

Oregon Department of **ENERGY**

EO 20-04
Implementation:
Energy Code
Stakeholders

Facilitator: Roger Kainu
September 22, 2020
1:30-3:00pm



Agenda

Topic	Lead	Action	Time
Intro and meeting description	ODOE staff	Share attendees and today's meeting description.	5 min
Update from Building Codes Division	BCD staff	Report to Governor on EO 20-04 Process and highlights. 2021 Res Code proposal next steps and list of proposed changes.	10 min
Q/A	BCD/ODOE staff	Questions and answer time.	10 min
Commercial Code	ODOE staff	ODOE analysis and chart.	10 min
Q/A	ODOE staff	Question and answer time.	10 min
Oregon Reach Code	BCD	Continued Reach Code discussion.	10 min
Q/A	BCD/ODOE staff	Question and answer time.	10 min
Cost Effectiveness Report	ODOE	When will review be done and what is included.	10 min
Wrap-up	ODOE	Determine action items and announce next meeting.	5 min

Update from Building Codes Division

- Report to Governor per EO 20-04 Process and highlights
 - Issued September 15
 - Copy to be posted on BCD site
- 2021 Residential Code adoption update
 - Work from Committee forwarded to the Board (Oct. 7)
- NEEA Code Compliance reports (Residential)

2017 to 2021 ORSC Updates

- Highlight of changes from 2017 Chapter 11 to 2021 Chapter 11

Building Component	2017 v. 2021 Oregon Residential Specialty Code (ORSC)			
	Component	2017 ORSC (5/A) ^a	2021 ORSC (1) ^d	Notes
		CZ 4C & 5B	CZ 4C & 5B	
Building Envelope	Wall Insulation - Above Grade	R-21 Intermediate ^c	R-21 Intermediate ^c	Intermediate framing = Studs located 16" O.C. with three-stud comers. Advanced = 24" O.C.
	Wall Insulation - Below Grade	R-15/R-21	R-15/R-21	R-15 cont. insul. on the int. or ext. of the home OR R-19/21 cavity insul. at the interior of basement wall.
	Flat Ceilings	R-49	R-49	Min. 6" depth at top plate at exterior of structure to achieve U-factor.
	Vaulted Ceilings	R-30	R-30	Performance Path for IECC.
	Underfloors	R-30	R-30	IECC allows for reduction to R-19 if insulation is "sufficient to fill framing cavity."
	Slab Edge Perimeter	R-15/2 Feet	R-15/2 Feet	Full depth is req'd in ORSC. 2 Feet is depth of insul. in IECC.
	Heated Slab Interior	R-10	R-10	Insulation to be installed under entire slab.
	Windows	U-0.30	U-0.27	Average of all windows & glazed doors. Windows have air leakage maximums.
	Skylights	U-0.50	U-0.50	U-factor tested in 20 degree plane in accordance with NFRC standards.
	Exterior Doors	U-0.20	U-0.20	Average of all windows & glazed doors. Doors have air leakage maximum in ORSC.

