	1	1	1	1	1	1	1
W07: SHW Submeters	8	-	-	-	-	-	-	-	-
W08: SHW Distribution Sizing	23	-	8	-	-	-	-	-	-
W09: Shower Drain Heat Recovery	20	-	7	-	-	-	2	-	10
R01: On-Site Renewable Energy	17	6	12	16	2	15	19	49	17
G01: Lighting Load Management	-	-	-	7	-	11	4	7	7
G02: HVAC Load Management	-	-	-	17	-	-	8	-	13
G03: Shading Load Management	11	2	1	15	1	-	15	-	8
G04: Electric Energy Storage	10	11	11	28	4	10	18	34	16
G05: HVAC Cooling Energy Storage	14	7	16	16	2	16	28	12	14
G06: SHW Thermal Storage	21	1	31	7	19	5	8	4	12
G07: Building Mass/Night Flush	-	-	-	20	9	20	30	20	25
Total Base Credits in CZ 5B	**267**	**98**	**154**	**208**	**142**	**180**	**234**	**204**	**222**
Total Credits Required in CZ 5B	**32**	**47**	**42**	**43**	**49**	**38**	**41**	**30**	**23**

Energy Credit Statistics

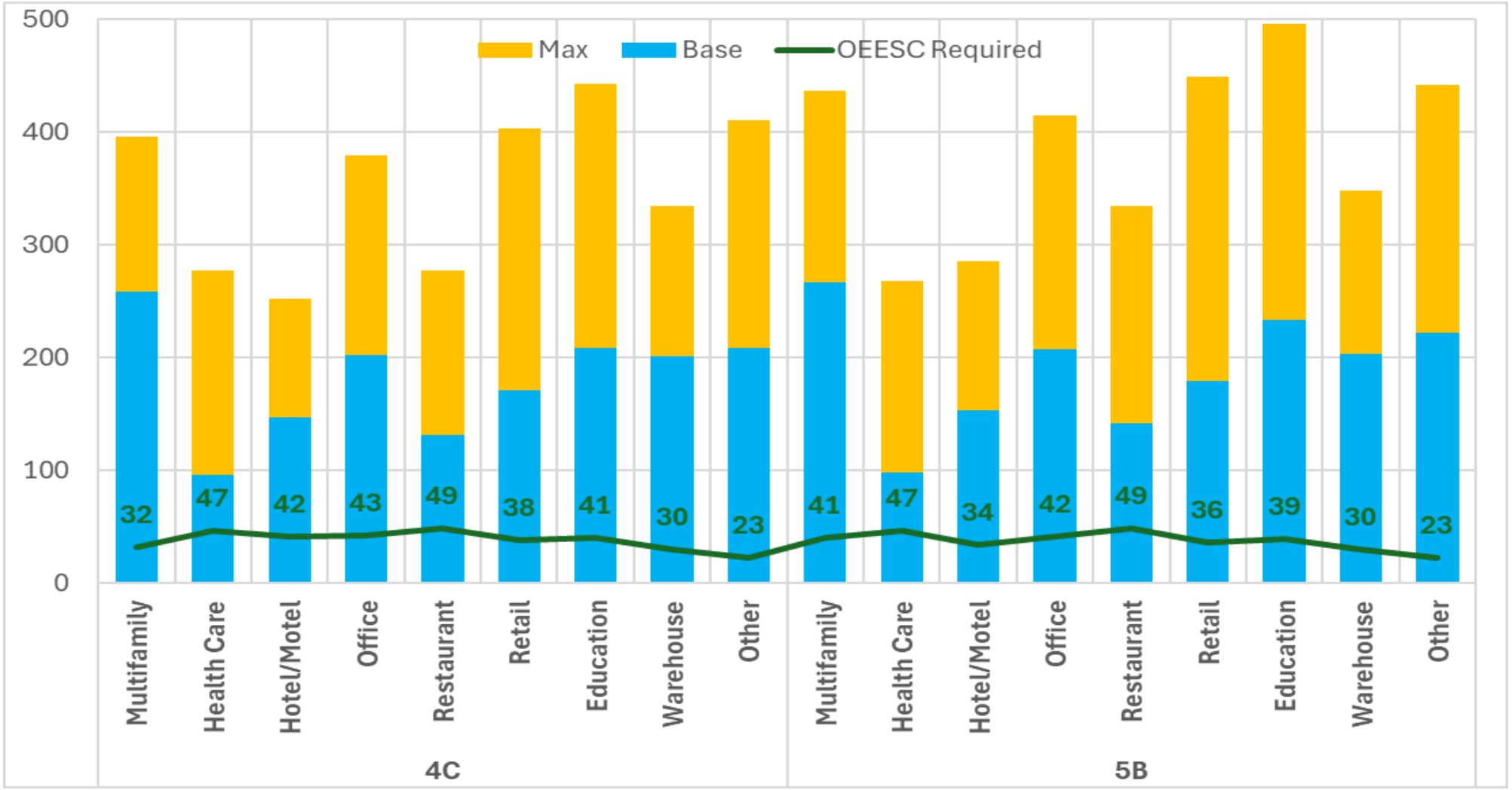
		Building Types	Avg Base Credit	Avg Max Credit
E01: Improved Envelope Performance	Adj Up & Down	18	5	25
H02: Heating Efficiency	Adj Up	17	4	17
H03: Cooling Efficiency	Adj Up	18	3	14
H04: Residential HVAC Controls	Non-Adj	2	9	9
H05: Ground-Source Heat Pump	Adj Up	16	11	97
H06: DOAS/Fan Controls	Adj Down	8	13	13
H07: Guideline 36 Sequences	Non-Adj	18	2	2
W01: SHW Preheat Recovery	Non-Adj	18	8	8
W02: Heat-Pump Water Heater	Adj Up	18	8	17
W03: Efficient Gas Water Heater	Non-Adj	18	8	8
W04: SWH Pipe Insulation	Non-Adj	12	2	2
W05: Point-of-Use Water Heaters	Non-Adj	6	3	3
W06: Thermostatic Balancing Valves	Non-Adj	18	1	1
W07: SHW Submeters	Non-Adj	2	8	8
W08: SHW Distribution Sizing	Non-Adj	4	16	16
W09: Shower Drain Heat Recovery	Adj Down	8	10	10
P01: Energy Monitoring	Non-Adj	18	3	3

		Building Types	Avg Base Credit	Avg Max Credit
L02: Lighting Dimming and Tuning	Adj Up or Down	16	5	6
L03: Increase Occupancy Sensor	Non-Adj	16	5	5
L04: Increase Daylight Area	Adj Up	10	10	38
L05: Residential Light Controls	Adj Down	4	10	10
L06: Light Power Reduction	Adj Up	18	7	15
Q01: Efficient Elevator Equipment	Adj Down	18	4	4
Q02: Efficient Kitchen Equipment	Non-Adj	2	29	29
Q03: Fault Detection and Diagnostics	Non-Adj	18	2	2
R01: On-Site Renewable Energy	Adj Up & Down	18	16	23

R & G measures limited to 60% of total credits

G01: Lighting Load Management	Adj Up & Down	10	8	10
G02: HVAC Load Management	Non-Adj	7	10	10
G03: Shading Load Management	Non-Adj	14	7	7
G04: Electric Energy Storage	Adj Up & Down	18	17	25
G05: HVAC Cooling Energy Storage	Adj Up & Down	18	12	35
G06: SHW Thermal Storage	Non-Adj	18	12	12
G07: Building Mass/Night Flush	Non-Adj	12	19	19

Potential Energy Credits Available



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OEESC Bonuses for Extra Energy Credits

- If a building earns two more credits than the minimum
  - It will not need whole building energy monitoring (10.4.7.1 & 10.4.7.2) or sub-monitoring of various electrical end-uses (8.4.3.1 & 8.4.3.2)
  - 90.1-2022 requires monitoring and recording of energy use in buildings with at least 25,000 SF or individual tenant spaces of at least 10,000 SF or common areas of residential buildings of at least 10,000 SF
  - 2025 OEESC E301.4 (d) and E301.6 (b)

- If a building earns five more credits than the minimum
  - It will not need automatic receptacle controls (8.4.2)
    - Receptacles with on-off schedule or occupancy control or automated signal
  - 90.1-2022 requires these over 50% of 15A and 20A receptacles in private offices, conference rooms, copy rooms, break rooms, classrooms, workstations AND on at least 25% of branch circuits for modular furniture
  - 2025 OEESC E301.4 (c)

