

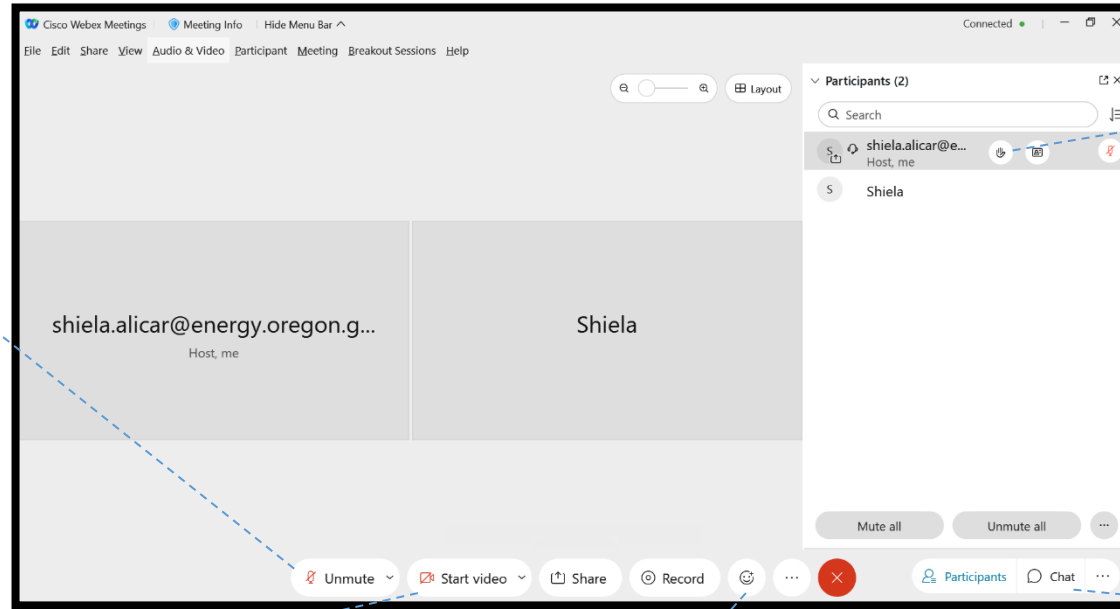
# Oregon Department of **ENERGY**

**EUI Target Development**  
Public meeting #1

SBW Team  
September 11, 2024



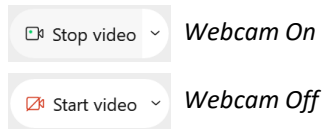
# USING WEBEX



## Audio Options



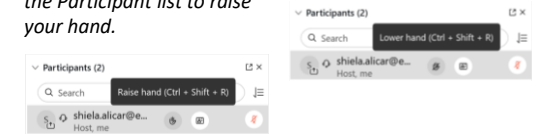
## Video Options



## Second Raise Hand Option

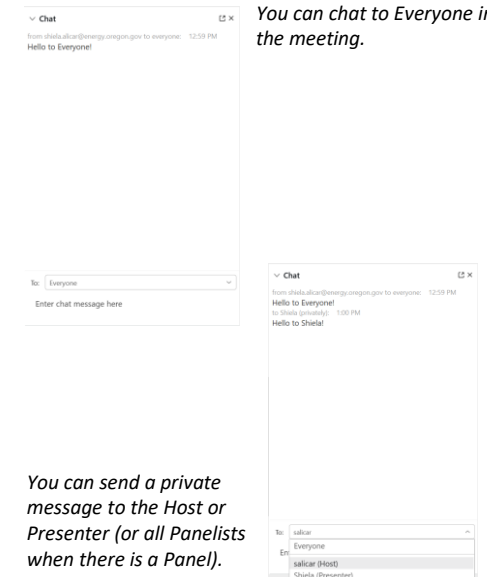
You can also click on the hand next to your name in the Participant list to raise your hand.

Click on Lower hand when you are done.



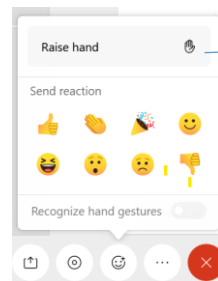
## Chat

You can chat to Everyone in the meeting.

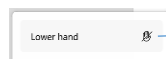


You can send a private message to the Host or Presenter (or all Panelists when there is a Panel).

## Reactions



Click to Raise your hand.



Click on Lower hand when you are done.

# AGENDA

<b>10:00 a.m.</b>	Introductions	Sepideh/Kirstin, Facilitator
<b>10:05 p.m.</b>	Review EUI Target Development Process & Timeline	Anna Kelly, Director of Innovation and Strategy
<b>10:10 p.m.</b>	Background	Anna Kelly, Director of Innovation and Strategy
<b>10:20 p.m.</b>	Average EUIs	Santiago Rodriguez-Anderson, Sr Engineer
<b>11:05 p.m.</b>	Target EUIs	Poppy Storm, Senior Policy Advisor
<b>11:25 p.m.</b>	Wrap Up and Next Steps	Anna Kelly, Director of Innovation and Strategy

# SBW Team

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**Principal in Charge**  
Faith DeBolt, SBW



**Project Manager**  
Anna Kelly, SBW



**Technical**  
Michael Baker, SBW



**Technical**  
Santiago Rodríguez-Anderson, SBW



**Facilitation**  
Sepideh Rezania,  
Unrooz



**Facilitation**  
Kirstin Pulles, Unrooz

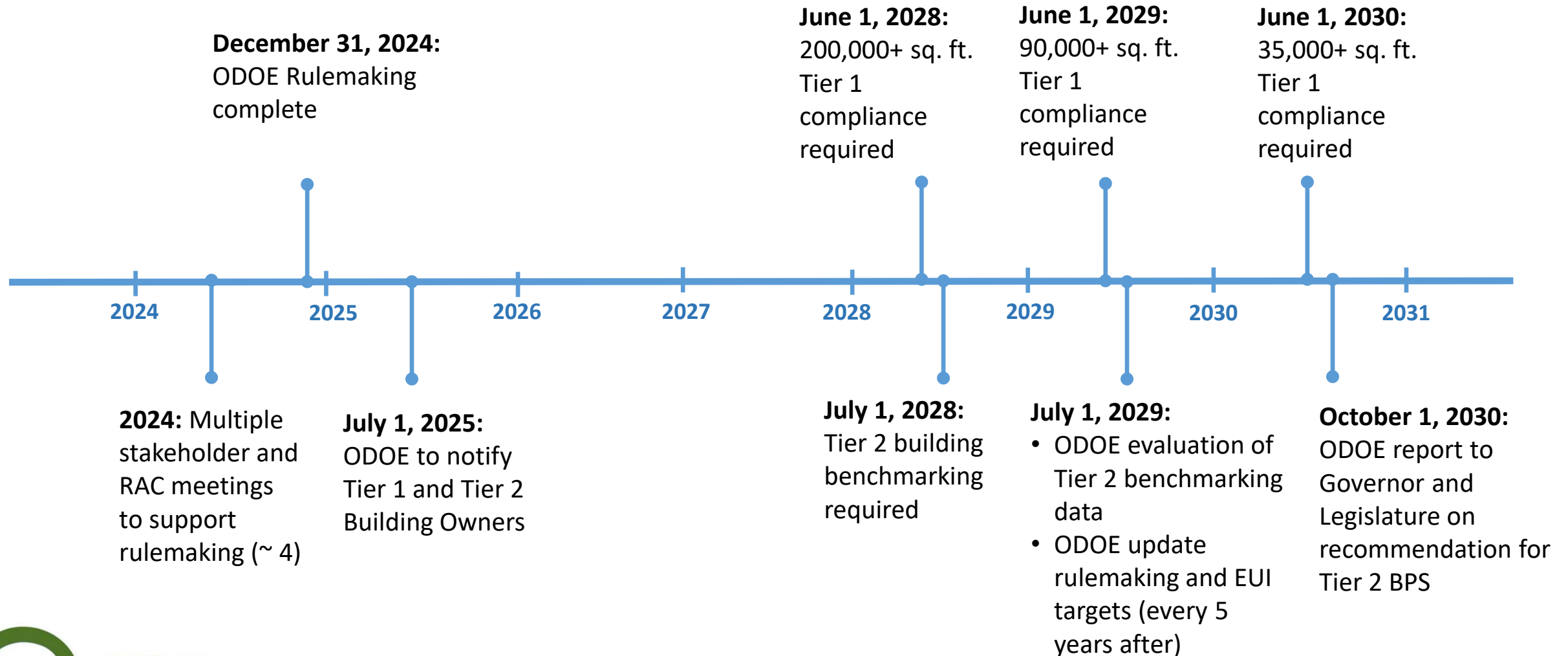


**Policy**  
Poppy Storm,  
2050 Institute

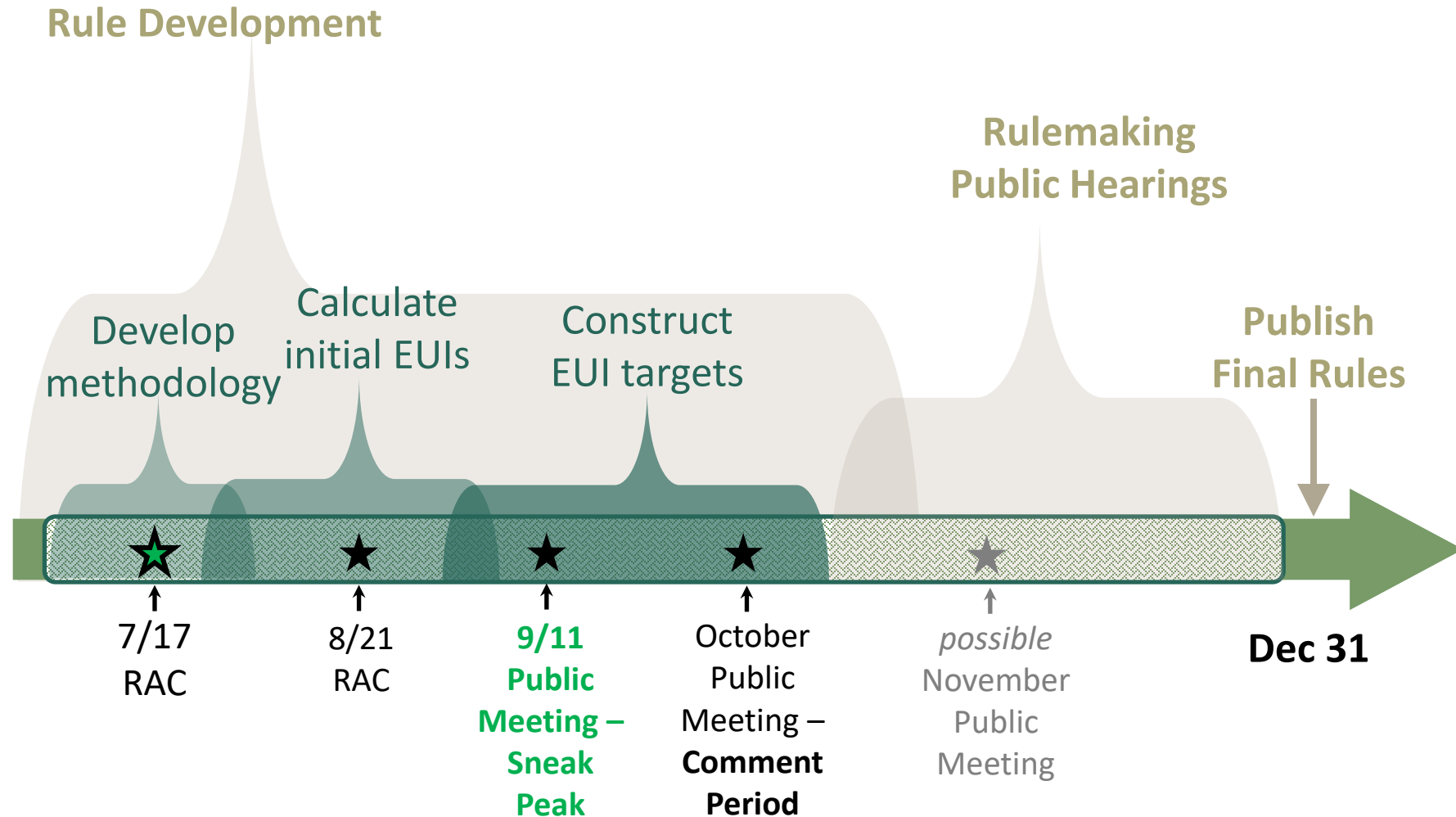


**Additional SBW Technical Staff:**  
Jeremy Stapp, Gina Hicks, Erin Wenger, Nick Sitts

# BPS PROGRAM TIMELINE – KEY DATES



# BPS Target Development Process



# PURPOSE OF THIS MEETING

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PROVIDE A SNEAK PEAK TO THE  
POTENTIAL TARGETS



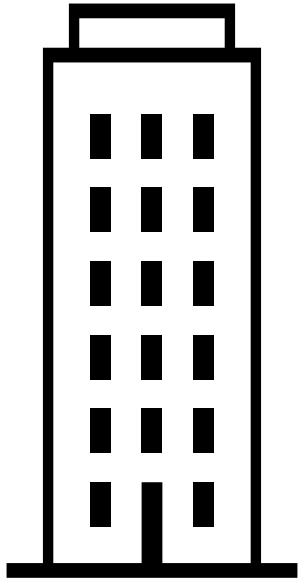
INCREASE AWARENESS OF THE  
TARGET DEVELOPMENT PROCESS

**COMMENT PERIOD OPENS IN  
OCTOBER!**

# Background



# BPS KEY CONSIDERATIONS



Building Performance Standards require certain buildings and owners to meet certain performance targets by a specified date.