2017 to 2021 ORSC Updates

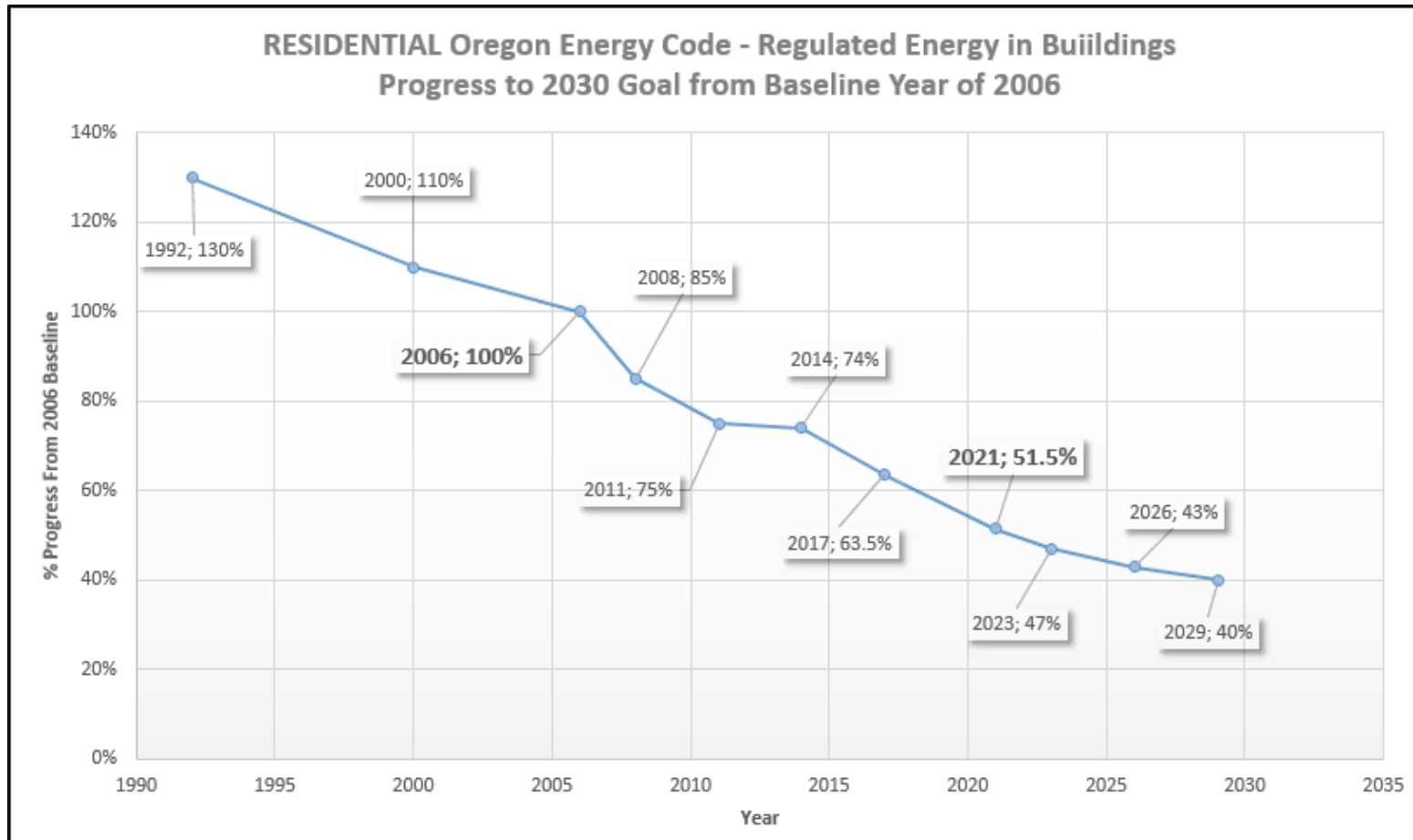
HVAC Systems	Forced Air Duct Location	N/A	Inside Envelope or deeply buried	5-10% energy improvement over 2017 Code (not primary selection under Measure A)
	Air Duct Leakage	Mastic sealed (Measure A)	Mastic sealed	
	Air Sealing	General air sealing language	3.5 ACH average equivalent; required top plate sealing and Table	State average at 4-4.5; top plate sealing 1 ACH50 improvement
	Heating	AFUE 94%	AFUE 94% (Measure 1)	Conservation Measure '1' from Table 1101.(2).
	Split Heat Pump	HSPF 9.5 (Measure 1/5)	HSPF 10 (Measure 1)	Conservation Measure '1' or '5' from Table 1101.(2).
	Split Cooling	15 SEER (Measure 1/5)	14 SEER (Measure 1)	Conservation Measure '1' from Table 1101.(2), if a heat pump unit.
	Furnace Fan Motor	PSC motor	ECM motor	Federal mandatory ECM motor effective in 2020; ZERH based upon current, non-ECM Motor
	Mechanical Ventilation quantity	Whole house, exhaust only ventilation.	Whole house, balanced ventilation; reduction allowance for distributed ventilation	Mechanical code Health & Safety addition to code for balanced Whole House Ventilation (WHV) increases energy use of homes
	Ventilation Fans (Energy Star)	Exhaust fans Energy Star	All supply/intake fans and exhaust fans to newest Energy Star	Intake fans added; Energy Star efficiency upgraded = fans under new code with higher efficiency levels
	Heat Recovery	N/A	HRV with 1.2 CFM/Watt and 66% SRE	HRV efficiency offsets some of the energy consumption impact of WHV
Programmable Thermostat	Optional	Required	Removing alternate 'manual' language	