Determining Energy Credits - Calculations

- Non-Adjustable energy credits, 14 of 33 measures
  - Must meet minimum conditions to earn credit
  - Example – Q03: Fault Detection and Diagnostics
    - Monitor HVAC systems every 15 minutes for common operating faults – 1 or 2 ECs
  - Example – H07: Guideline 36 Sequences
    - Follow ASHRAE 36 sequences of operations – 1 or 2 ECs

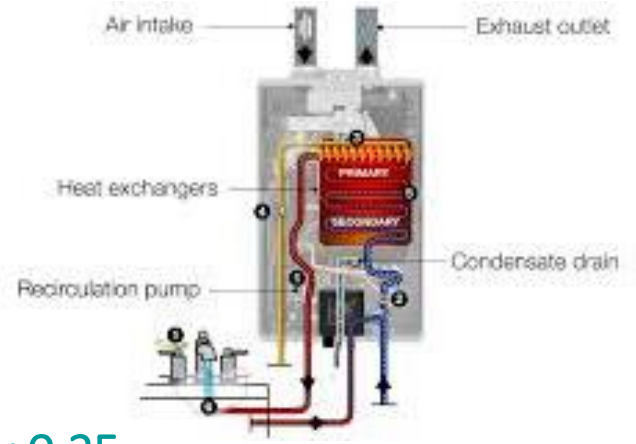
Determining Energy Credits - Calculations

- Adjustable Down energy credits, 7 of 33 measures
  - Must meet minimum conditions to earn credit

  - Example - W03: Efficient Gas Water Heater
    - Medium systems: At least 200,000 Btu/hr of water heating capacity
      Gas water heating in entire building must have capacity-weighted average of at least 0.95 E_t or 0.93 UEF

      Can earn 1 to 29 base ECs, depending on building type

    - Large systems: >=1,000,000 Btu/hr
      Required to have ~0.92 E_t under Section 7.5.3
      If they exceed 0.95 E_t or 0.93 UEF, EC = EC base x 0.296



    - Small systems: <200,000 Btu/hr and UEF >= 0.82, EC = EC base x 0.25
    - Multifamily up to 29 x 0.25 = 7 ECs, Restaurant up to 14 x 0.25 = 4 ECs, Hotel/Motel up to 10 x 0.25 = 3 ECs *(rounded to nearest whole number)*

Determining Energy Credits - Calculations

- Adjustable Down energy credits, 7 of 33 measures
  - Must meet minimum conditions, then credit is calculated

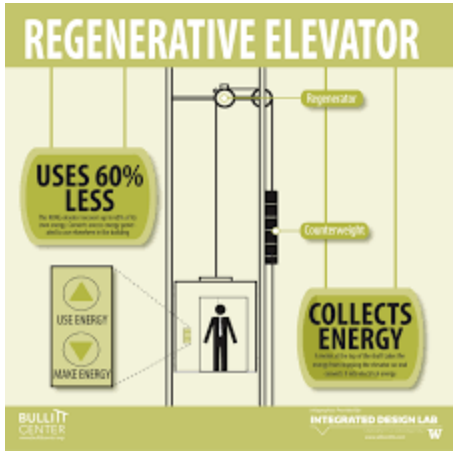
  - Example – Q01: Efficient Elevator Equipment
    - Must be a Class A regenerative elevator

    - then $$EC_{Q01\_adj} = EC_{Q01\_base} \times \frac{F_A}{F_B}$$

      where F_A is the sum of floors served by Class A elevators and F_B is the sum of floors served by all elevators

    - Ten-story Hotel, CZ4, served by 2 Class A elevators and 1 non-Class A freight elevator

      ECadj = 4 x (2 x 10)/(3 x 10) = 2.67, *rounded to nearest whole number*, so ECadj = 3



Determining Energy Credits - Calculations

- Adjustable Up energy credits, 6 of 33 measures
  - Must meet minimum conditions, then credit is calculated
  - Example – H02: Heating Efficiency
    - Must exceed minimum efficiency requirements from Section 6.8.1 by at least 5%, then

$$EC_{H02\_adj} = EC_{H02\_base} \times \frac{EI_{heat}}{0.05}$$

where $EI_{heat} = \frac{HM_{des}}{HM_{min}} - 1$, heating metric increases with efficiency up to 0.20

- Gas furnace for ducted system in Office, CZ 4C

  EI heat = 0.96/0.80 – 1 = 0.20, ECadj = 2 x 0.20/0.05 = 8 (this is max credit)

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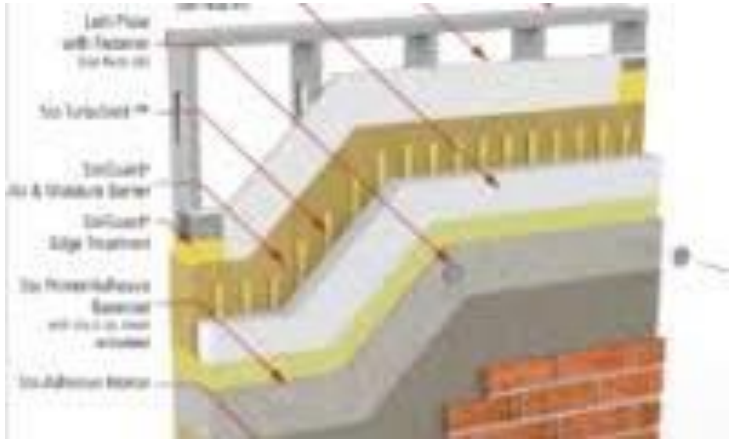
Determining Energy Credits - Calculations

- Adjustable Up & Down energy credits, 6 of 33 measures
  - Must meet minimum conditions, then credit is calculated
  - Example – E01: Improved Envelope Performance
    - No EC base values are given, EC calculated as:

$$EC_{E01\_calc} = 1000 \times \frac{EPF_{E01\_base} - EPF_{prop}}{EPF_{E01\_base}}$$

    - EPF values, Envelope Performance Factors, come from Section 5.6 Building Envelope Trade-Off Path as laid out in Normative Appendix C
    - COMcheck runs Normative Appendix C to calculate EPF and energy credits under E01 when it runs the Building Envelope Compliance check

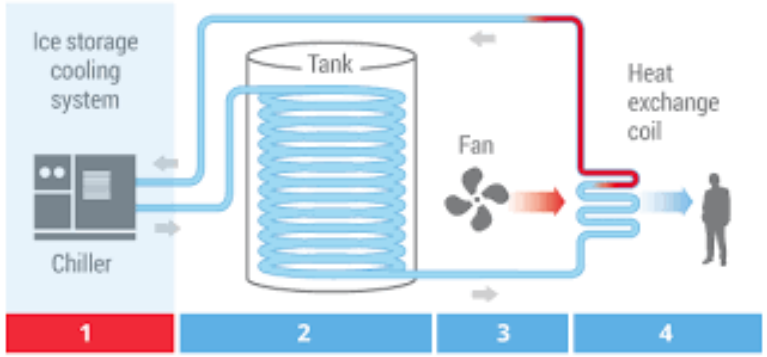


Determining Energy Credits - Calculations

- Adjustable Up & Down energy credits, 6 of 33 measures
  - Must meet minimum conditions, then credit is calculated

  - Example – G05: HVAC Cooling Energy Storage
    - Storage Ratio (SR) must be 0.5 to 4 ton-hrs of storage per ton of cooling load

$$EC_{G05\_adj} = EC_{G05\_base} \times \frac{(1.44 \times SR + 0.71)}{2.15}$$



    - Above equation is based on 1 ton-hr per ton of cooling
    - Adjusted EC values can vary from 0.67 to 3.0 times EC base
    - But capped at 60% of required energy credits together with any other load management or renewable energy measures

Determining Energy Credits - Calculations

- Adjustable Up & Down energy credits, 6 of 33 measures
  - Must meet minimum conditions, then credit is calculated

  - Example – R01: On-Site Renewable Energy
    - 2025 OEESC E301.7 (e) supersedes ASHRAE 90.1-2022 for this energy credit
    - Renewable energy generation must be at least 0.1 W/sf of project gross floor area

$$EC_{R01\_adj} = EC_{R01\_base} \times \frac{RR_{total} - RR_{req}}{0.1 \times PGFA}$$

Difference between PGFA and "conditioned area of largest 3 floors"
Possibility of negative multiplier…

EC_{R01_adj}	=	*energy* credits achieved for *on-site renewable energy*
EC_{R01_base}	=	R01 base *energy* credit from Section 11.5.3
RR_{total}	=	actual total minimum rating of *on-site renewable energy systems*, W
RR_{req}	=	~~minimum rating of *on-site renewable energy systems* required by Section 10.5.1.1 without exception~~ 0.50 W/ft² or 1.7 Btu/ft², multiplied by the sum of the gross conditioned floor area for all floors up to the three largest floors, W
PGFA	=	project *gross floor area*