## Align and Establish Goals

- Alignment with decarbonization goals
- Performance metrics



## Determine Covered Properties

- Property Types
- Exemptions and Accommodations



## Consider Compliance Approaches

- Compliance Approaches
- Enforcement for Non-compliance



## Provide Support to Building Owners

- Technical Support
- Funding Support

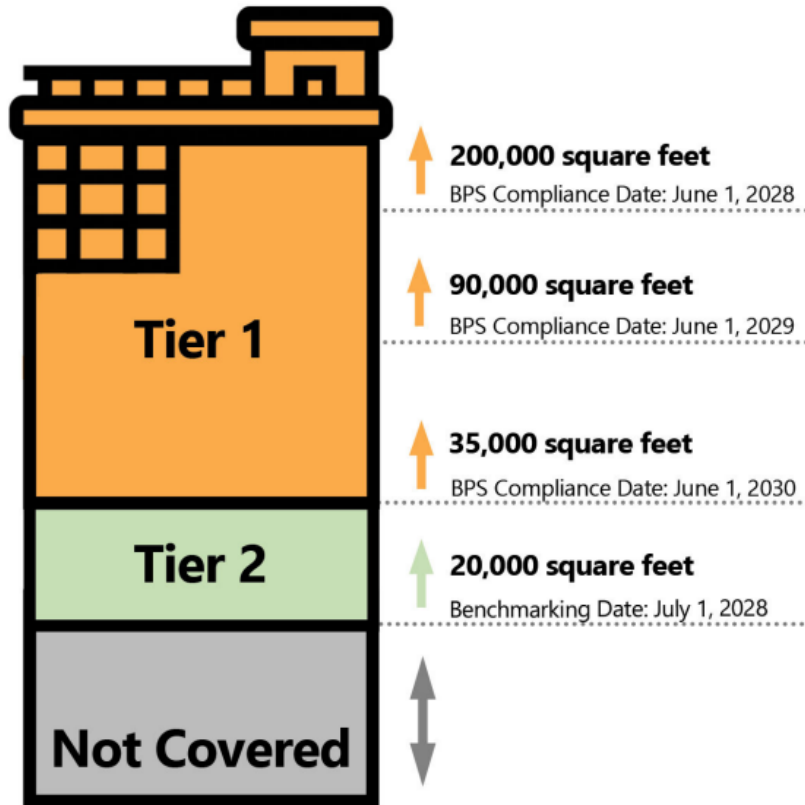


## Establish Reporting Requirements

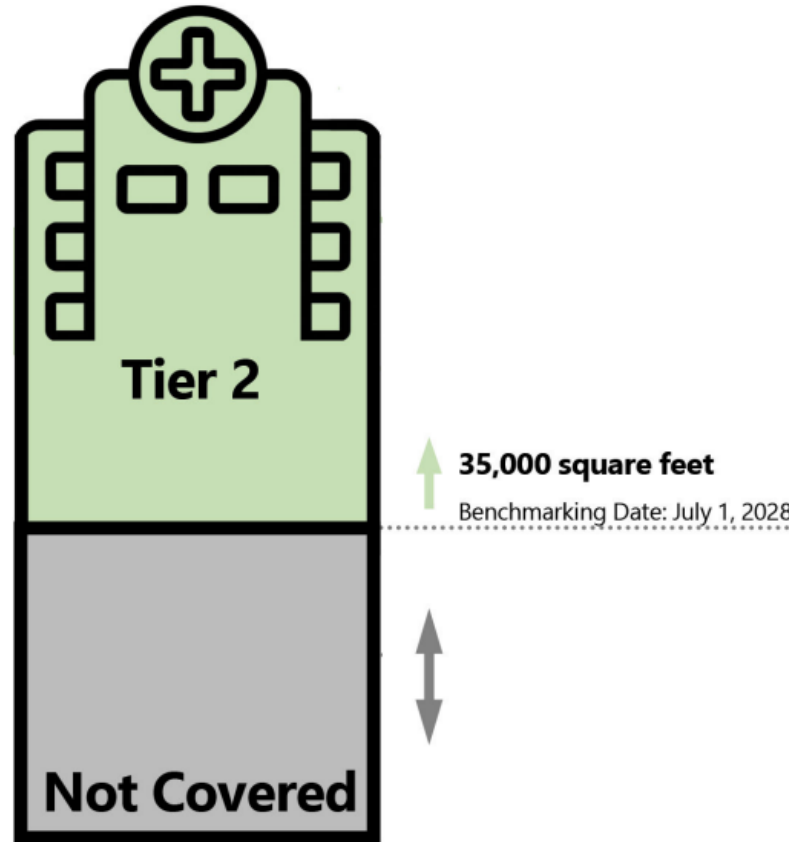
- Reporting Mechanism
- Access to Historical Data

# UNDERSTANDING HB 3409: BPS

## Commercial (Non-Residential), Hotels, and Motels



## Multifamily Residential, Hospitals, Schools, Dormitories, and University Buildings



**Tier 1 = BPS Compliance**

**Tier 2 = Energy  
Benchmarking / Reporting**

# UNDERSTANDING HB 3409: BPS

	Directive	Key Detail
Building Performance	Establish energy performance standards	Standards are for commercial buildings >35,000sqft
Average EUI	Set energy use intensity targets (EUI <sub>t</sub> ) for specific building types	The <b>average</b> EUI serves as the <b>minimum allowable</b> EUI <sub>t</sub> for buildings.
Compliance Pathways	Buildings can comply using multiply pathways	Conditional compliance through energy audits, energy investments and energy management plans

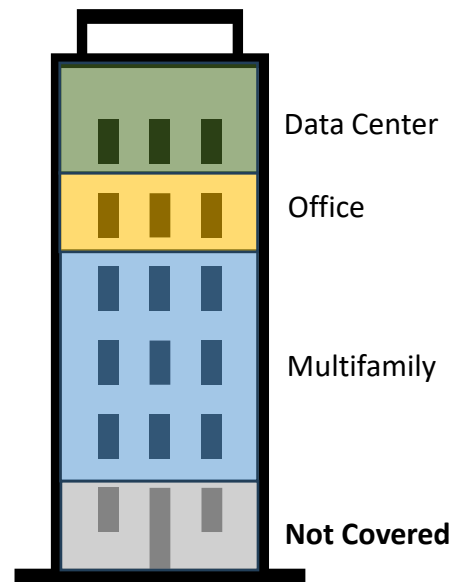
# WHAT DETERMINES AN EUI FOR A BUILDING?

## Drivers of Energy Use

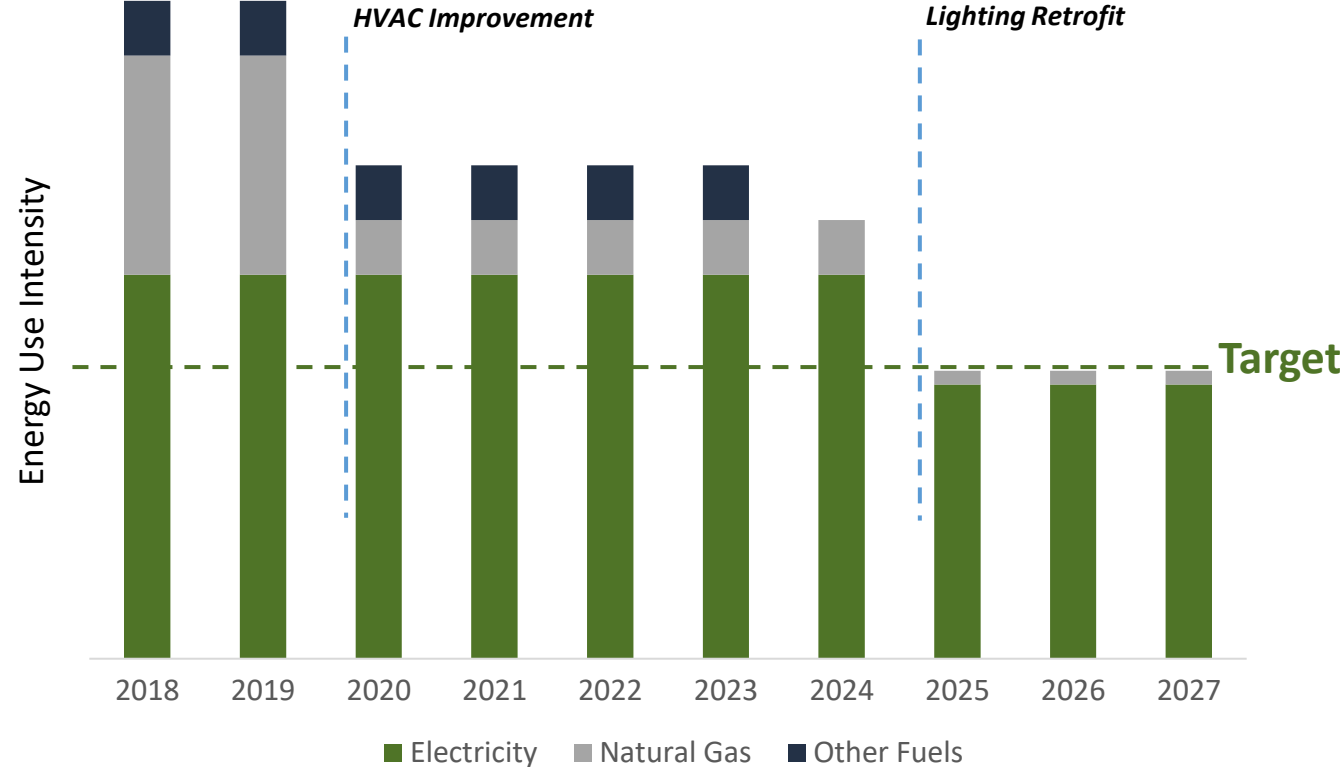
### Energy Consumption



### Building Activity Types



## Energy Use Intensity



# HOW AN EUI TARGET IS DETERMINED

Each covered building type gets their own target

Outpatient  
Health  
Care

Lodging

Office

Malls

...and 37 more building types!

How is energy used at a hospital compared to an office?

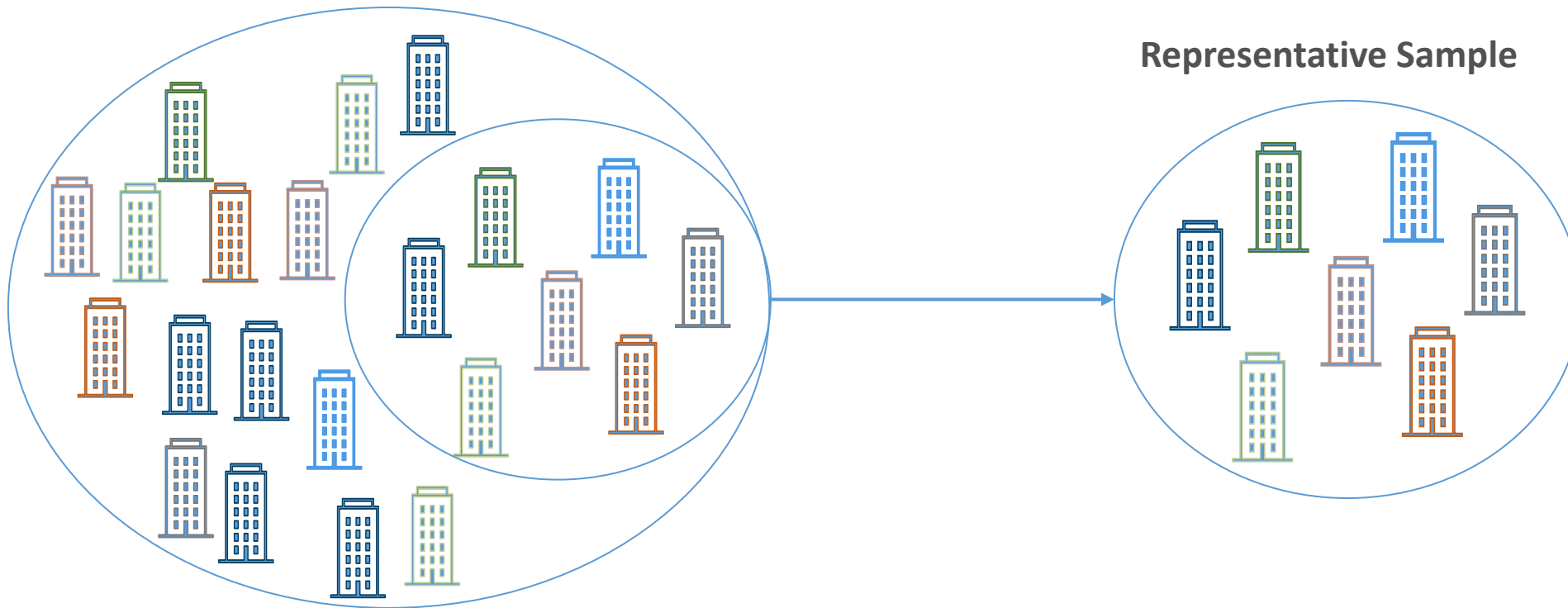
Customizations are made to targets to account for use-case

“Are you reviewing for changes in occupancy post COVID?”

**YES**

# WAYS TO DEVELOP AVERAGE EUIS

*Example: Census of Office Buildings*



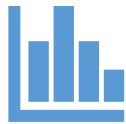
# DATA AVAILABLE FOR AVERAGE EUIS



Northwest  
Regional Data

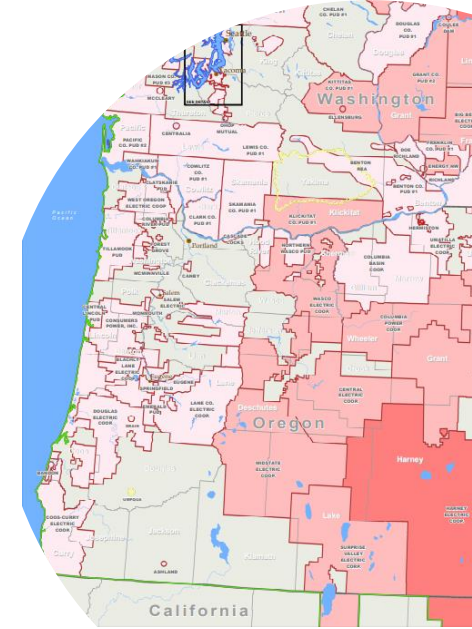
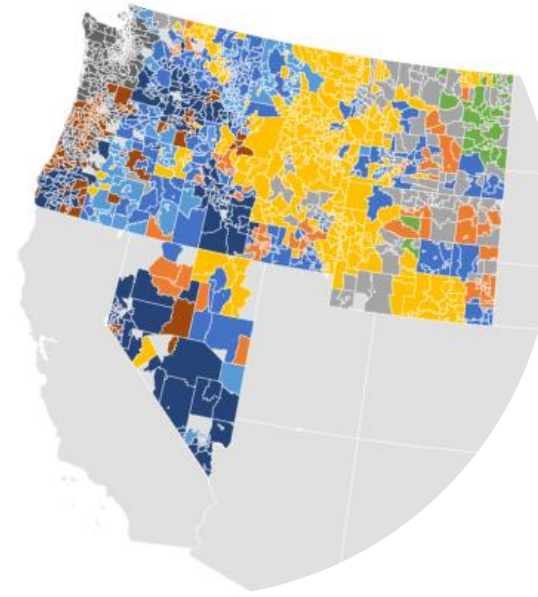


Climate Adjusted  
National Data



Oregon and  
Washington Data

- HZ2\_CZ2
- HZ2\_CZ3
- HZ3\_CZ2
- HZ3\_CZ1
- 72\_CZ1
- CZ3



# KEY CONSIDERATIONS & DISCUSSION

- Questions and/or comments on background information?
- Thoughts on data sources available?