2017 to 2021 ORSC Updates

Lights & Plumbing	Water Closets	1.28 GPF	1.28 GPF	ORSC requires WaterSense equivalent
	Shower Heads	2.0 GPM	2.0 GPM	ORSC requires WaterSense labeling.
	Other regulated fixtures	N/A	Water Sense Equivalent	Green Plumbing Code water flow equivalent to Water Sense program adopted under Plumbing Code
	HW Pipe Distribution	N/A	Lines into and out-of water heater	Model Code first 8 ft. must be insulated. Clarifying recirculating systems and outside of envelope
	HW Pipe Insulation	R-3	R-3	Mechanical piping above 105° F and H2O piping outside envelope.
	Water Heater (Gas)	EF = 0.62	EF = 0.62	CM '2' Table 1101.(2) in ORSC requires a Uniform Energy Factor UEF = 0.90, or UEF = 0.80 w/ DWHR.
	Water Heater (Electric)	UEF = 1.0	UEF = 1.0	Conservation Measure '2' from Table 1101.(2) in ORSC requires UEF of 2.0 (Tier 1 Spec Sheet)
	Lighting	98% CFL/LED	100% CFL/LED and 2021 efficacy levels	CFL or LED complies in ORSC. Two fixtures inside and two outside are exempt, but only with controls