    - Maximum EC limited by 90.1-2022 requirement that R01 plus G01-G07 ECs be no more than 60% of required ECs

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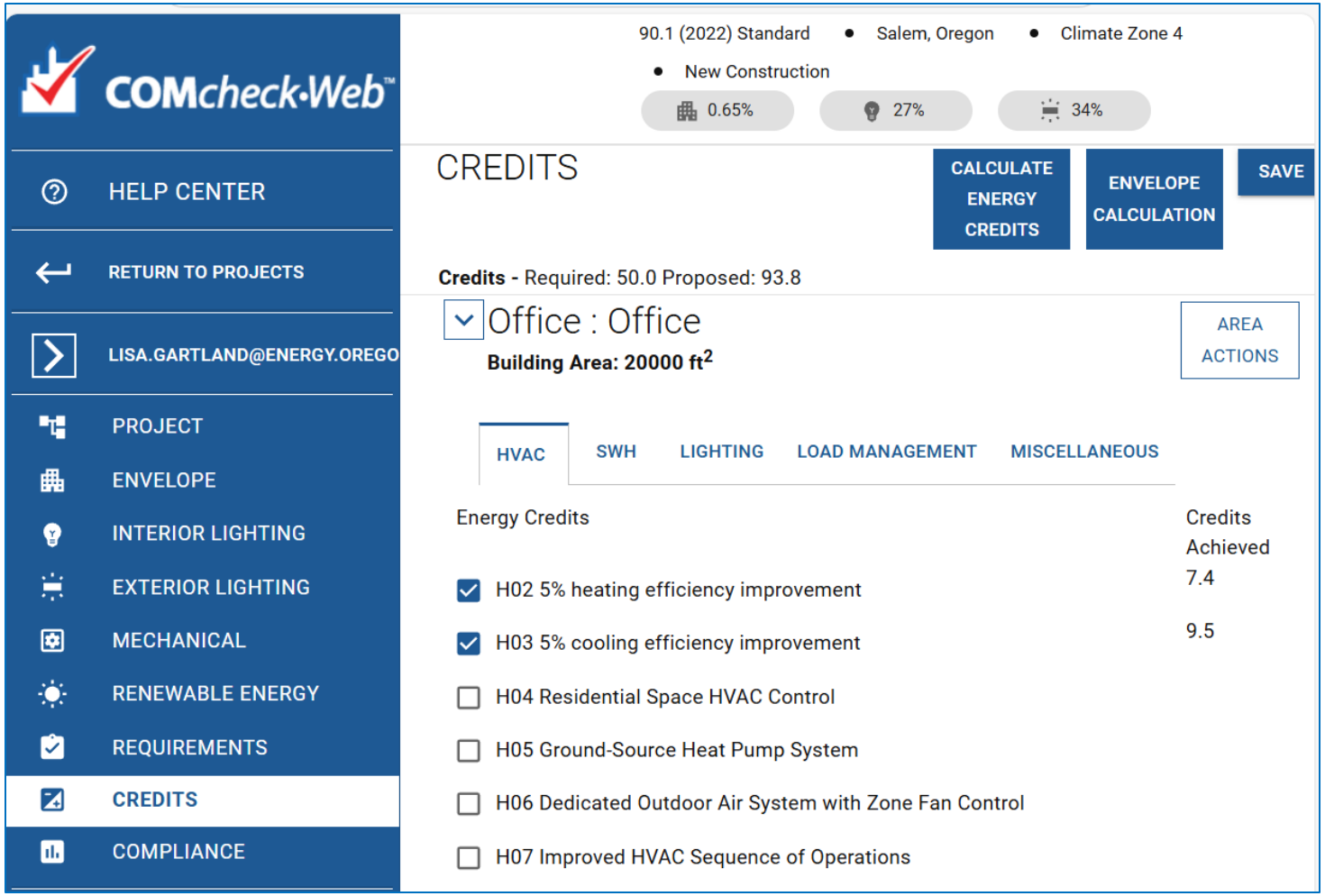
Determining Energy Credits - COMcheck

- COMcheck Web calculates energy credits for 90.1-2022 compliance
  - CREDITS section has tabs for different credit types
  - Check desired credits, then CALCULATE ENERGY CREDITS, SAVE, then go to next tab
  - Run ENVELOPE CALCULATION to get E01: Improved Envelope Performance energy credits (MISC tab)



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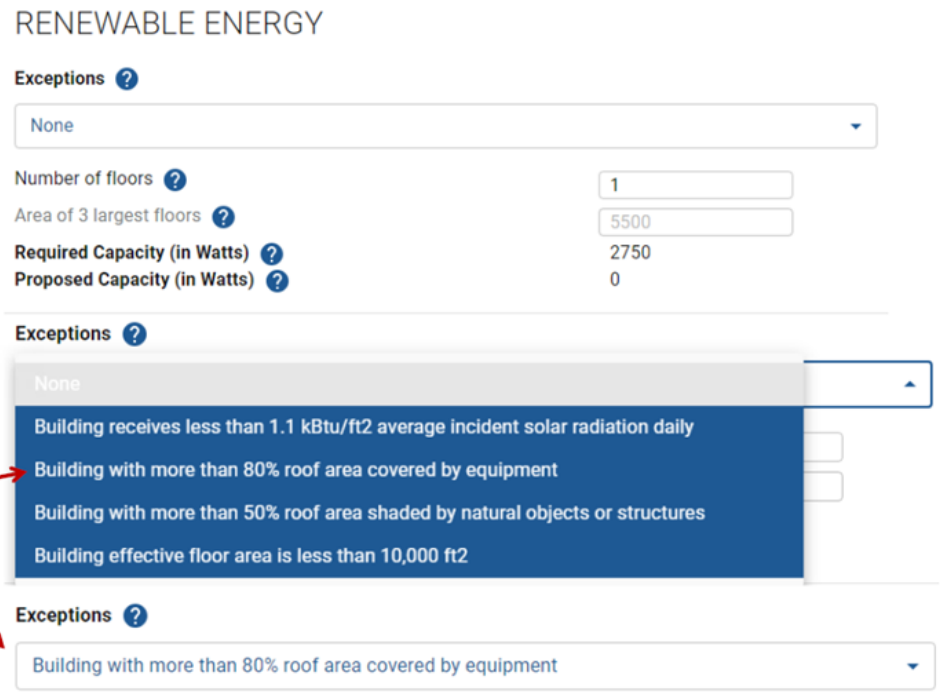
Determining Energy Credits - COMcheck

- COMcheck was updated for 90.1-2022
- COMcheck was NOT specifically updated for Oregon
- OEESC did not adopt:
  - ASHRAE's new 10.5 Renewable Energy Resources - renewables not mandatory in Oregon

To Align with Oregon's "Adjusted AEC's"

Designer should select the "*80% Roof Area*" exception



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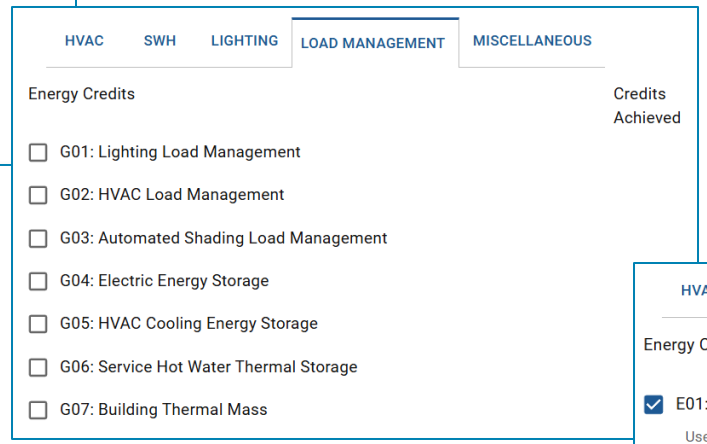
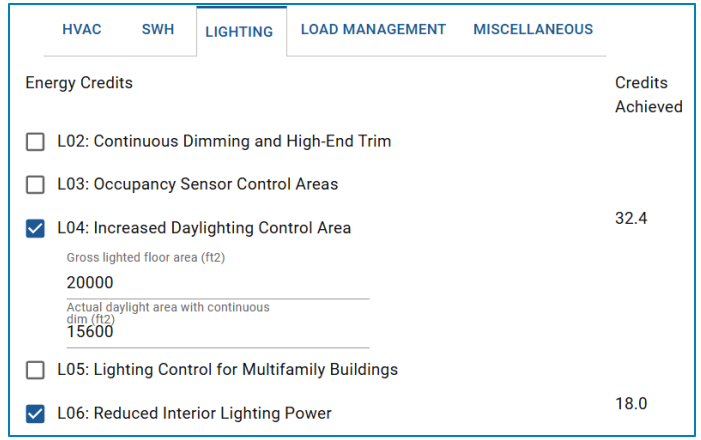
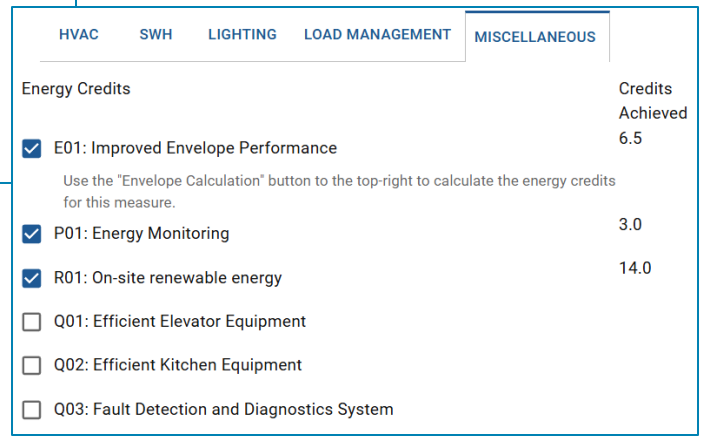
Determining Energy Credits - COMcheck