## Average EUIs

- Process Overview
- Building Types
- Developing Northwest Average EUIs
- Draft Northwest Average EUIs

# PROCESS OVERVIEW

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## Step 1: Data Collection

**Objective:** Gather EUI data from various sources.

**Sources Include:** Regional, national, and local EUI data.



## Step 2: 2019 Northwest Average EUIs

**Objective:** Determine the baseline EUI for the Northwest.

**Approach:** Combine regional and national data to establish the 2019 average.



## Step 3: Oregon Average EUIs

**Objective:** Tailor EUI benchmarks for Oregon.

**Approach:** Make Oregon adjustments to specific building types and use trends to adjust to Oregon average EUIs.

# BUILDING TYPES

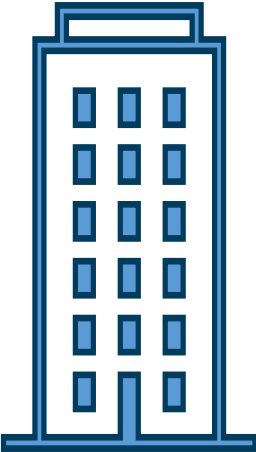
- Targets will be Energy Star Portfolio Manager types
- Using ASHRAE-100 2024 for analysis but will convert for final standard
- Propose dropping types in blue

Building Type	Subtype
Education	College/university
Education	Elementary/middle school
Education	High school
Education	Other classroom education
Education	Preschool/daycare
Food Sales	Grocery/food market
Food Sales	Convenience store
Food Service	Restaurant/cafeteria
Food Service	Fast Food
Health Care (Inpatient)	Hospital/inpatient health
Health Care (Outpatient)	Clinic/other outpatient health
Health Care (Outpatient)	Medical office (diagnostic)
Laboratory	Laboratory
Lodging	Dormitory/fraternity/sorority
Lodging	Hotel
Lodging	Motel or Inn
Lodging	Nursing home/assisted living
Lodging	Other lodging
Mercantile (Enclosed and Strip Malls)	Enclosed mall
Mercantile (Enclosed and Strip Malls)	Strip shopping mall
Mercantile (Retail Other Than Mall)	Other retail
Mercantile (Retail Other Than Mall)	Retail Store
Mercantile (Retail Other Than Mall)	Vehicle dealership/showroom

Building Type	Subtype
Office	Admin/professional office
Office	Bank/other financial
Office	Government office
Office	Medical office (nondiagnostic)
Office	Mixed-use office
Office	Other office
Public Assembly	Entertainment/culture
Public Assembly	Library
Public Assembly	Other public assembly
Public Assembly	Recreation
Public Assembly	Social/meeting
Public Order and Safety	Fire/police station
Public Order and Safety	Other public order and safety
Religious Worship	Religious worship
Service	Other service
Service	Post office/postal center
Service	Repair shop
Service	Vehicle service/repair shop
Service	Vehicle storage/maintenance
Warehouse/Storage	Distribution/shipping center
Warehouse/Storage	Nonrefrigerated warehouse
Warehouse/Storage	Refrigerated warehouse

# CLIMATE ZONE ADJUSTMENTS FOR NATIONAL DATA

## San Antonio EUI



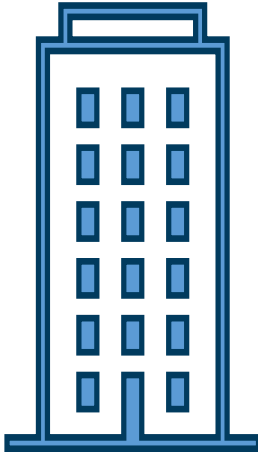
A building in San Antonio, Texas. Different climate, different energy use



ASHRAE Ratio to convert energy use between climate zones



## NW Equivalent EUI

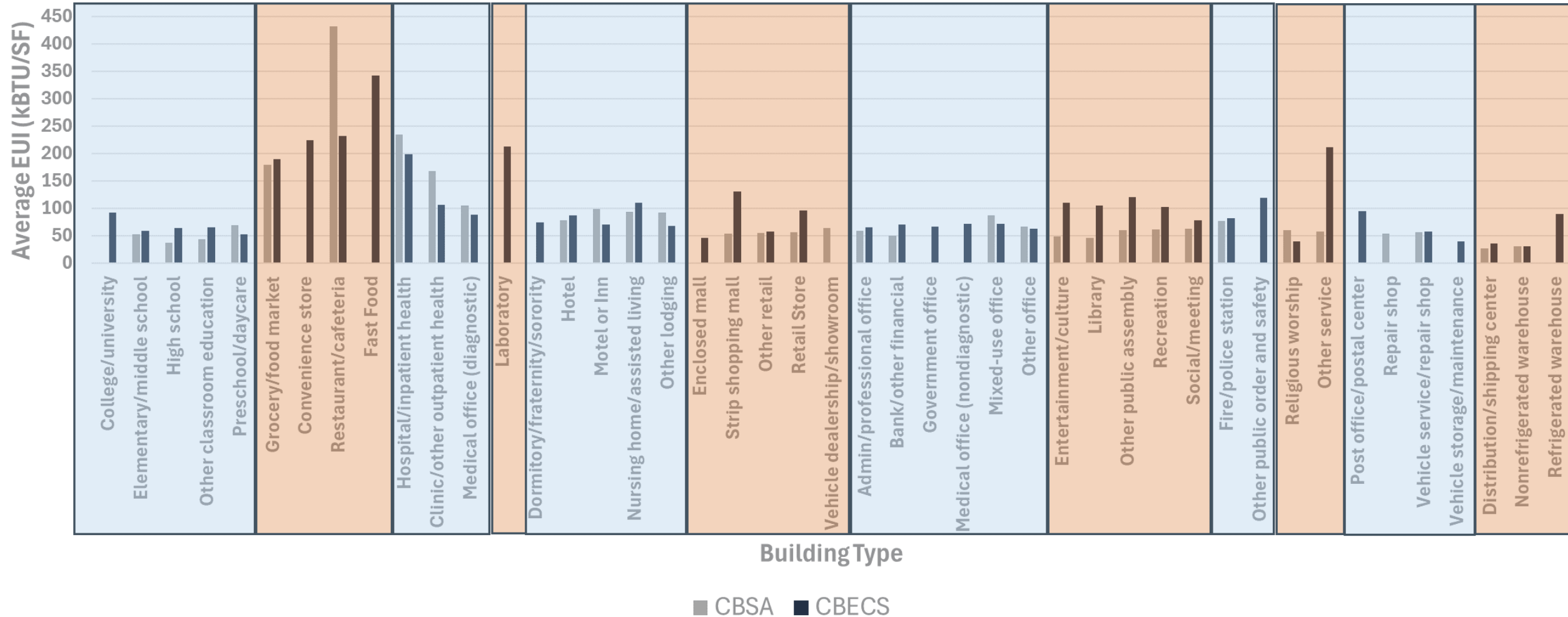


How much energy that building would use if operating in Oregon's climate

Ex. 115 (Lab Building EUI in San Antonio) x 1.13 (ASHRAE ratio to convert between Texas and Eastern Oregon climate zone) = 130 EUI in Oregon Climate Zone 5B

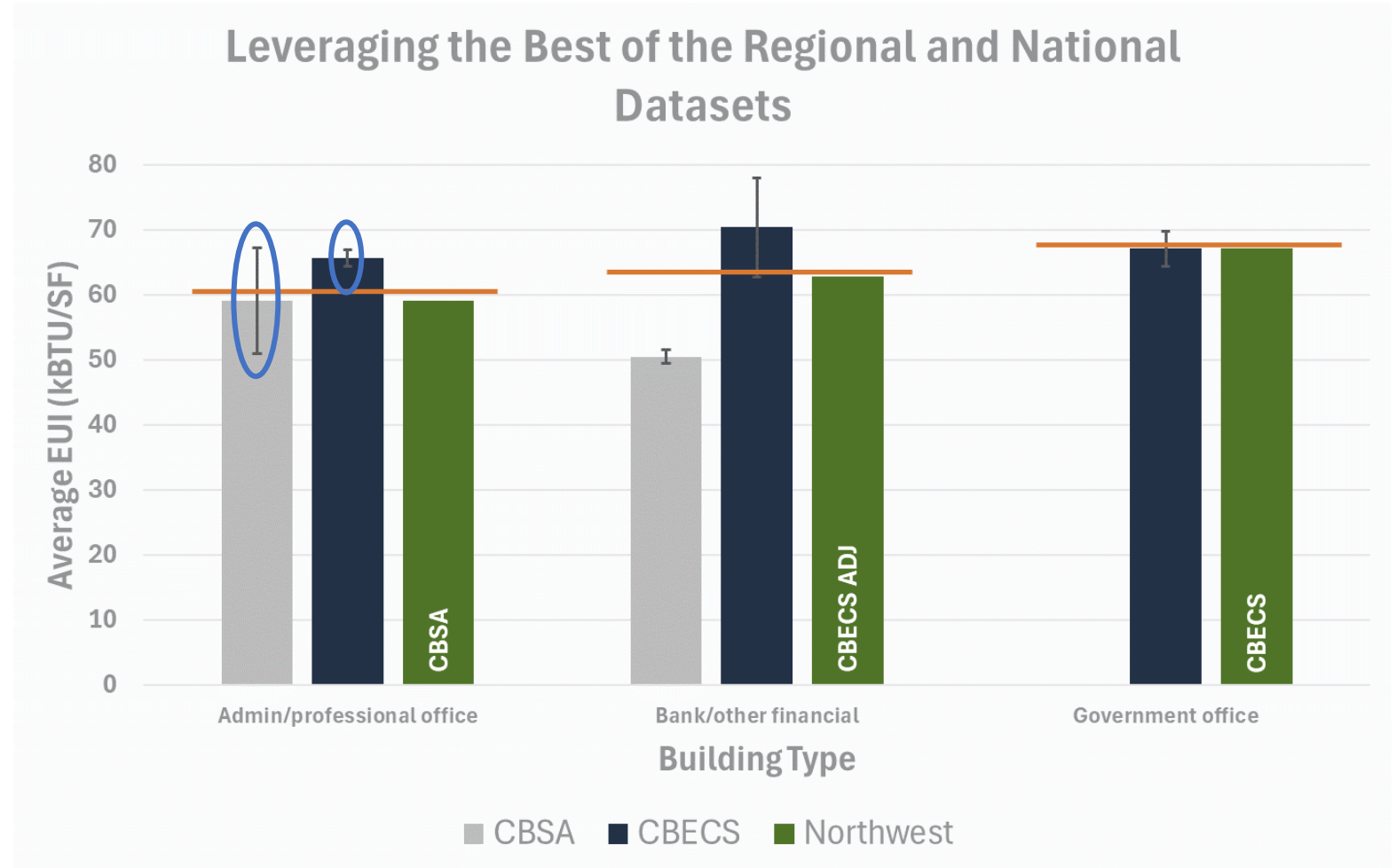
# DEVELOPING 2019 NORTHWEST AVERAGE EUIs

Northwest & National Average EUIs



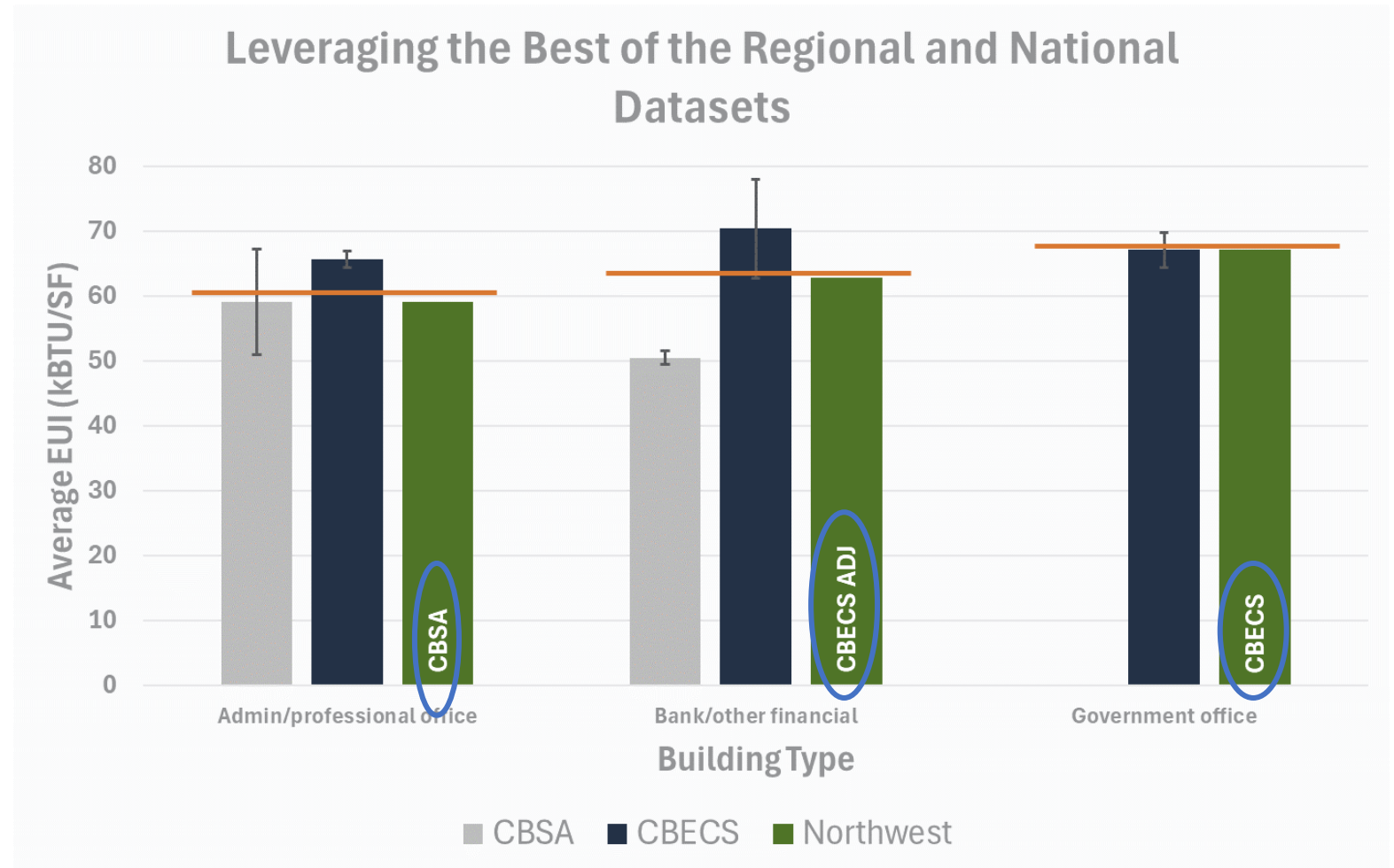
# DEVELOPING 2019 NORTHWEST AVERAGE EUIs

Step 1. Determine the error range for both data sets.