Getting to the 60% Target

- Meeting the 2030 60% reduction target

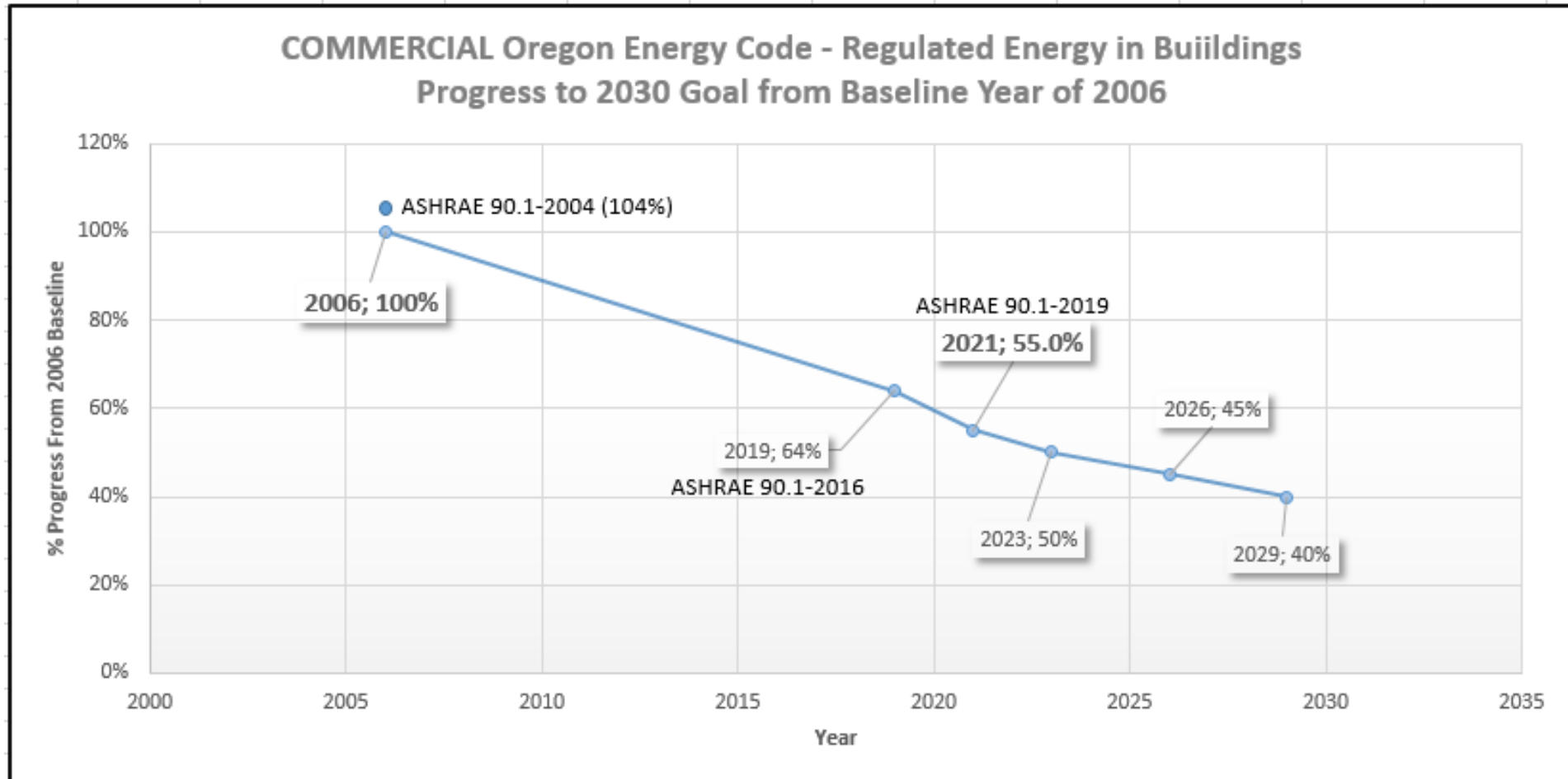


Commercial Code Updates

- Expecting move forward at CIEB for 90.1-2019
 - Start process at October meeting
 - US DOE still expected to release COMcheck and Final Determination in October
- Integration into OSSC for all buildings
 - 2017 OEESC items not found in 90.1
- Guidance on code change proposals
 - Modification to 90.1-2019
 - Time for review is critical
- Energy Cost vs. Site Energy using 90.1 Building Performance Factors