- COMcheck Energy Credit tabs







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Energy Credits on Construction Documents

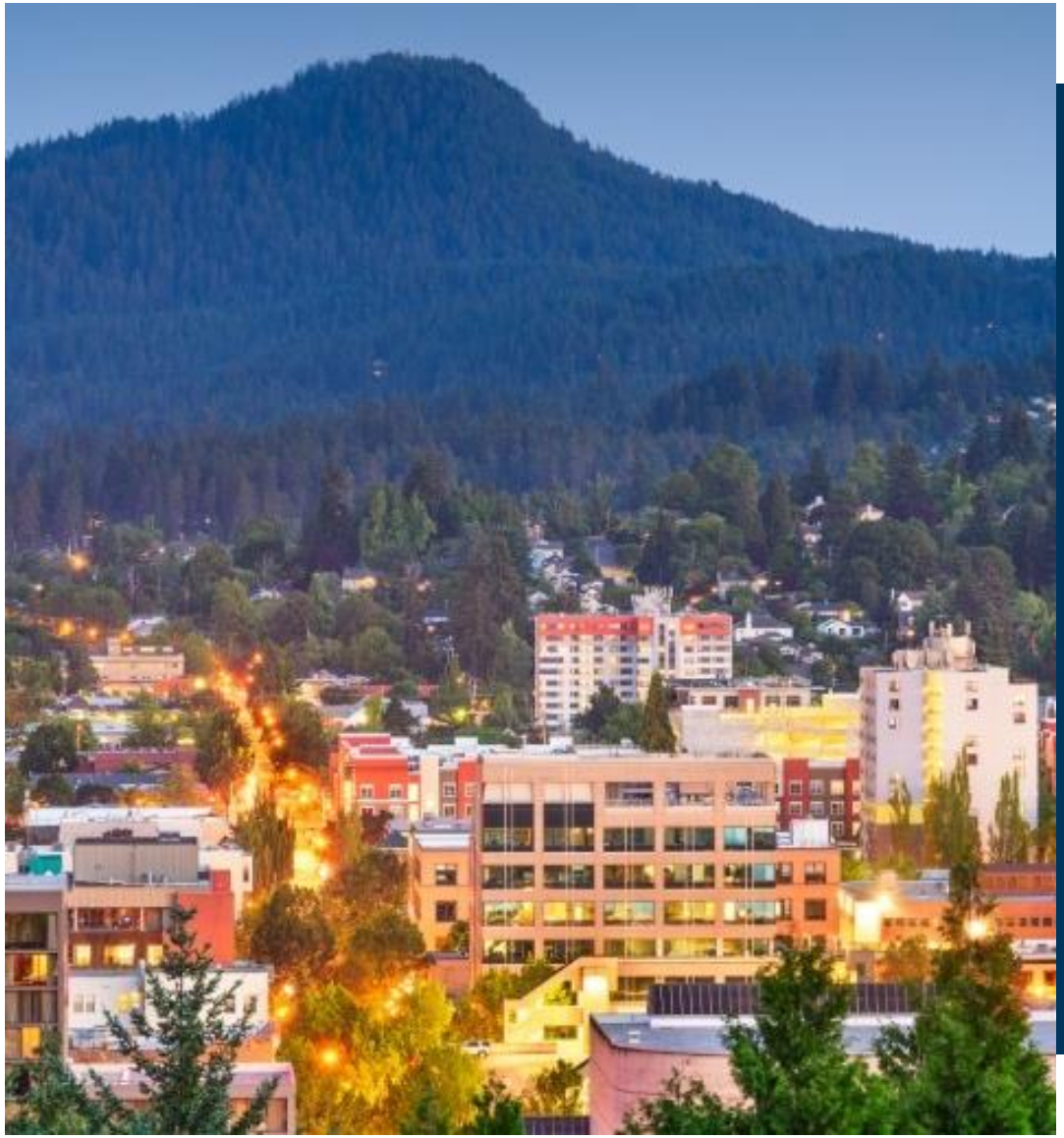
- OEESC E104.2 Energy efficiency information on the construction documents

Plans shall indicate the total additional *efficiency* credits required by Section 11 of Standard 90.1. Core and shell buildings shall indicate the base number of credits and reduced number of credits when complying with Section 11.5.1(b) of Standard 90.1. Plans shall also indicate any exceptions specific to Section 301 that are used to comply with this code.

Exception: The *building official* is authorized to waive the requirements for *construction documents*, COM*check* reports, or other supporting data if the *building official* determines these are not necessary to confirm compliance with this code.

E104.2.1 Oregon Energy Compliance Form. *Construction documents* for new buildings shall include the Oregon Energy Compliance Form, including a ZERO Code 2.0 Calculator report (See ZERO-Code.org/energy-calculator/).

- Include required # of energy/efficiency credits in construction documents
- Document building envelope and energy systems, COMcheck compliance report, and energy credit tally
- Building official may waive construction document and COMcheck requirements
- Oregon Energy Compliance Form & ZERO Code 2.0 Calculator report still required for ***new*** buildings



OEESC/ASHRAE 90.1 Measure Updates

2025 OEESC/90.1-2022 Measure Updates

	Section	Topic
Envelope	5.4.3 .1	Air Leakage
	5.9.1.2	Continuous Air Barrier
	5.4.3.4 / E301.2 (b)	Vestibules
	5.5.5	Thermal Bridging
	Informative Appendix K	Thermal Bridging
	5.1.4.1, 5.5.3.1	Roof Replacement Insulation

	Section	Topic
HVAC	6.4.3.3	Off Hours Controls
	6.4.3.3.5, 9.4.1.3	Hotel Guest Room Controls
	6.4.3.4.1	Stair and Elevator Shaft Dampers
	6.4.3.4.5 / E301.3 (a)	Parking Garage Ventilation Systems
	6.4.3.8	Demand Control Ventilation (DCV)
	6.5.1	Economizers
	6.5.3.7	Small Ventilation Fans
	6.5.6.1 / E301.3 (d)	Energy Recovery
	6.8.1 / E301.3 (b)	Equipment Efficiency Tables
	6.5.8.3 / E301.3 (e)	Radiant Heating
	6.1.10 / E301.3 (f)	Door Switches
	6.5.4.8	Large Capacity Boilers for Space Heating

	Section	Topic
SWH	7.5.3	Large Service Water-Heating Systems
	7.4.3	Service Water Heating Pipe Insulation
Lighting	9.4.1.1	Interior Lighting Controls
	9.4.4	Horticultural Lighting
	9.5.1, 9.6.1	Lighting Power Density
	9.1.1.3 / B7 E301.5	Lighting Alterations, Efficacy

ENVELOPE - Air Leakage & Continuous Air Barrier

- 90.1-2019 air leakage, 5.4.3
  - 0.40 cfm/SF @ 0.30" H2O, corrective action @ 0.60 cfm/SF

  or
  - install continuous air barrier with independent inspection as in 5.9.1

Mandatory Requirements

- 90.1-2022 air leakage, 5.4.3
  - 0.35 cfm/SF @ 0.30" H2O, corrective action @ 0.45 cfm/SF

  or
  - if building is > 10,000 SF, can either test air leakage

  or

  install continuous air barrier
  + write inspection plan
  + 3rd party inspection as in 5.9.1