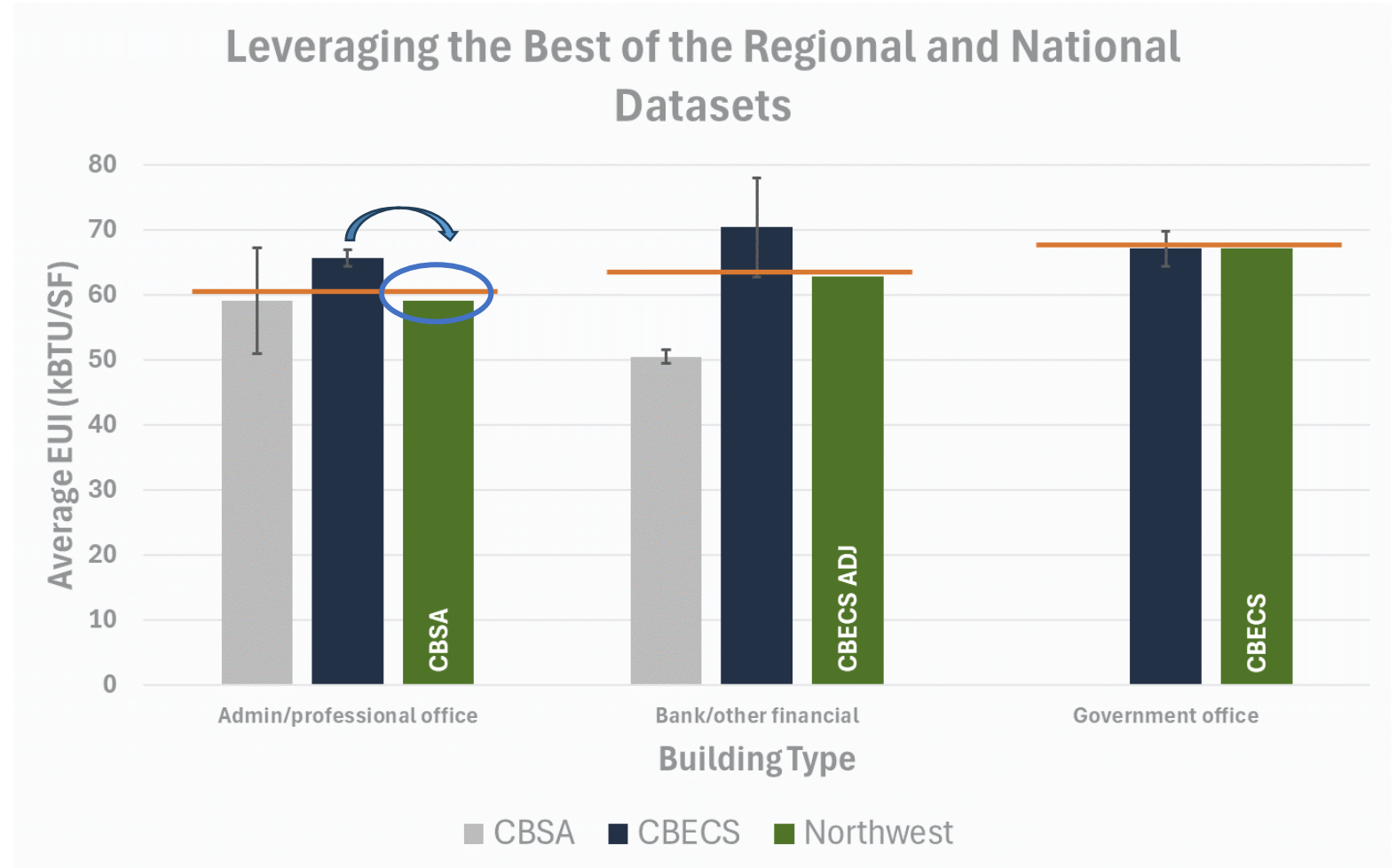
# DEVELOPING 2019 NORTHWEST AVERAGE EUIS

Step 2. Determine whether the base will be CBSA data or CBECS data.



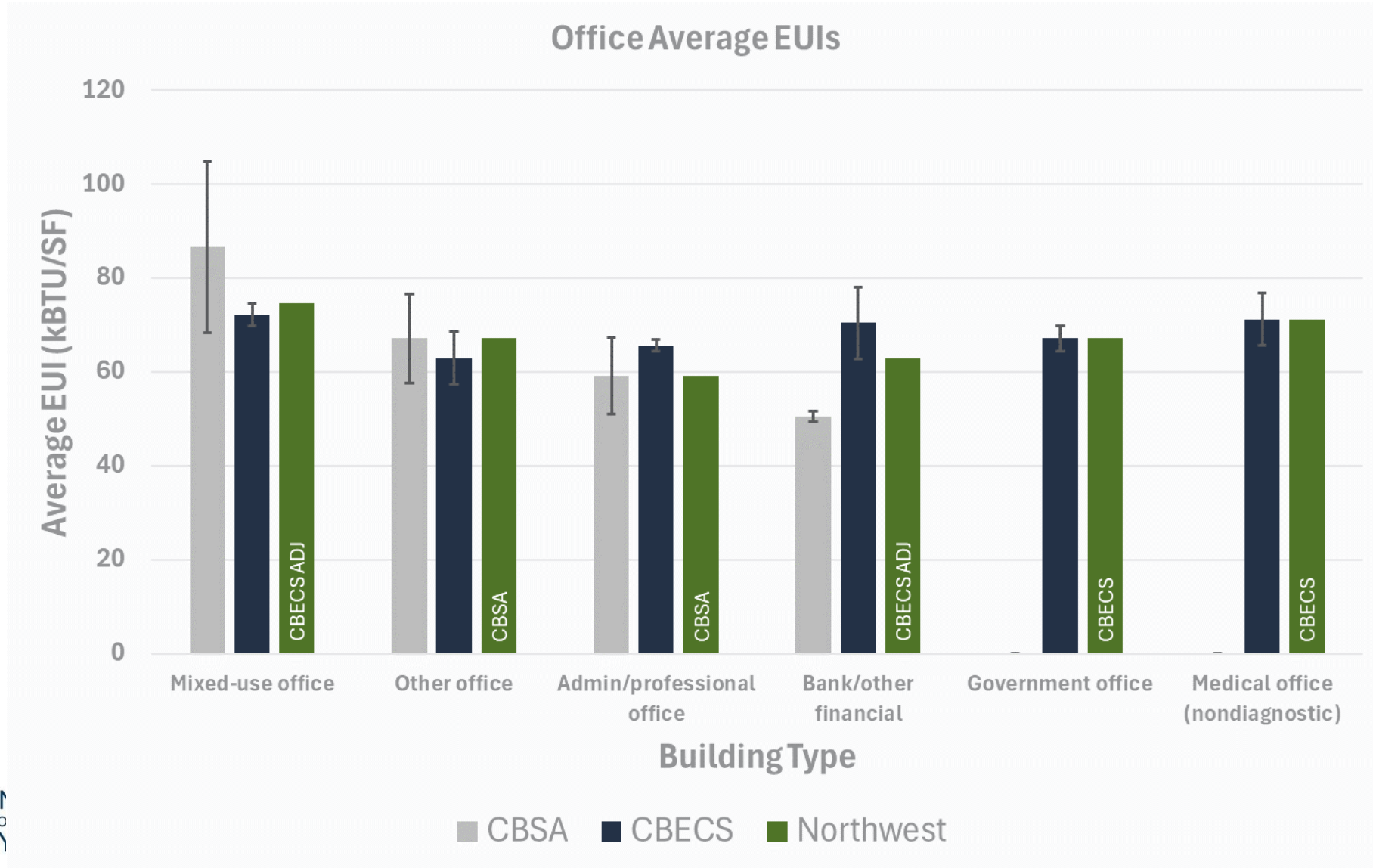
# DEVELOPING 2019 NORTHWEST AVERAGE EUIs

Step 3. Apply the smaller error range to the average in the chosen data set.

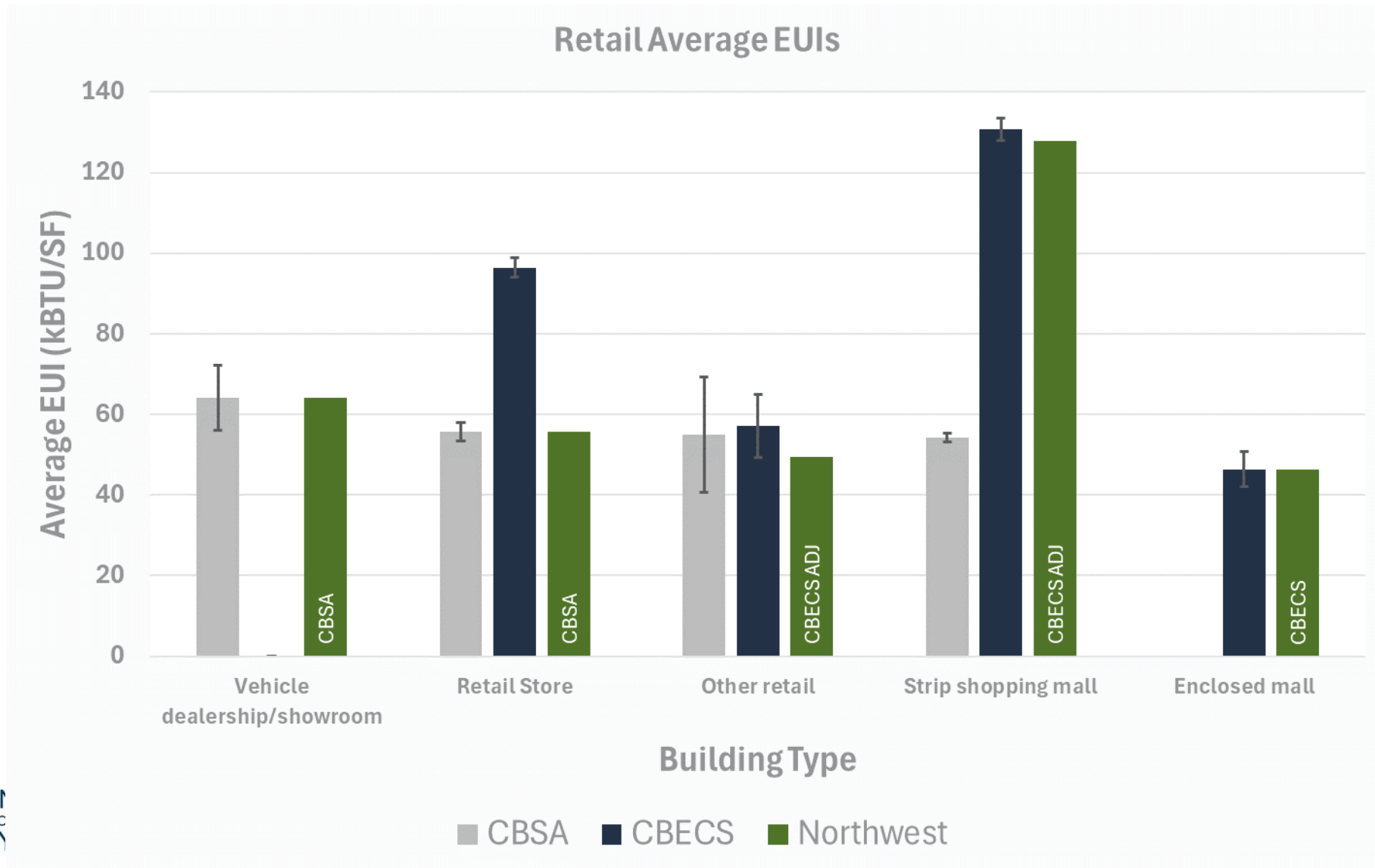




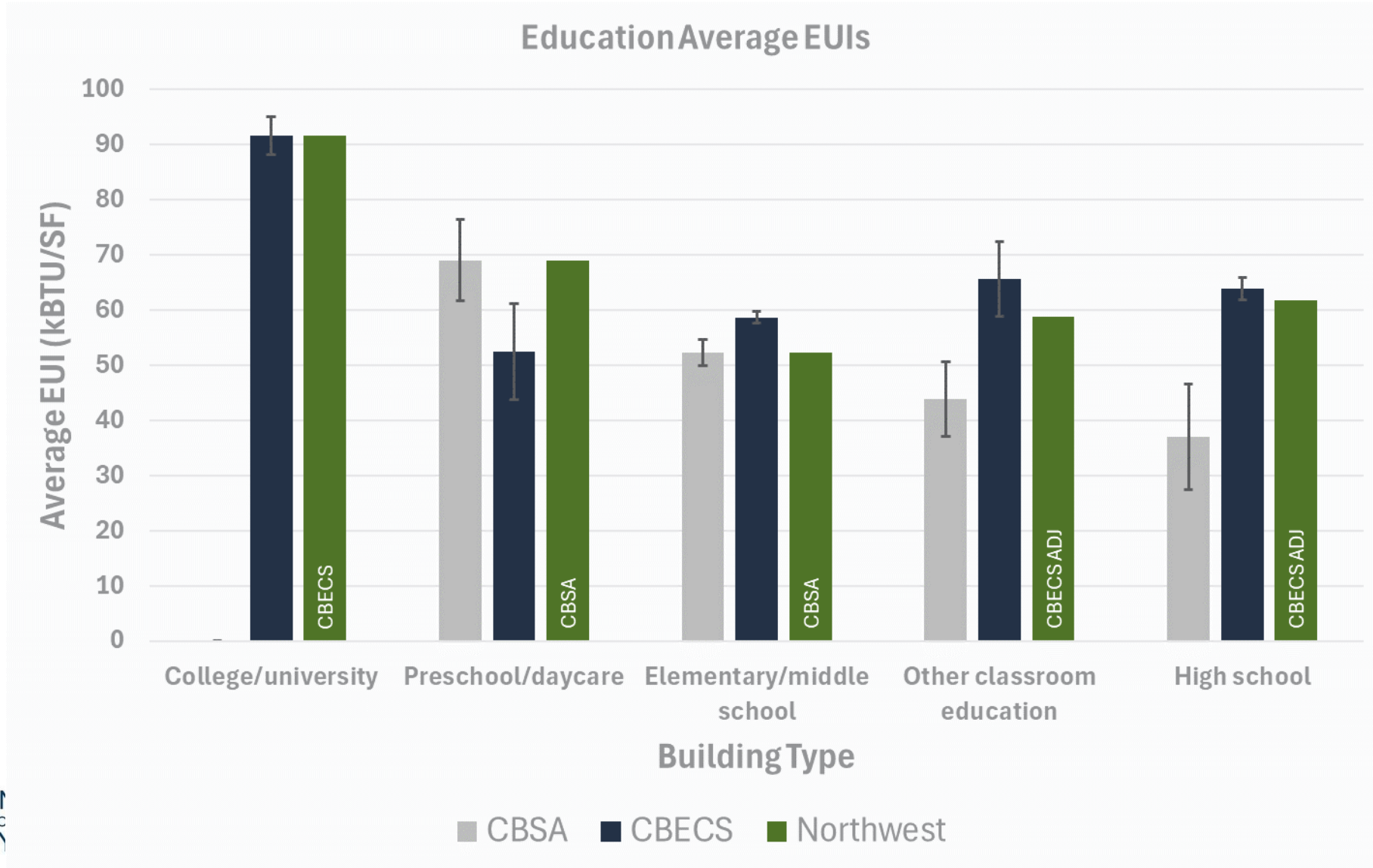
# DEVELOPING 2019 NORTHWEST AVERAGE EUIs