Getting to the 60% Target

- Commercial Code Progress



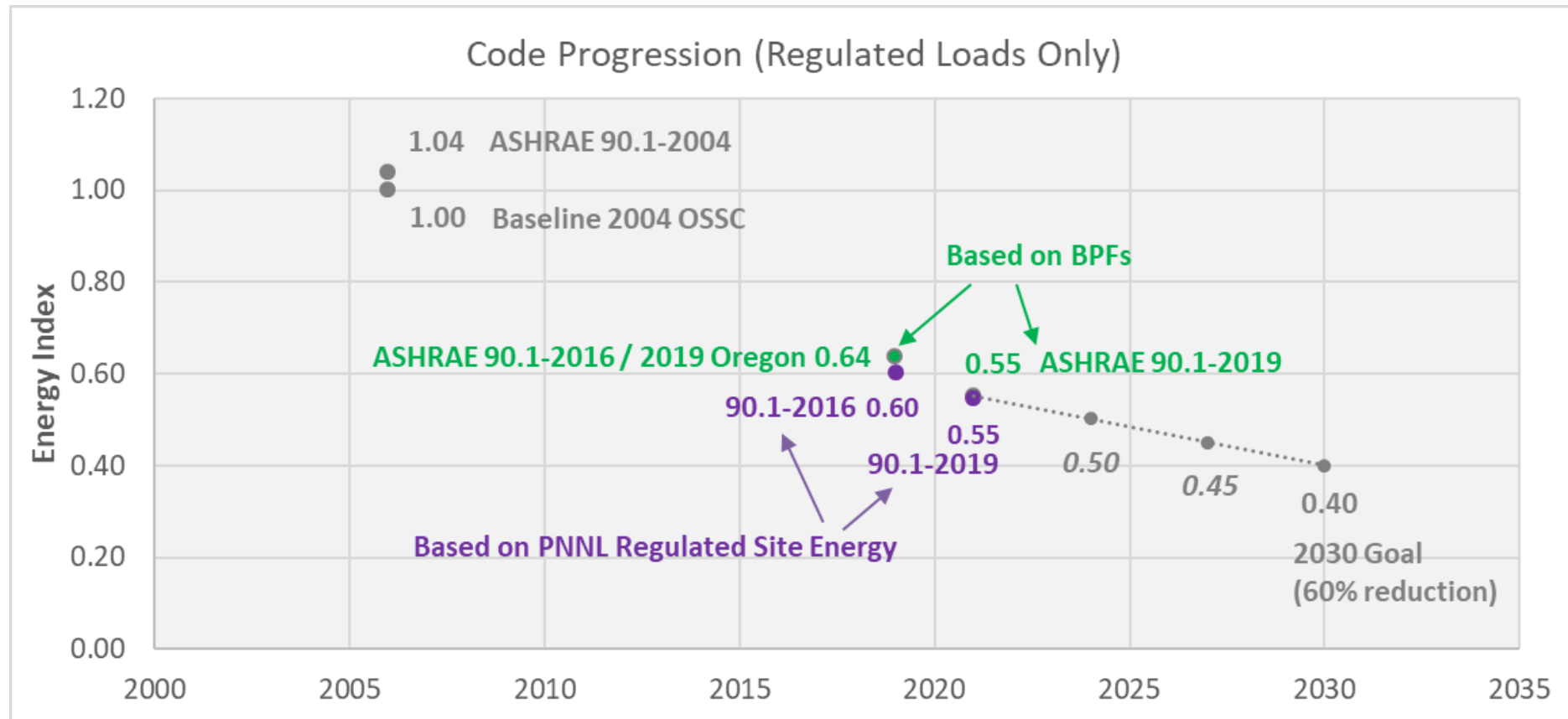
Getting to the 60% Target

- Follow-up from August meeting comments
- Questions on using the Building Performance Factors to determine progress
 - BPFs are for site energy cost
 - BPFs are established as the code is being developed
- Have since worked with NEEA to review PNNL's ASHRAE analysis for Regulated Site Energy (kBtu/ft²/yr)

Regulated Site Energy [kBtu/ft²/yr]	4C	5B
ASHRAE901_2004	42.61	55.82
ASHRAE901_2016	25.51	31.85
ASHRAE901_2019	22.83	29.20
ASHRAE901_2004 vs ASHRAE901_2016	40%	43%
ASHRAE901_2004 vs ASHRAE901_2019	46%	48%

Getting to the 60% Target

- Second review confirms the results



Reach Code

- 2023 Version per EO 20-04 requirement: Adequate time for ideas
- For a 2021 version, Division has begun outreach
 - Division will be holding input meetings
- Don't conflict with incentives (Align/compliment)
- MA stretch code example
 - Residential Reach Code: performance targets
 - 2021 ORSC exceeds 2018 IECC
 - Commercial Reach Code
 - ECB and Appendix G performance targets ("ZEPI")

Meeting Wrap-up



- Recording will be available
- Action items identified and distributed
- Next meeting date – 10/20/2020
- Any questions, please send to:
Roger.Kainu@Oregon.Gov

- Meeting materials:
<https://www.oregon.gov/energy/Get-Involved/Pages/Energy-Code-Stakeholder-Panel.aspx>

- BCD:
<https://www.oregon.gov/bcd/Pages/index.aspx>