ENVELOPE - Vestibules

- 90.1-2022 5.4.3.4 requires vestibules and revolving doors
  - 5.4.3.4.3 requires vestibule envelope to have a continuous air barrier

Mandatory Requirements

- 2025 OEESC E301.2 (b) adds an exception:

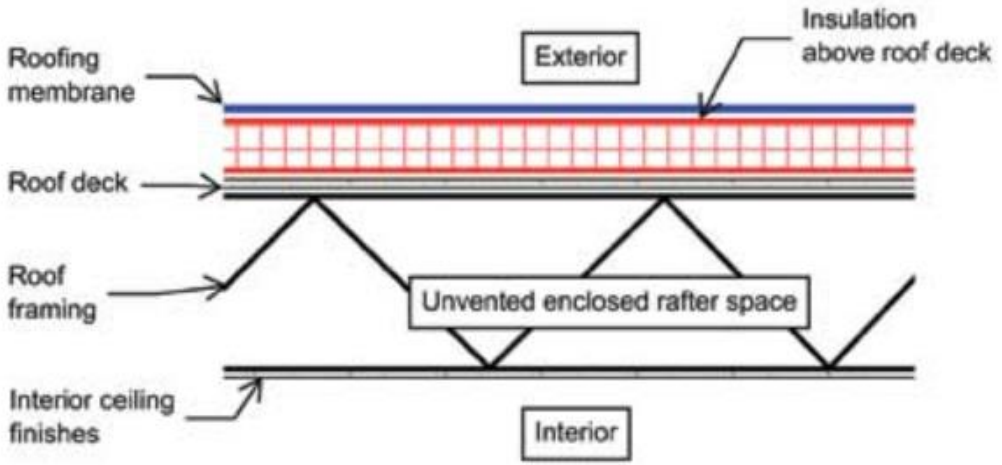
> **b. Exceptions to 5.4.3.4**
>
> 11. Buildings less than 25,000 ft^2 in gross *conditioned floor area* with an *air leakage* rate not exceeding 0.30 cfm/ft^2 and meeting the testing requirements of Section 5.4.3.1.4.

  - 5.4.3.1.4 Measured Air Leakage

ENVELOPE - Roof Replacements

Prescriptive Requirements

- Roofs with insulation above deck
  - New sections 5.1.4.1 and 5.4.3.1
- Upon replacement, insulation must meet new construction requirements
  - Maximum U-0.032 / minimum R-30 c.i. in CZs 4 and 5
  - If not achievable, a roof inspection must document existing roof conditions
- Does not have to meet air leakage / continuous air barrier requirements
- Replacement roof shall not increase energy use of building
  - Watch out for solar reflectance & thermal emittance changes



ENVELOPE - Thermal Bridges

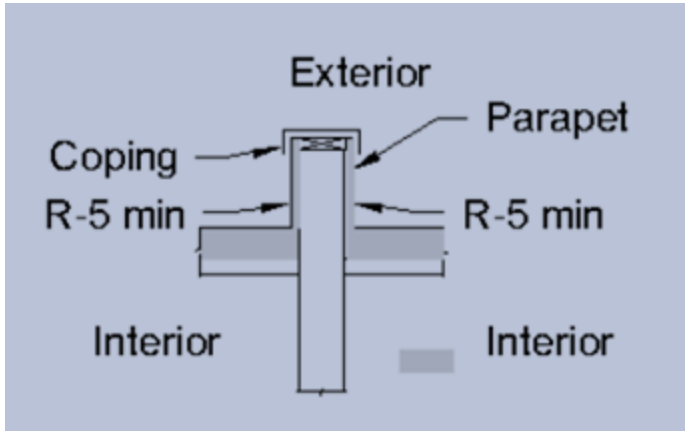
Prescriptive Requirements

- New Section 5.5.5 in 90.1-2022

- Linear thermal bridges
  - Framing pieces where building components are joined
  - Add specified insulation layers

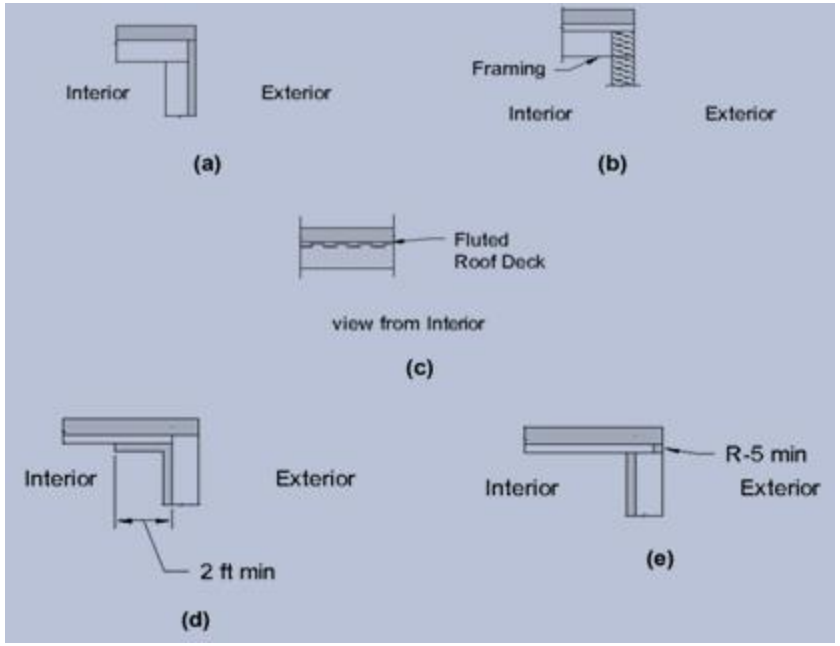
- Point thermal bridges
  - Brackets, nails, screws that hold components together
  - Does not include penetrations for service equipment (HVAC, water)
  - Stay below maximum specified amount of use
  - May require some supervision during construction

- New Informative Appendix K
  - Illustrates framing configurations and where to insulate them
  - Joints between walls, roofs, floors
  - Around parapets
  - Around fenestration