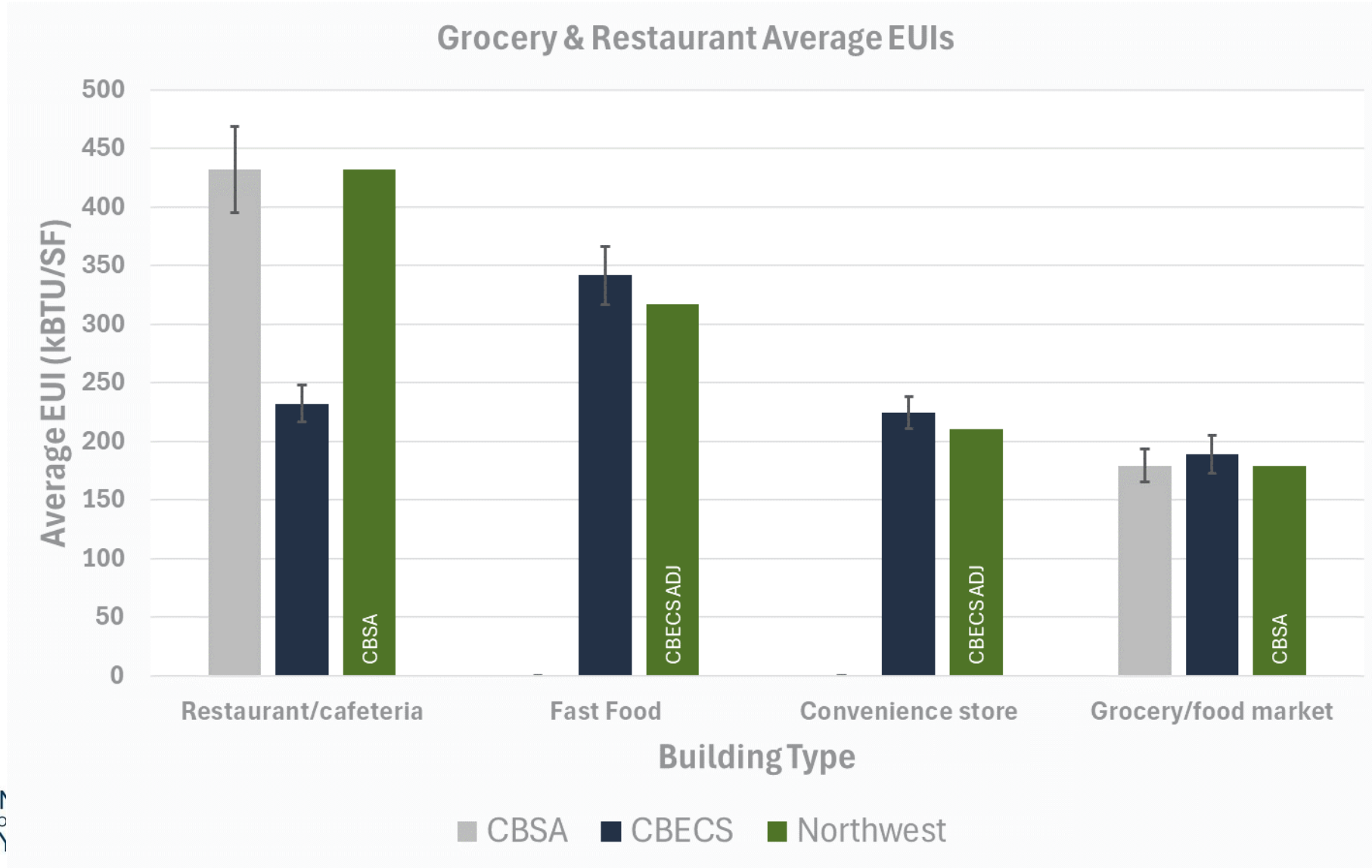
# DEVELOPING 2019 NORTHWEST AVERAGE EUIs



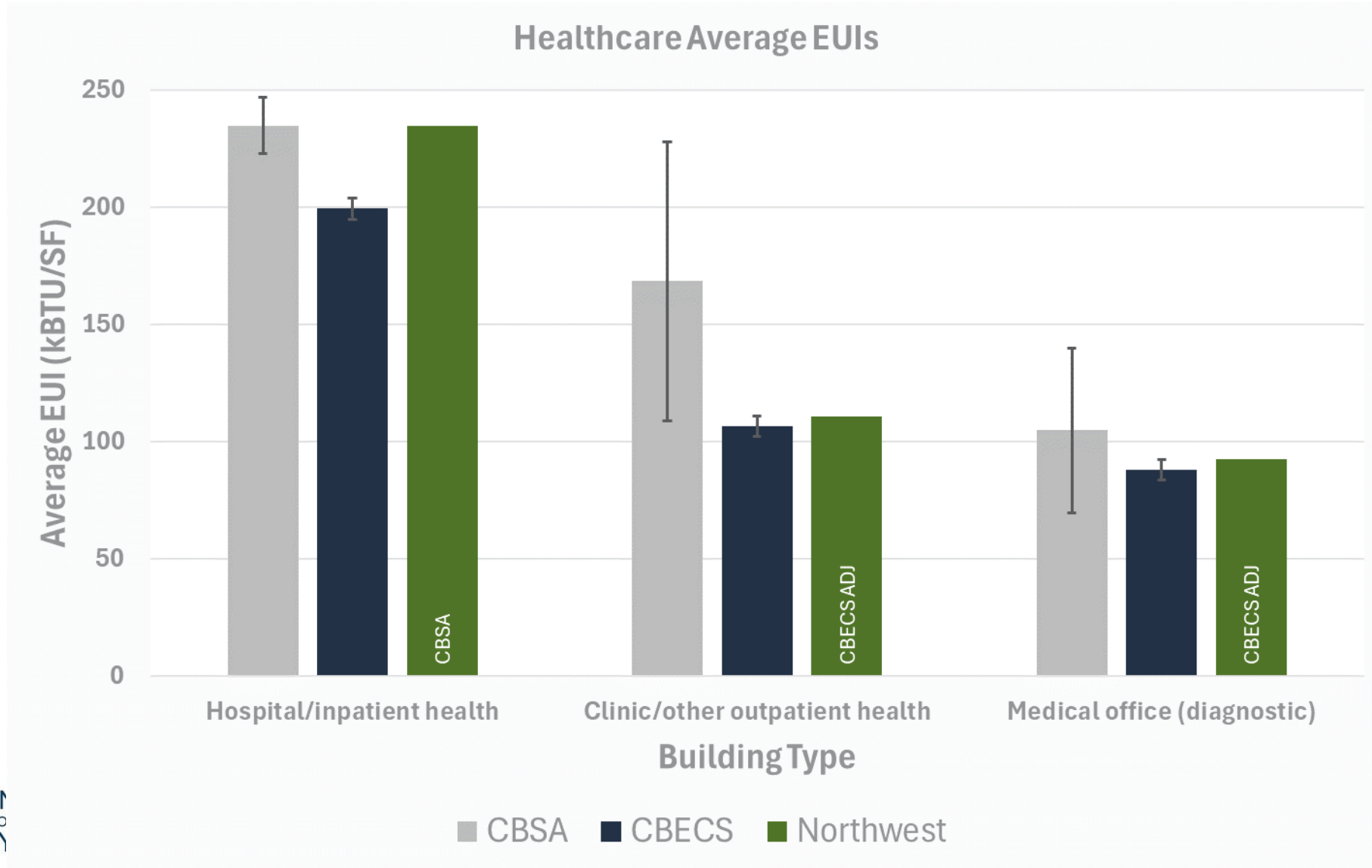
# DEVELOPING 2019 NORTHWEST AVERAGE EUIs



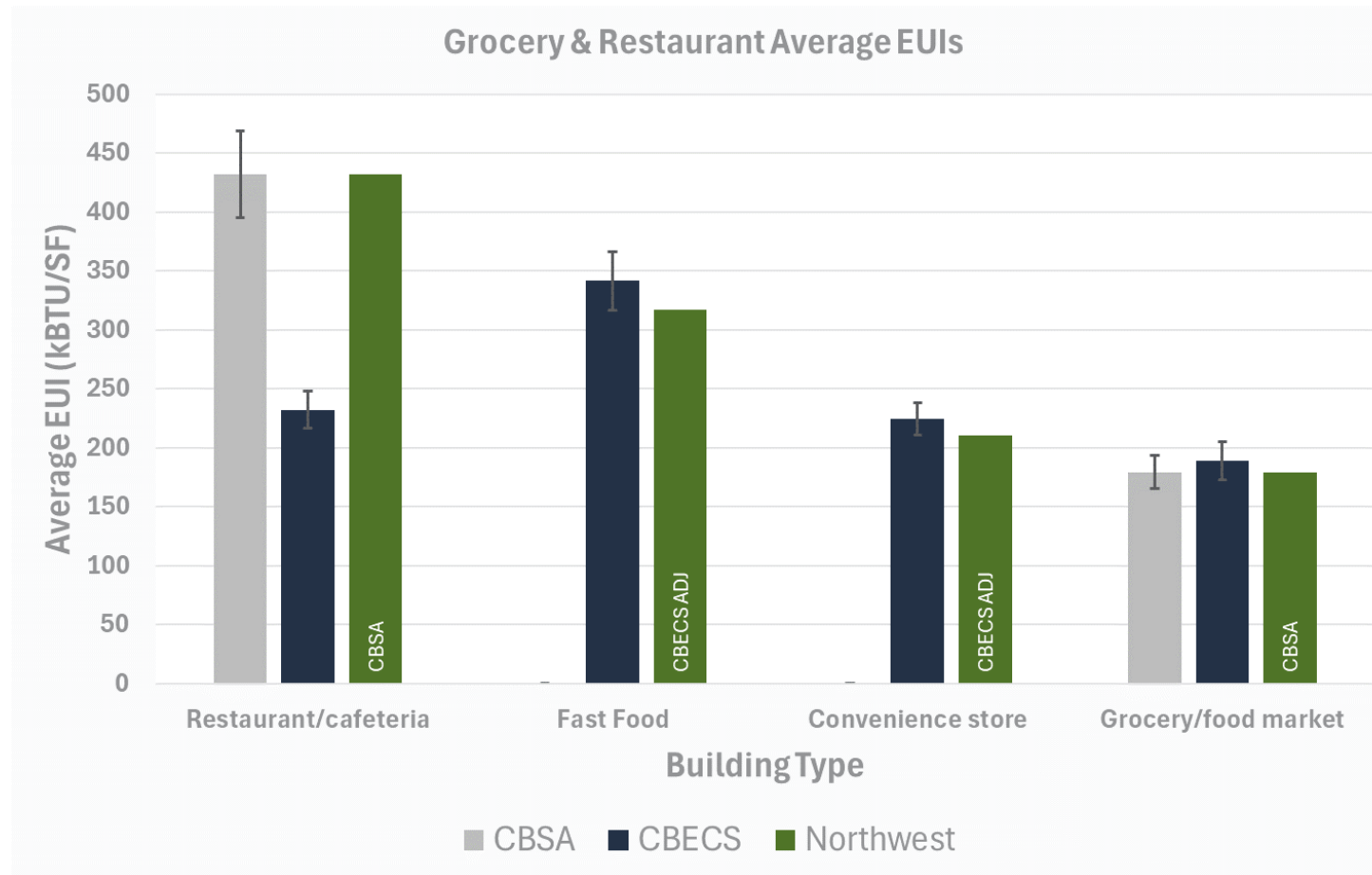
# DEVELOPING 2019 NORTHWEST AVERAGE EUIs



# DEVELOPING 2019 NORTHWEST AVERAGE EUIs



# DEVELOPING 2019 NORTHWEST AVERAGE EUIs



# DEVELOPING OREGON AVERAGE EUIS

- Oregon and other Northwest data sources
  - Portland benchmarking
  - Seattle benchmarking
  - Oregon state-owned buildings
  - Oregon schools
  - Washington State average EUIs

# DEVELOPING OREGON AVERAGE EUIs



## Step 3: Oregon Average EUIs

**Objective:** Tailor EUI benchmarks for Oregon.

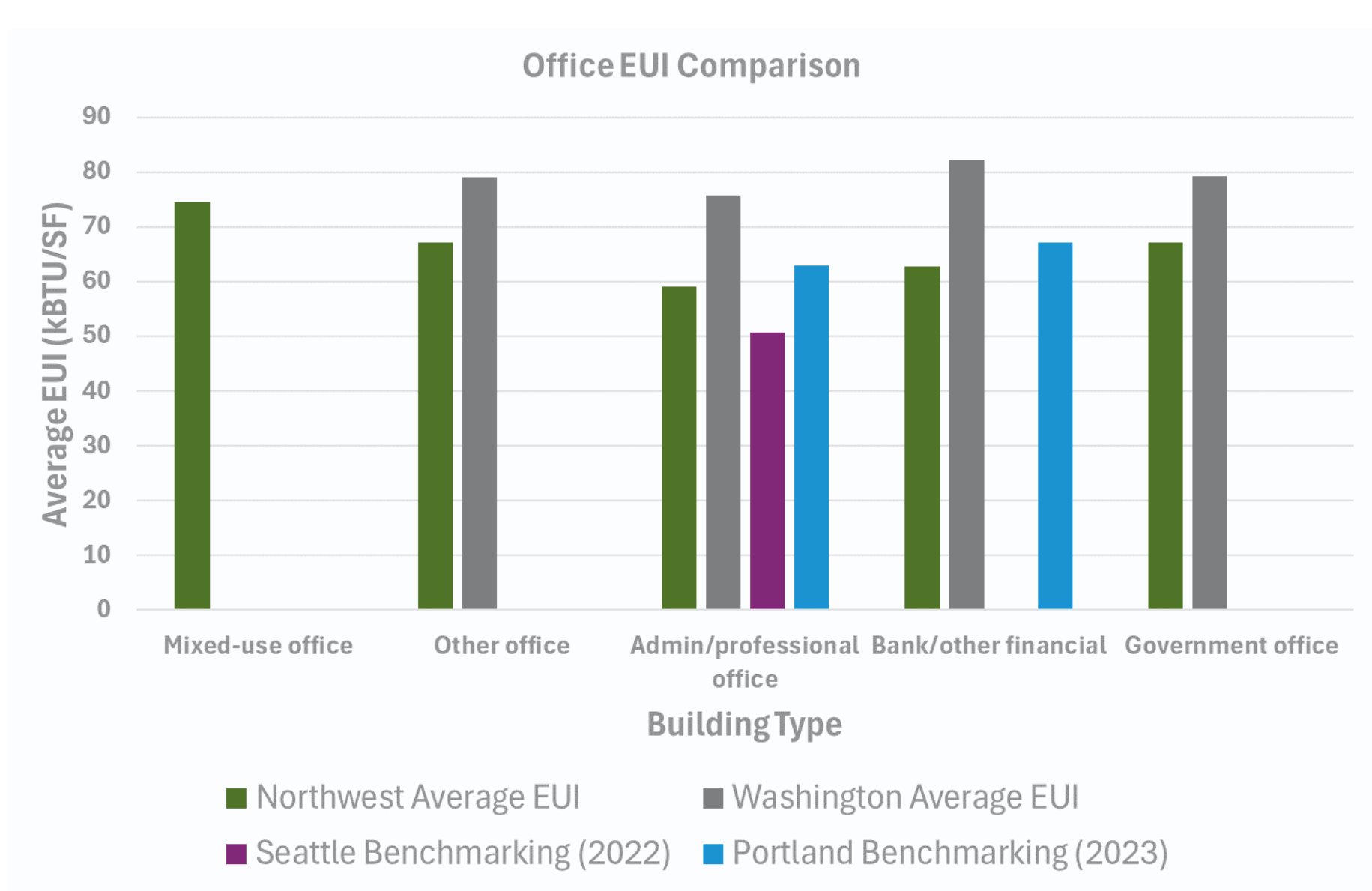
**Approach:** Make Oregon adjustments to specific building types and use trends to adjust to Oregon average EUIs.