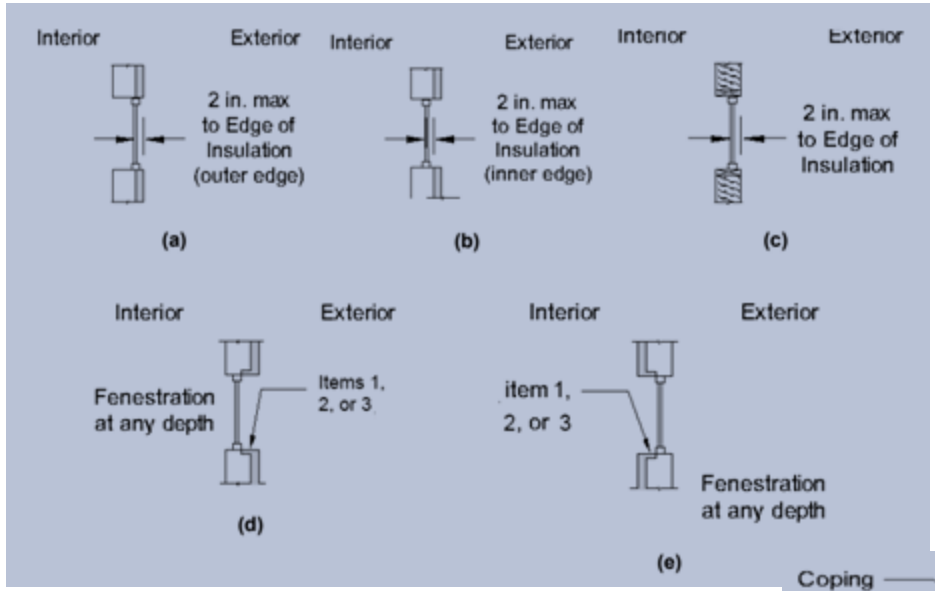


Parapet in field of roof

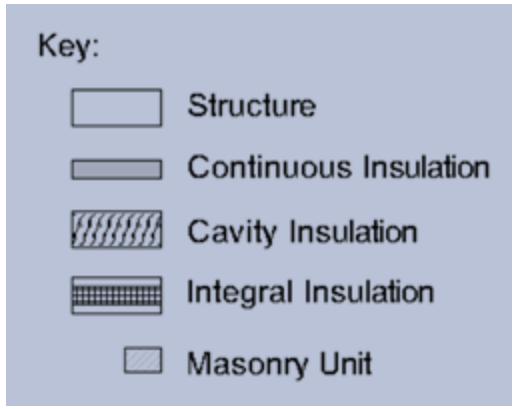
ENVELOPE - Thermal Bridges

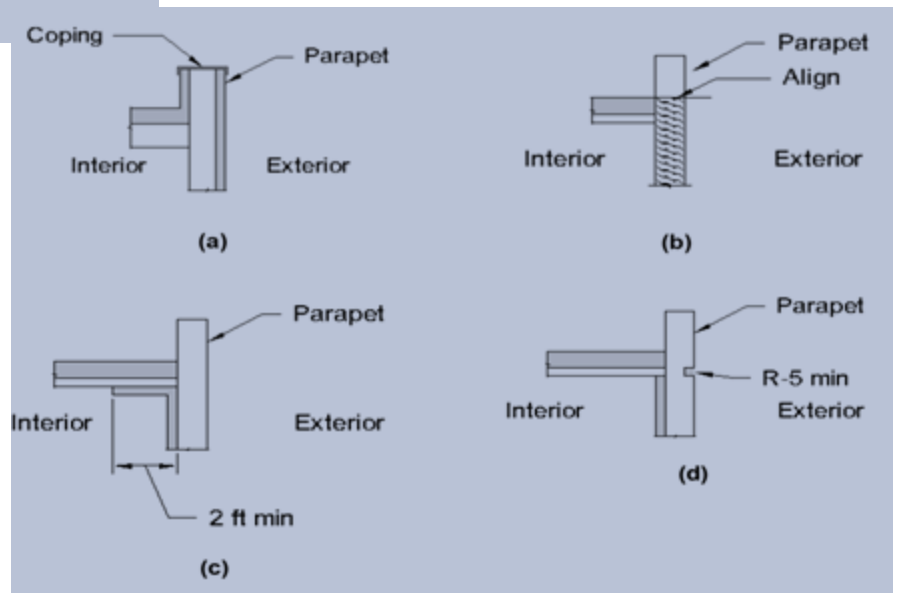


Insulation around wall and roof connections



Insulation around fenestration framing





Insulation around wall and parapet connections

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HVAC - Off Hour Controls

Mandatory Requirements

- Section 6.4.3.3
- Heating and cooling systems must have a bunch of off-hour controls
  - Automatic shutdown, setbacks, optimum start controls, etc.
- Exception for small systems that run continuously
  - < 15,000 Btu/hr in 90.1-2019
  - Lowered to < 7,000 Btu/hr in 90.1-2022

- Subsection 6.4.3.3.5
- Hotel/Motel Guest Rooms
  - Temperature setpoint controls for rented & occupied, unrented & unoccupied, and occupied rooms
  - Ventilation controls
- Key cards to indicate occupancy and run HVAC were allowed in 90.1-2019
  - No longer allowed in 90.1-2022
  - Also not allowed to control ventilation or lighting, see 9.4.1.3

HVAC - Stair & Elevator Dampers

Mandatory Requirements

- 90.1-2019 Section 6.4.3.4.1
  - Motorized dampers required
  - Automatically close during normal operation
  - Interlocked to open on signal from fire and smoke detection systems or thermostatic control systems

- 90.1-2022 Section 6.4.3.4.1
  - New exception allows use of nonmotorized gravity backdraft dampers on buildings less than three stories

HVAC - Parking Garage Ventilation

Mandatory Requirements

- 90.1-2019 Section 6.4.3.4.5
  - "Enclosed Parking Garage Ventilation"
  - Ventilation system automatically detected contaminants, could stage or modulate fans to 50% capacity or lower
  - Exceptions for garages with no heating or cooling and <30,000 SF or >1,500 SF/HP

- 90.1-2022 Section 6.4.3.4.5
  - "Parking Garage Ventilation Systems"
  - Each parking garage section must have its own ventilation system and controls
    - New definition - parking garage section:
      a part of a parking garage where airflow is restricted from other parts of the garage by solid walls
  - Ventilation system automatically detects contaminants, can stage or modulate fans to 20% capacity or lower *in accordance with Section 404 of Mechanical Code*
  - Fan power ≤30% of design watt draw at 50% design airflow
  - Exceptions for garages with design fan ≤ 5 hp ~~*and no garage heating or cooling*~~
    2025 OEESC E301.3 (a)

HVAC - Demand Control Ventilation

Mandatory Requirements

- 90.1-2019 Section 6.4.3.8
- DCV was mandatory if:
  - ≥ 25 people /1000 SF
  - > 500 SF
  - > 3000 cfm design OA flow
  - Economizer use with modulating OA damper
- Various exceptions included:
  - Space types that need ventilation
  - >75% makeup air or transfer air
  - Multi-zones without DDC
  - Outdoor airflow < 750 cfm
  - Exhaust air energy recovery

- 90.1-2022 Section 6.4.3.8
  - DCV mandatory if:
    - > 3000 cfm design OA flow, economizer use with modulating OA damper
    - Also based on occupant outdoor airflow, climate zone, exhaust air energy recovery, space area

Table 6.4.3.8 Demand Control Ventilation (DCV) Floor Area Thresholds

Climate Zone	Occupant Outdoor Airflow Component (cfm/1000 ft²) [a]					
	100 to 199	200 to 399	≥400	100 to 199	200 to 399	≥400
	Minimum Space Floor Area in ft² where DCV Is Required					
	Areas without Exhaust Air Energy Recovery			Areas with Exhaust Air Energy Recovery [b]		
0A, 0B, 1B, 3A, 4A, 5B, 5C	800	400	250	2000	1000	500
2A, 2B, 4C	1100	600	300	2300	1100	600

- No exception for exhaust air energy recovery anymore
- New exception if other codes disallow DCV, such as Std 170: Ventilation for Health Care Facilities

HVAC - Economizers / Low Power Fans

Prescriptive Requirements

- Economizers
- 90.1-2019 Section 6.5.1
  - Air or fluid economizer mandatory for systems with cooling capacity ≥ 54,000 Btu/hr
- 90.1-2022 Section 6.5.1
  - If fan-coil unit is outside the building, economizer mandatory for systems with cooling capacity ≥ 33,000 Btu/hr
  - All other fan-coil locations, mandatory if cooling capacity ≥ 54,000 Btu/hr

- Low Power Fans
- 90.1-2022 New Section 6.5.3.7
  - New efficiency requirements for fans less than 180 W or 1/12 HP

Table 6.5.3.7 Minimum Fan Efficacy for Low-Power Fans

System Type	Minimum Fan Efficacy [a, b], cfm/W
HRV [c], ERV [d], or other system with exhaust air *energy* recovery	1.2
Transfer fans; in-line [e] supply or exhaust fan	3.8
Other exhaust fan, <90 cfm	2.8
Other exhaust fan, ≥90 cfm and ≤200 cfm	3.5
Other exhaust fan, >200 cfm	4.0

HVAC - Energy Recovery

- 90.1-2022 Section 6.5.6.1 plus 2025 OEESC E301.3 (d) - outdoor air energy recovery
  - Individual nontransient dwelling units ≥ 500 SF in CZ 4C and 5B plus continuous ventilation rate > 60 cfm
    - 60% sensible energy recovery during heating or heating with humidification – ADDED in 90.1-2022
    - No energy recovery required during cooling
  - Other space types in CZ 4C and 5B:
    - Also for ventilation serving multiple nontransient dwelling units
    - No energy recovery required in 4C & 5B if operating hours < 8,000/year (Table 6.5.1.6.1.2-1)
    - 50% of sensible or enthalpy recovery from heating if operating hours ≥ 8,000/year and airflow rates are at least at levels in Table 6.5.1.6.2.1-2 below:

Prescriptive Requirements

Table 6.5.6.1.2-2 Exhaust Air Energy Recovery Requirements for Ventilation Systems Operating Greater than or Equal to 8000 Hours per Year

	% Outdoor Air at Full Design Airflow Rate							
	≥10% and <20%	≥20% and <30%	≥30% and <40%	≥40% and <50%	≥50% and <60%	≥60% and <70%	≥70% and < 80%	≥80%
Climate Zone	Design Supply Fan Airflow Rate, cfm							
3C	NR	NR	NR	NR	NR	NR	NR	NR
0B, 1B, 2B, 3B, 4C, 5C	NR	≥19,500	≥9000	≥5000	≥4000	≥3000	≥1500	≥120
0A, 1A, 2A, 3A, 4B, 5B	≥2500	≥2000	≥1000	≥500	≥140	≥120	≥100	≥80
4A, 5A, 6A, 6B, 7, 8	≥200	≥130	≥100	≥80	≥70	≥60	≥50	≥40

HVAC – Equipment Efficiency Tables

- Tables 6.8.1-1 through 6.8.1-21
  - Minimum efficiencies and test procedures for HVAC equipment
  - Tables include both Mandatory Requirements and Prescriptive Requirements
- Changes for 90.1-2022
  - Tables 6.8.1-1 and -2 added SEER2, HSPF2 values and test procedures
  - Table 6.8.1-3 now called Liquid-Chilling Packages (was Water-Chilling)
  - Tables 6.8.1-8 and -9 for VRF AC & HP has updated test procedures
  - Table 6.8.1-16 for heat pump and heat recovery chillers added new size categories, plus efficiencies for simultaneous heating and cooling
  - New Table 6.8.1-21 for large ceiling fan efficiency (≥ 84.5 inch blade span)
- 2025 OEESC E301.3 (b) Packaged HVAC Equipment with Electric Heat
  - Systems below 241,000 Btu/hr (20 tons) cooling capacity from Table 6.8.1-1 (Unitary AC) must keep electric supplemental heat to max of 21,500 Btu/hr
  - Systems above 241,000 Btu/hr (20 tons) cooling capacity should select equipment meeting Table 6.8.1-2 (Unitary HP) and must have heat pump for first stage heating source

HVAC – Radiant Heating / Door Switches

Prescriptive Requirements

- Radiant Heating
- 90.1-2022 6.5.8.3 added via 2025 OEESC E301.3 (e)
  - Overhead radiant heating systems shall be allowed in unconditioned spaces for spot heating of occupied areas.
  - Spot heating shall be limited to 500 SF or 10 percent of the space floor area, whichever is greater.
  - Control shall be automatic complying with either 6.4.3.3.1(b) or 6.4.3.3.1(c).

- Door Switches
  - Disable or reset heating or cooling based on door opening
- 90.1-2022 6.5.10 exceptions added via 2025 OEESC E301.3 (f)
  - Exceptions 1 through 4 unchanged
  - Exception 5. Residential dwelling units in buildings three stories and less
  - Exception 6. Normally locked doors not used as a building entry where approved

HVAC & SWH – Gas Water Heating

- Large Capacity Gas Hot Water Boiler/Water Heater Requirements
  - 6.5.4.8 Buildings with High-Capacity Space-Heating Gas Boiler Systems
  - 7.5.3 Large Service Water-Heating Systems
- If at least 1 million Btu/hr capacity from 1 or more boilers/WHs
  - Minimum 90% efficiency for space heating, capacity-weighted
  - Minimum 92% efficiency for single WH, 90% for capacity-weighted
    - was 90% across the board in 90.1-2019
- These efficiencies preclude values listed in equipment tables
  - Table 6.8.1-6 for Gas- and Oil-Fired Boilers
  - Table 7.4-1 for Water-Heating Equipment
  - Efficiencies of around 80%
  - But test procedures still apply
  - Not new to 90.1-2022, but worth noting!

Prescriptive Requirements

SWH – Piping Insulation

Mandatory Requirements

- In 90.1-2019 SWH piping insulation requirements were the same as for heating hot water piping, Section 7.4.3, Table 6.8.3-1
- In 90.1-2022 SWH piping insulation thickness depends on whether piping is in conditioned space, Section 7.4.3, new Table 7.4-2

Table 7.4-2 Minimum Piping Insulation Thickness for Service Water Heating Systems [a,b]

Service Hot-Water Temperature Range	Insulation Thermal Conductivity		Nominal Pipe or Tube Size, in.				
	Conductivity, Btu·in/h·ft²·°F	Mean Rating Temperature, °F	<1	1 to <1-1/2	1-1/2 to <4	4 to <8	≥8
			Insulation Thickness, in.				
Service Water Heating System Piping not Located in Partitions within *Conditioned Spaces*							
105°F to 140°F	0.22 to 0.28	100	1.0	1.0	1.5	2.0	2.0
>140°F to 200°F	0.25 to 0.29	125	1.5	1.5	2.5	2.5	2.5
>200°F	0.27 to 0.30	150	2.5	2.5	3.0	3.0	3.0
Service Water Heating System Piping Located in Partitions within *Conditioned Spaces*							
105°F to 140°F	0.22 to 0.28	100	1.0	1.0	1.5	1.5	1.5
>140°F to 200°F	0.25 to 0.29	125	1.0	1.0	2.0	2.0	2.0
>200°F	0.27 to 0.30	150	1.5	1.5	2.5	3.0	3.0

a. These thicknesses are based on *energy efficiency* considerations only. Additional insulation may be necessary for safety.
b. For direct-buried *service water heating system piping*, reduction of these thicknesses by 1.5 in. shall be permitted (before thickness adjustment required in Section 7.4.3 but not to thicknesses less than 1 in.).

LIGHTING – Interior Controls & LPD

- 90.1-2022 9.4.1.1 changes from 2019, including:
  - Bilevel controls must now be multilevel controls
    - With continuous dimming to no more than 10%
  - Lower minimum wattage to require daylighting controls
    - From 150 W to 75 W for toplighting and primary zone sidelighting
    - From 300 W to 150 W for secondary zone sidelighting

Mandatory Requirements

- LPD values were adjusted in 90.1-2022
  - Many adjusted lower, some the same, a few are higher
  - 9.5 Building Area Method follows Table 9.5.1 for LPD
  - 9.6 Space by Space Method follows Table 9.6.1 for LPD
  - Table 9.6.1 also lists minimum control requirements per space type

Prescriptive Requirements

LIGHTING – Horticultural Lighting

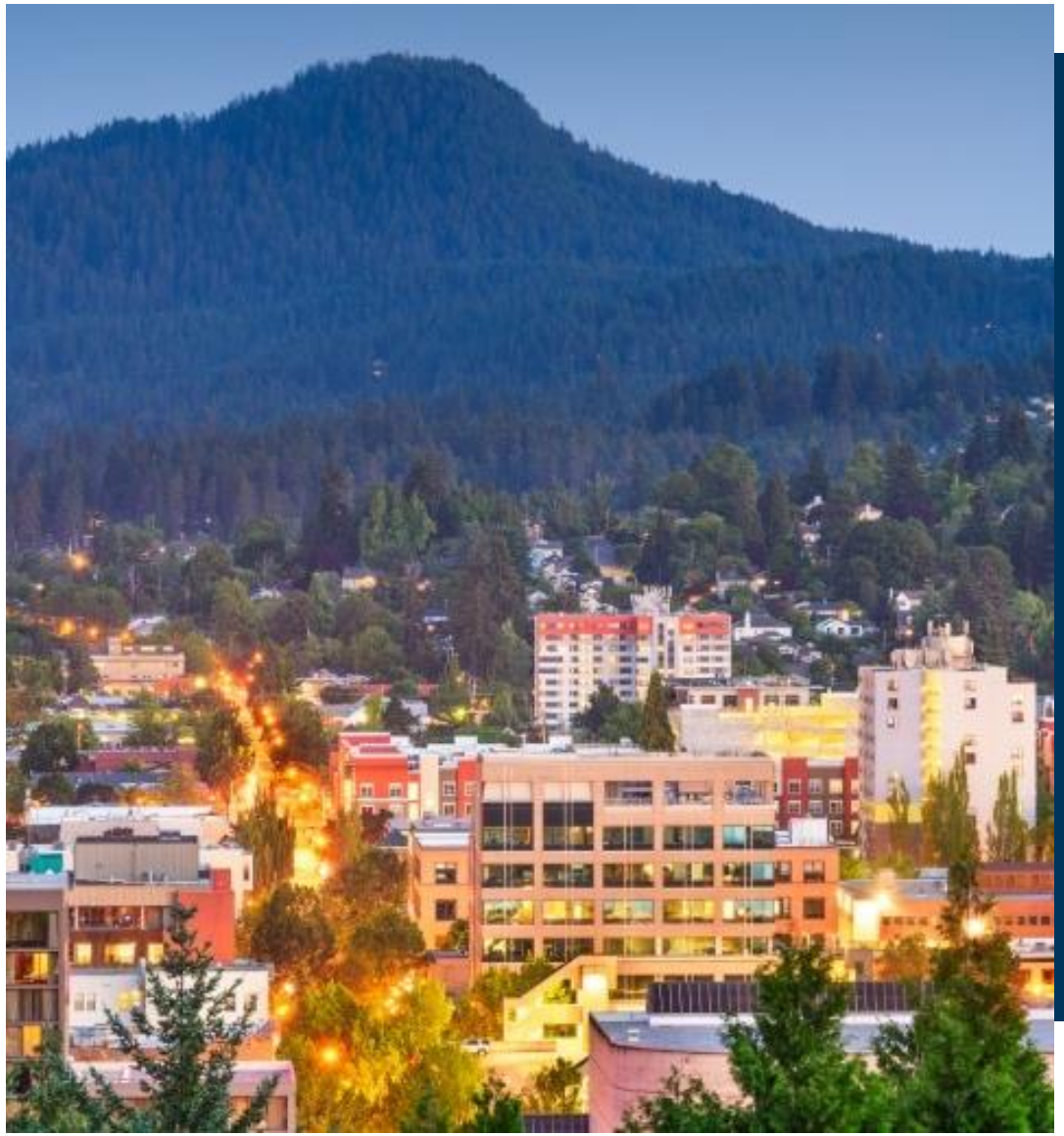
Mandatory Requirements

- New section 9.4.4 in 90.1-2022
  - Lighting requirements for greenhouses & indoor grow spaces
  - Sets photosynthetic photon efficacy (PPE) levels in µmol/J , micromoles per Joule
  - New unit of measure, since lumens only measure visible light