## Establish "Oregon Average EUIs"

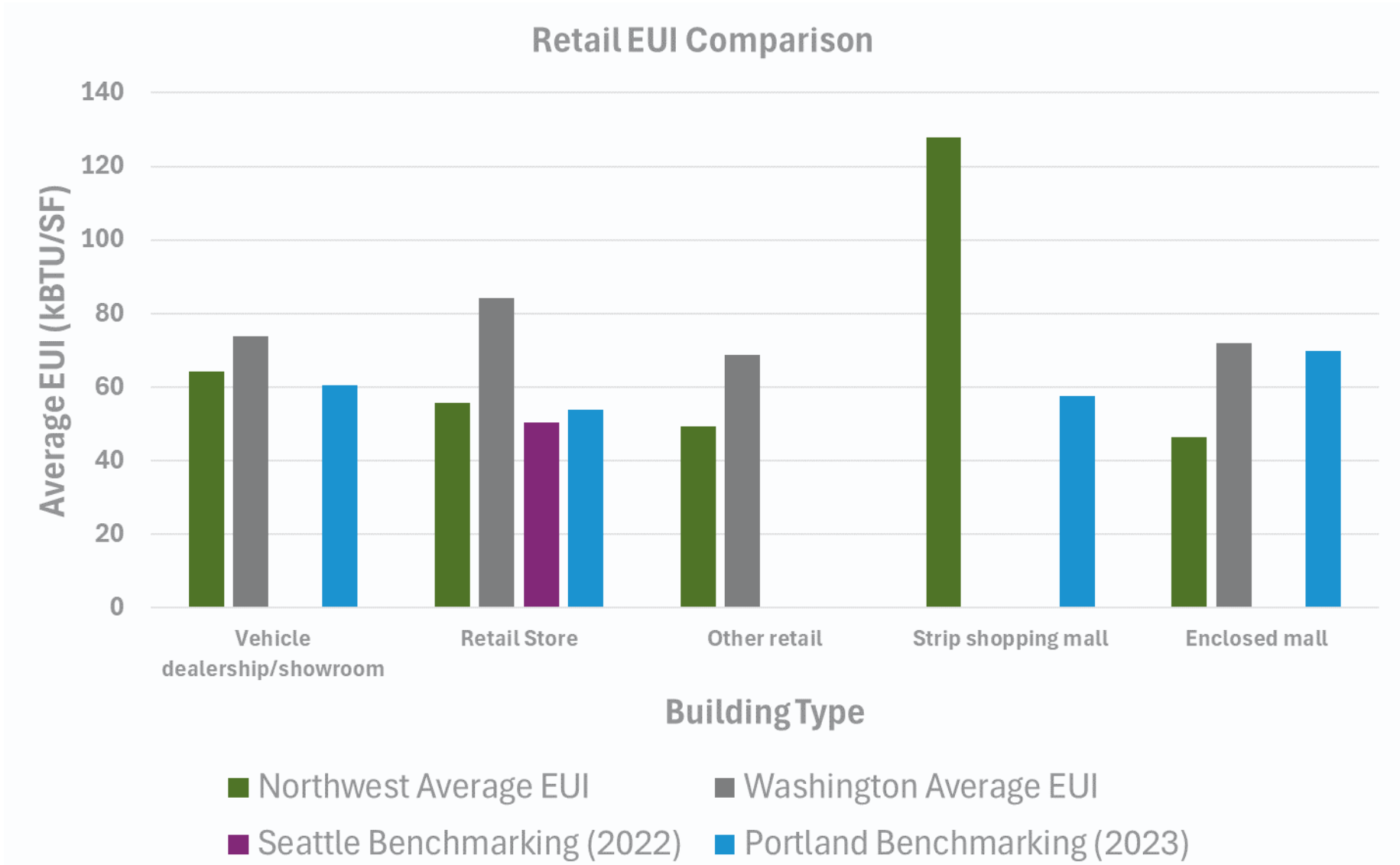
- Compare Oregon, Portland, and Seattle data against 2019 Northwest Average EUIs
- Recommend custom Oregon adjustments to specific building types
- Apply custom adjustments to specific building types in the 2019 Northwest Average EUIs
- Apply a 2027 adjustment factor to establish the Oregon Average EUIs



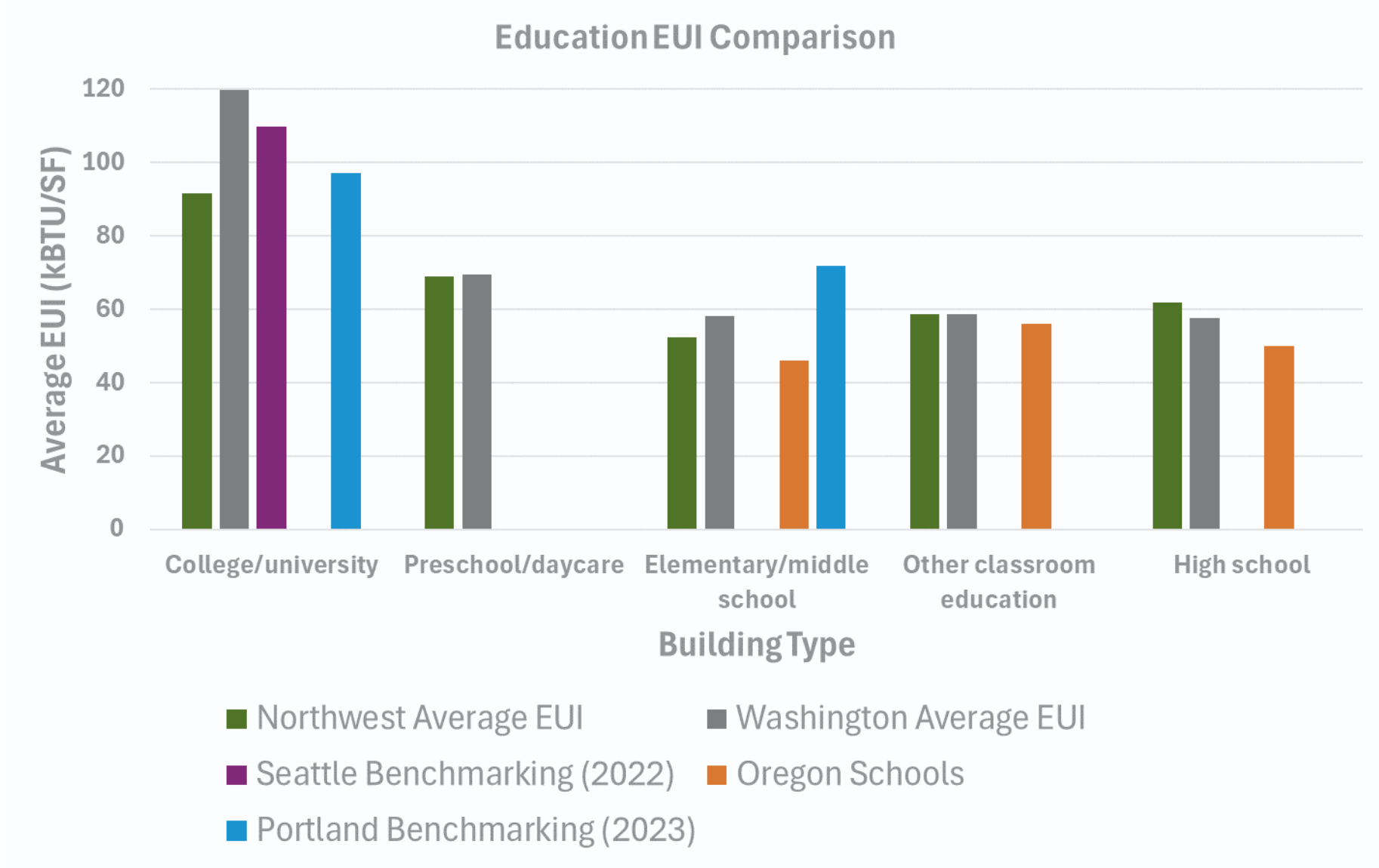
# DEVELOPING OREGON AVERAGE EUIs



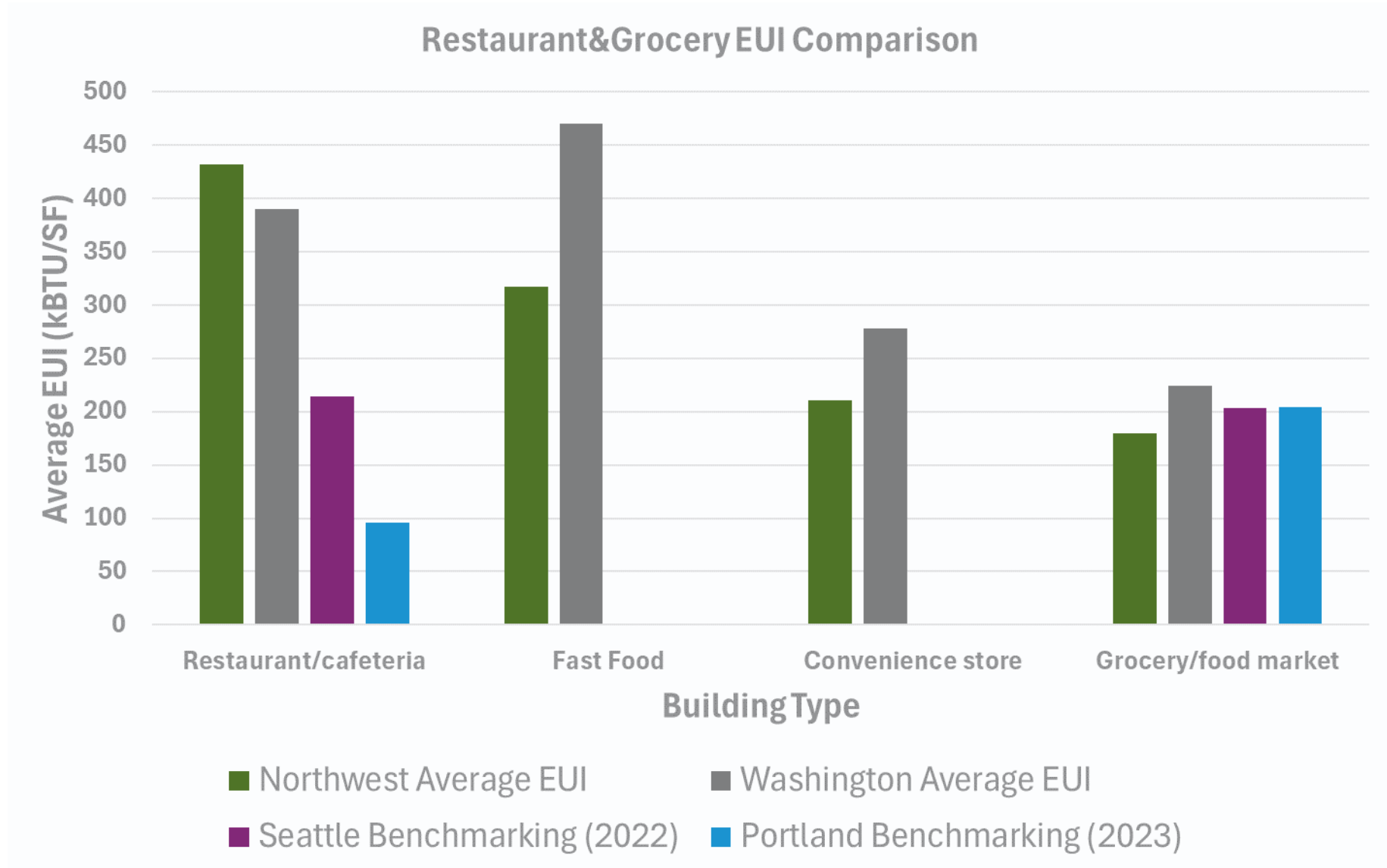
# DEVELOPING OREGON AVERAGE EUIS



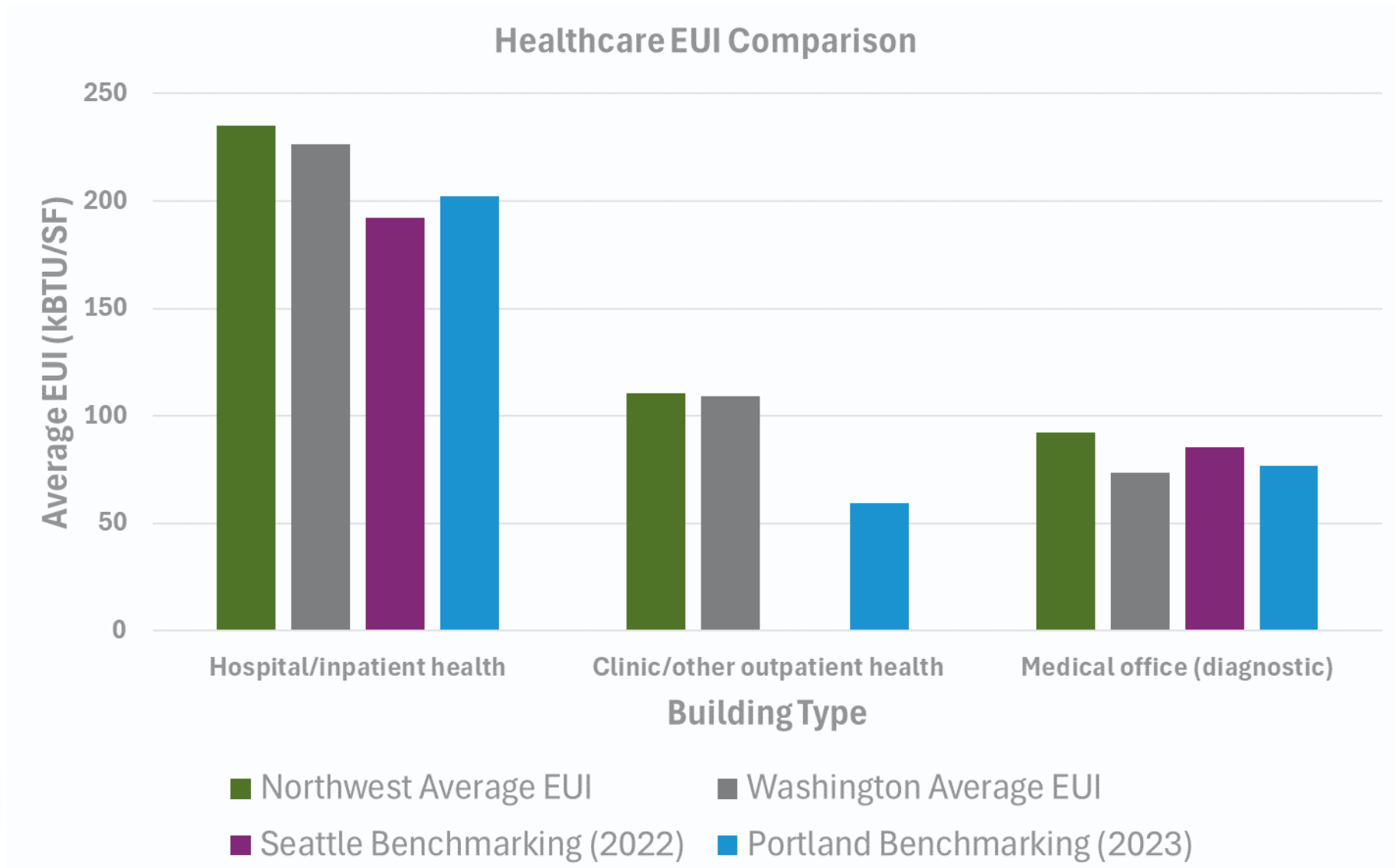
# DEVELOPING OREGON AVERAGE EUIS



# DEVELOPING OREGON AVERAGE EUIs



# DEVELOPING OREGON AVERAGE EUIS



# DEVELOPING OREGON AVERAGE EUIS

## Tailoring 2019 Northwest Average EUIs for Oregon

Consideration	OR State-Owned	OR Schools	Portland Benchmarking	Seattle Benchmarking
Relevant building type differences?	No	Yes	No	No
Use for custom adjustments?	No	Yes	No	No