LIGHTING – Alterations & Efficacy

- 2025 OEESC E301.5 (a) Lighting Alterations
  - Replaces 90.1-2022 9.1.1.3 for less rigorous definition of alteration
  - Interior lighting alterations
    - Shall not have more wattage than the original system
    - Must only comply with 90.1-2022 if they create a new space
    - Shall comply with 90.1-2022 control requirements
  - Exterior lighting alterations
    - Shall not have more wattage than the original system
    - Will have no less than the controls of the original system
- 2025 OEESC E301.5 (b) Lamp and Luminaire Efficacy
  - Replaces 90.1-2022 9.4.3.1
    - 100% (not 75%) of lamps must have at least 75 lumens/watt, luminaires 50 lumens/watt
    - Floor area for dwelling spaces not included in Building Area Compliance Method tallies

Mandatory Requirements



RESOURCES

ODOE Commercial Energy Code Resources

OREGON.GOV | HOME | RESOURCES | INCENTIVES | DATA & REPORTS | GET INVOLVED | ABOUT US

To build smart and conserve energy, Oregon has developed energy codes and standards for buildings.

Oregon's building codes are administered by the state Building Codes Division, including the:

- 2025 Oregon Energy Efficiency Specialty Code (OEESC): The 2025 OEESC, based on ASHRAE Standard 90.1-2022, became effective on January 1, 2025. This code becomes mandatory after the six-month phase-in period ends on July 1, 2025. More information can be found on the Oregon Building Codes Division Commercial Energy Code page.
- 2023 Oregon Residential Specialty Code (ORSC): Chapter 11 of the ORSC contains the residential building energy provisions. The 2023 ORSC became effective on October 1, 2023, became mandatory on April 1, 2024 after a 6 month phase-in. More information can be found on the Oregon Building Codes Division Residential Energy Code page.

These codes outline energy efficiency requirements for Oregon buildings. The codes cover insulation, equipment, windows, lighting, and much more.

TRAINING RESOURCES

- Commercial Building Codes
- Residential Building Codes
- Residential- Earth Advantage ORSC
- HVAC Training Slides

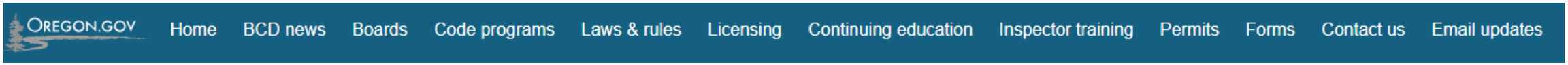
GENERAL RESOURCES

- Oregon Building Codes Division-Energy Code Program
- Oregon Energy Building Code Stakeholder Panel
- Built Environment Efficiency Working Group
- Northwest Energy Efficiency Alliance
- USDOE Energy Code Map
- International Energy Conservation Code
- ASHRAE Standard 90.1

Ask an Energy Code Question Through Our Customer Service Portal

[State of Oregon: Energy in Oregon - Energy Code & the Built Environment]

BCD Commercial Energy Code Resources



Compliance forms and resources

Energy compliance form

To demonstrate compliance with the commercial energy code, construction documents shall include the following where applicable:

- Energy code compliance form instructions
- Energy code compliance form

Supplementary compliance forms

- Measured air leakage reporting (blower door results)
- Simplified building method - Building envelope compliance
- Simplified building method - Lighting compliance
- Simplified building method - HVAC compliance
- Prescriptive solar photovoltaic installation checklist

Compliance resources

Use the following resources to complete the compliance form:

- Commercial compliance using COMcheck
- COMcheck
- ZERO energy calculator

Energy modeling / Cost of energy

Energy modeling guidance from the U.S. Department of Energy

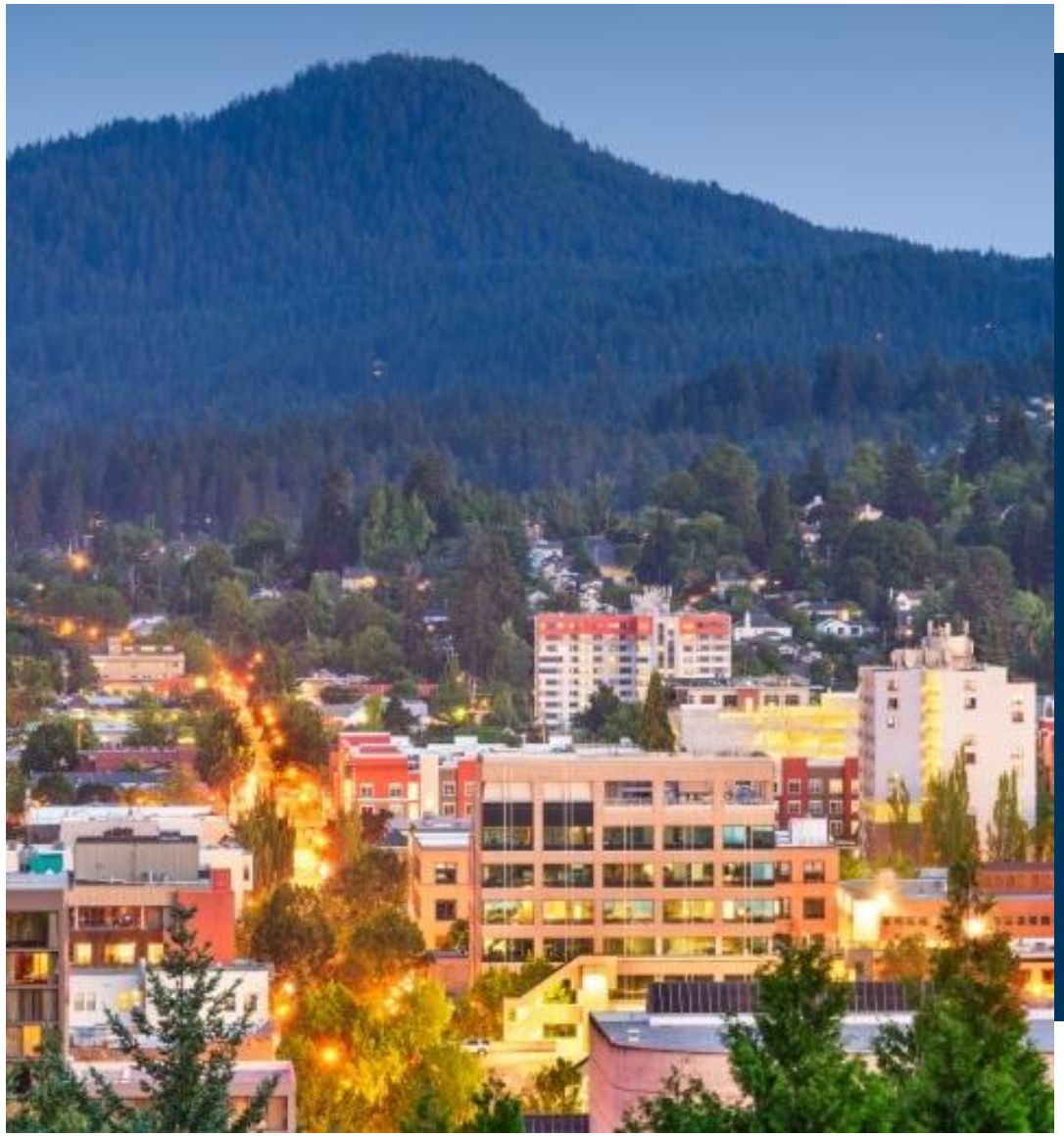
- ASHRAE Standard 90.1 Performance Based Compliance (Section 11 and Appendix G)

Use the following for energy modeling / cost of energy:

- Cost-per-unit of energy: performance methods

Building Codes Division : Commercial energy code compliance, training, and resources : Codes and standards : State of Oregon

OREGON DEPARTMENT OF ENERGY 50 YEARS of SERVICE



Thank you!

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Questions?