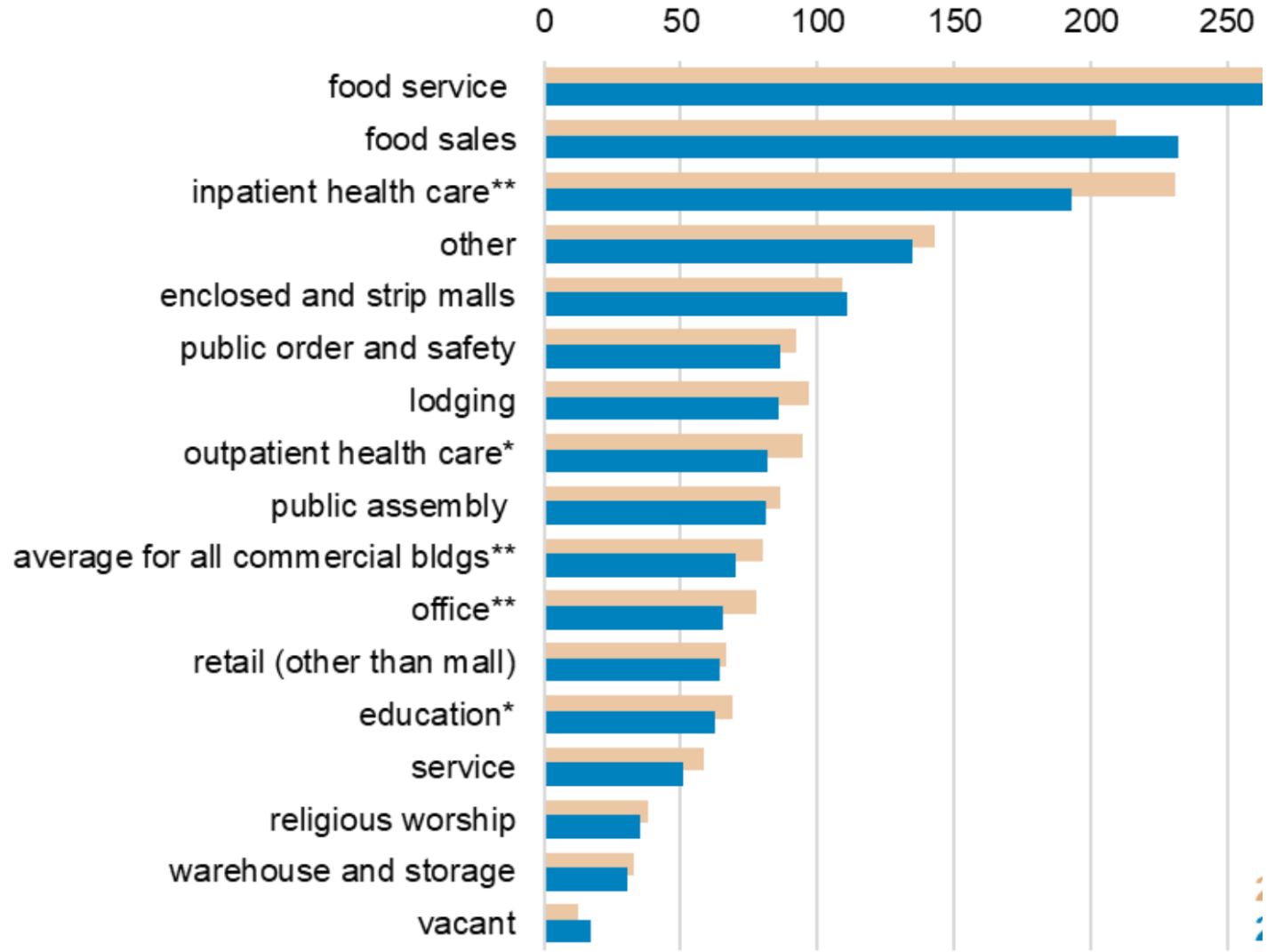
# DEVELOPING OREGON AVERAGE EUIS

## Adjusting 2019 Average EUIs to Reflect 2024 or 2027 Consumption

Consideration	CBECS (2012-2018)	CBSA (2014-2019)	OR State- Owned (2018-2023)	OR Schools (Various Ranges)	Portland Benchmarking (2018-2023)	Seattle Benchmarking (2018-2022)
Trending down overtime?	Yes	Yes	N/A	Yes	N/A	Yes
Use for 2027 adjustment factor?	Yes	No	N/A	No	N/A	No

# DEVELOPING OREGON AVERAGE EUIS

- National energy intensity decreased from 2012 to 2018:

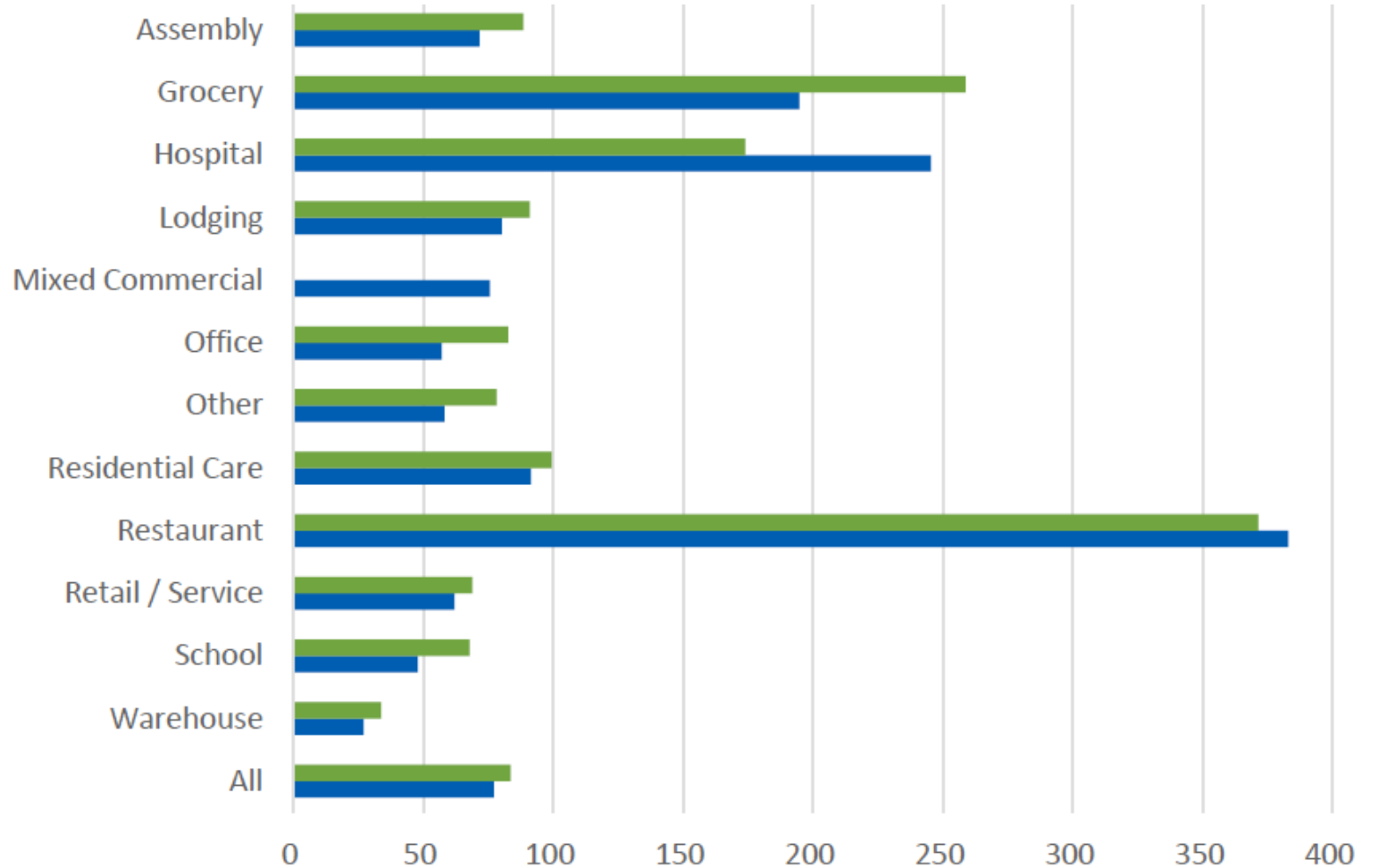


Data source: U.S. Energy Information Administration, Commercial Buildings Energy Consumption Survey



# DEVELOPING OREGON AVERAGE EUIS

Northwest energy intensity  
decreased from 2014 to  
2019:



Annual Energy Use Intensity  
(kBtu per Square Foot)

■ 2014 ■ 2019

# DEVELOPING OREGON AVERAGE EUIs



## Apply Four Custom Adjustments

Use Oregon schools' data to establish average EUIs for schools:

- Elementary/middle schools
- High schools
- Other classrooms

Reduce average restaurant EUI by 23% to align with CBECS, Portland, and Seattle data



## Apply a Universal Adjustment Factor to Establish Oregon Average EUIs

Use CBECS downward trend averaged across all building types (10% reduction from 2012-2018, -1.7%/yr)

- Large population of buildings (>6,000)
- Representative sample, highly vetted data and analysis
- Conservative estimate calculated pre-COVID

# DEVELOPING OREGON AVERAGE EUIs



**Adjusting Oregon Average EUIs to to 2024 versus 2027 benchmark?**

2024 aligns with analysis year

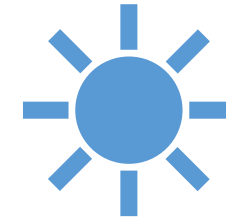
2027 aligns with first Oregon BEPS EUI measurement year (with June 1, 2028 reporting deadline)



**Calculate as -1.7%/year**

-8.5% total for 2024 (five years between 2019-2024)

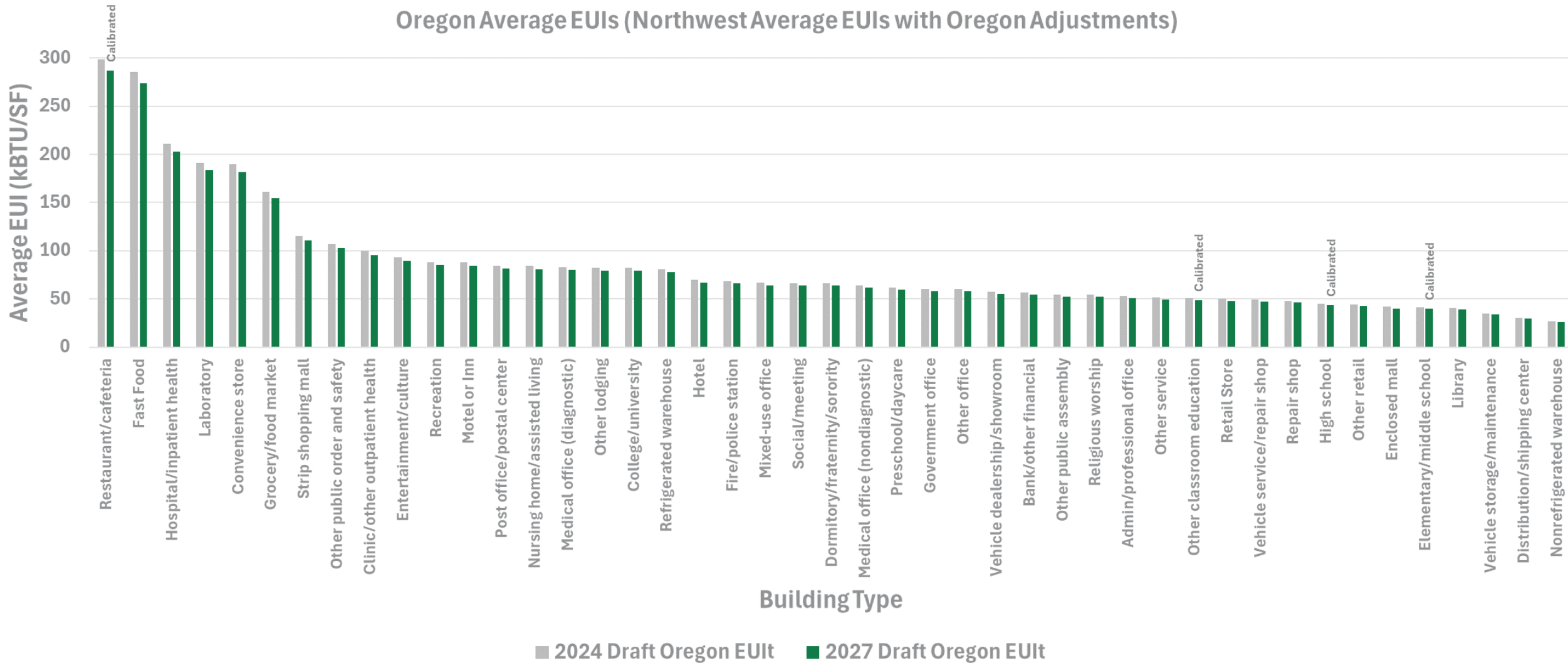
-13.6% total for 2027 (eight years between 2019-2027)



**Apply factor to 2019 Northwest Average EUIs to reflect 2024 or 2027 Oregon Average EUIs**

# DRAFT OREGON AVERAGE EUIs

Oregon Average EUIs (Northwest Average EUIs with Oregon Adjustments)



# KEY CONSIDERATIONS & DISCUSSION

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Questions and/or comments on average EUI approach?



Thoughts on data sources used?



Thoughts on proposed 2024 or 2027 Oregon Average EUIs?



How do these recommendations align with your policy expectations?

## Target EIUs

- Process Overview
- Target Setting Criteria
- EUI Target Comparisons
- Key Considerations & Discussion

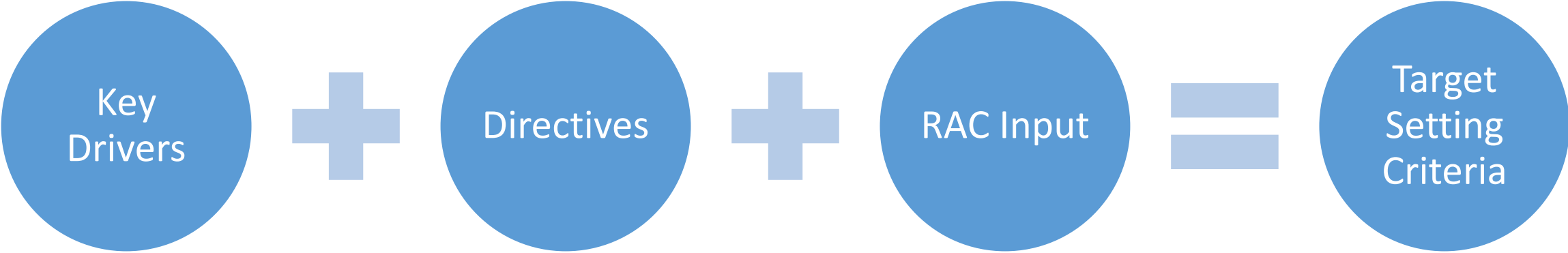
# PROCESS OVERVIEW

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# ESTABLISHING TARGET SETTING CRITERIA

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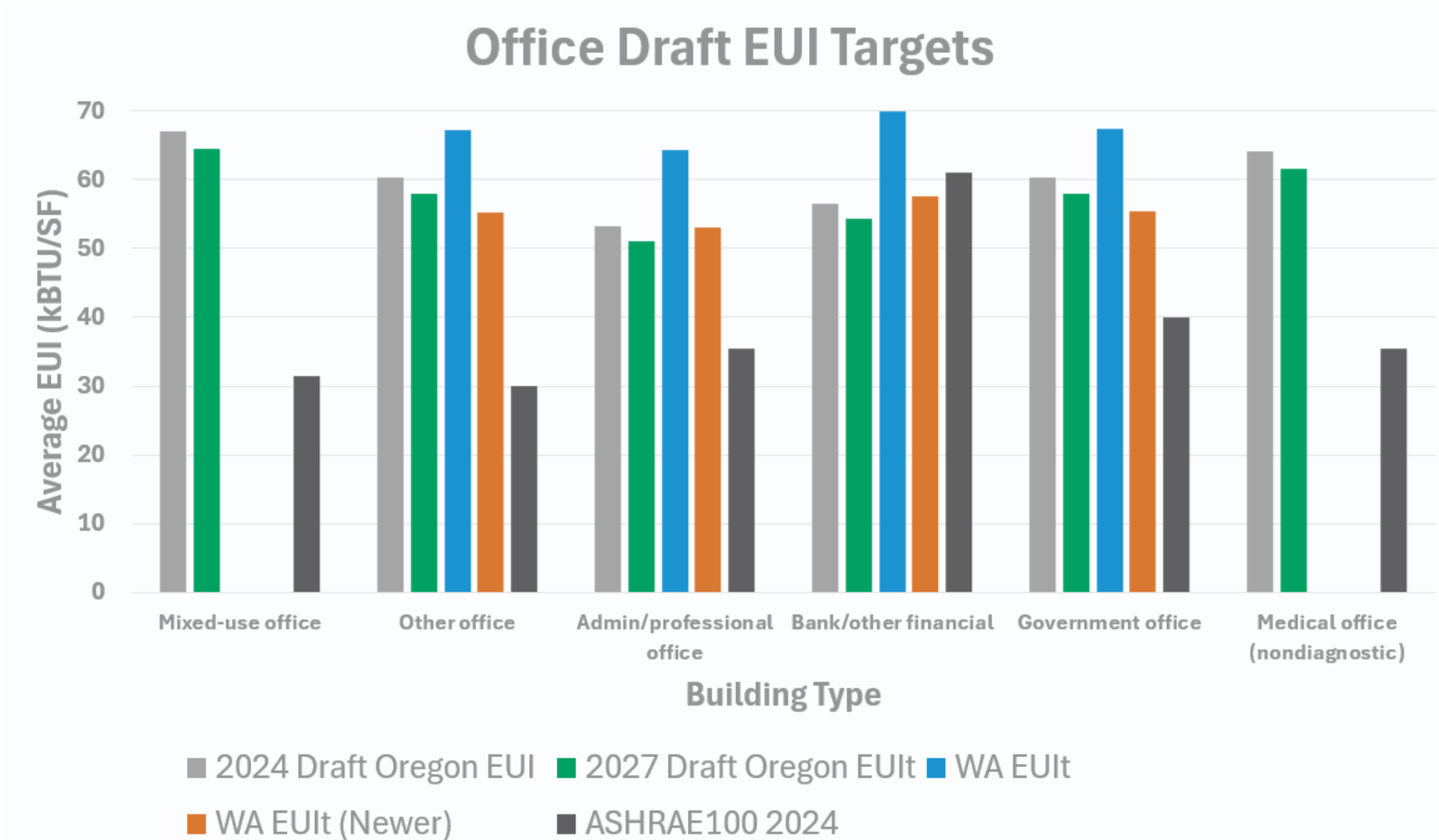




# TARGET SETTING CRITERIA

<b>EUI targets must:</b>	<b>Source:</b>
Be weather normalized, net energy	HB 3409
Be equal to or greater than average EUIs	HB 3409
Include two or more climate zones	HB 3409
Adjust as necessary for unique energy using features	HB 3409
Consider regional and local building energy use	HB 3409
Exclude EV supply equipment	HB 3409
Maximize GHG reductions	HB 3409
Recognize flexible loads (EUI <sub>t</sub> adjacent)?	RAC

# DRAFT EUI TARGETS: USE OREGON AVERAGE EUIS



# KEY CONSIDERATIONS & DISCUSSION

---

Questions and/or comments on target setting approach?

Thoughts on proposed draft EUI targets?

How do these recommendations align with your policy expectations?

How do they align with the HB 3409 directives?

# Key Take-Aways for Today



**Robust process for developing average and target EUIs**



**EUIs are trending down**



**Northwest and Oregon average EUIs are often lower than national**



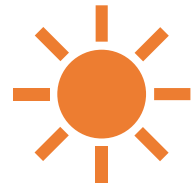
**Recommendations are to:**

- Make several custom building type adjustments
- Apply a 2027 adjustment factor to update 2019 average EUIs to 2027

# Next Steps



Adjust today's averages  
where needed



Present final averages  
to Oregon Department  
of Energy



File draft targets



Public comment period

# DRAFT EUI TARGETS

Principle Building Activity	ASHRAE Building Type	2027 Draft EUI <sup>t</sup>	ASHRAE 100
Education	College/university	79	65
Education	Elementary/middle school	40	34
Education	High school	43	47
Education	Other classroom education	49	28
Education	Preschool/daycare	60	46
Food Sales	Grocery/food market	155	150
Food Sales	Convenience store	182	166
Food Service	Restaurant/cafeteria	287	217
Food Service	Fast Food	274	304
Health Care (Inpatient)	Hospital/inpatient health	203	160
Health Care (Outpatient)	Clinic/other outpatient health	96	43
Health Care (Outpatient)	Medical office (diagnostic)	80	38
Laboratory	Laboratory	184	111
Lodging	Dormitory/fraternity/sorority	64	46
Lodging	Hotel	67	49
Lodging	Motel or Inn	85	41
Lodging	Nursing home/assisted living	81	89
Lodging	Other lodging	79	49
Retail	Enclosed mall	40	48
Retail	Strip shopping mall	111	80
Retail	Other retail	43	53
Retail	Retail Store	48	38
Retail	Vehicle dealership/showroom	55	46

\* A target projecting to 2024 would be 4.2% higher than the 2027 Target

# DRAFT EUI TARGETS

Principle Building Activity	ASHRAE Building Type	2027 Draft EUI	ASHRAE 100
Office	Admin/professional office	51	36
Office	Bank/other financial	54	61
Office	Government office	58	40
Office	Medical office (nondiagnostic)	62	36
Office	Mixed-use office	64	32
Office	Other office	58	30
Public Assembly	Entertainment/culture	90	32
Public Assembly	Library	39	50
Public Assembly	Other public assembly	52	40
Public Assembly	Recreation	85	37
Public Assembly	Social/meeting	64	34
Public Order and Safety	Fire/police station	66	41
Public Order and Safety	Other public order and safety	103	85
Religious Worship	Religious worship	52	20
Service	Other service	50	44
Service	Post office/postal center	81	51
Service	Repair shop	46	32
Service	Vehicle service/repair shop	47	41
Service	Vehicle storage/maintenance	34	31
Warehouse/Storage	Distribution/shipping center	29	26
Warehouse/Storage	Nonrefrigerated warehouse	26	16
Warehouse/Storage	Refrigerated warehouse	78	60

\* A target projecting to 2024 would be 4.2% higher than the 2027 Target

ODOE  
Rulemaking  
Process  
Review

- Process Overview To-Date
- Timeline
- Draft Rule Sections and How To Comment

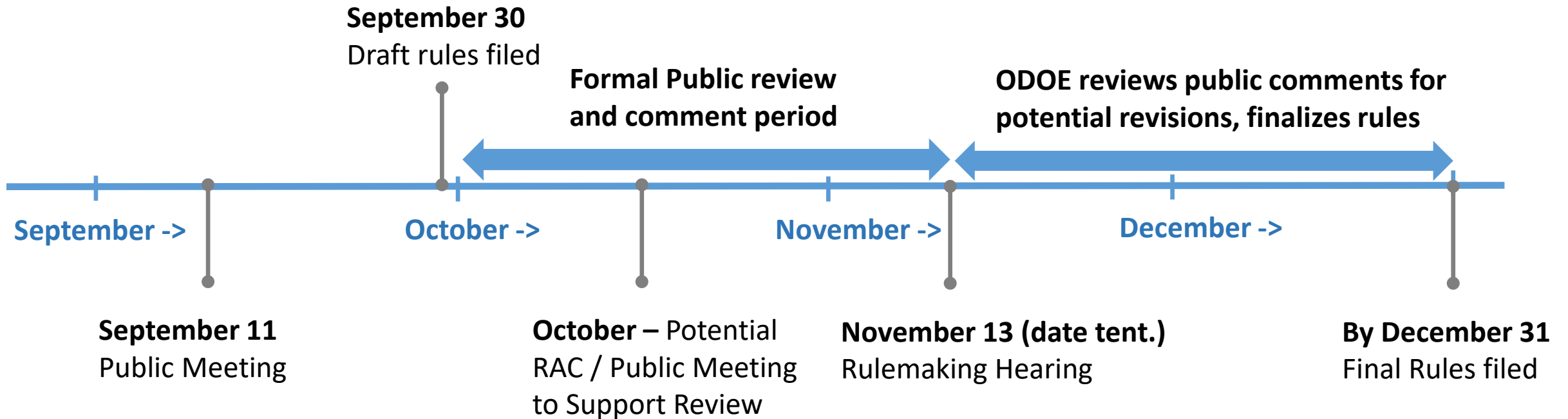


# RULEMAKING ADVISORY COMMITTEE

The 2024 Rulemaking process has involved multiple meetings of the RAC as well as periodic public meetings

	2024											
	January	February	March	April	May	June	July	August	September	October	November	December
RAC Meeting		2/21		4/24	5/22	6/26	7/17	8/21	9/4			
Public Meeting			3/21			6/5			9/11			
ODOE File Draft Rules with SOS									by 9/30			
Rulemaking Comments Open												
Rulemaking Hearing											X	
Final Rules Filed												by 12/31

# BPS RULEMAKING SCHEDULE



- We may be able to make revisions to the draft rules based on comments received between now and September 30, but will also be incorporating comments during the Public Comment Period

# DRAFT RULES FOR REVIEW

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- ODOE has posted the following draft rules for preliminary review, coming out of the Rulemaking Advisory Committee Process
  - ASHRAE Standard 100-2024, with Oregon Modifications, Chapters 1-9
  - Investment Criteria Pathway appendix
  - Tier 1 Covered Buildings Reporting Requirements Appendix
  - Tier 2 Covered Buildings Reporting Requirements Appendix
  - Utility Energy Data Aggregation
- **Comment portals** are posted on the ODOE BPS Rulemaking Website and will remain open through the Public Comment Period.
- <https://www.oregon.gov/energy/Get-Involved/Pages/BPS-Rulemaking.aspx>

# DRAFT RULES FOR REVIEW

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## ASHRAE Standard 100-2024, modified for Oregon BPS

### Chapter 7 – Energy Use and GHG Emissions Analysis and Target Requirements

- Process for determining  $EUI_t$ , particularly for buildings with mixed uses
- Modifications include removal of language referencing GHG Intensity Targets

### Chapter 8 – Energy Audit with Decarbonization Assessment Requirements

- Outlines the process for energy audits, when required for BPS compliance
- “Decarbonization Assessment” language remains

### Chapter 9 – Implementation and Verification Requirements

- Outlines the process for implementing the standard
- Modifications include removal of GHG intensity and Emissions Reduction Measure references

# DRAFT RULES FOR REVIEW

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## Investment Criteria Pathway

- Modeled after Washington state's pathway
- Outlines the requirements for this compliance pathway which includes an energy audit and implementation of cost-effective optimized bundle of energy measures

## Utility Energy Data Aggregation

- Provides requirements for larger qualified utilities (equal to or greater than 3% of retail sales) to provide aggregated data for upload into Energy Star Portfolio Manager

# DRAFT RULES FOR REVIEW

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## Tier 1 Covered Buildings Reporting Requirements Appendix

- Modeled after Washington state's appendix
- Provides reporting process and requirements for Tier 1 buildings, including building and energy information that will be required on reporting forms

## Tier 2 Covered Buildings Reporting Requirements Appendix

- Provides requirement for benchmarking Tier 2 buildings as required by HB 3409
- Does not require energy management plans, operations management plans for Tier 2 buildings



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ENERGY

# Thank You

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<https://www.oregon.gov/energy/save-energy/Pages/BPS.aspx>

<https://www.oregon.gov/energy/Get-Involved/Pages/BPS-Rulemaking.aspx>