## Welcome! We'll start the GHGI WEBINAR shortly.

### A FEW HOUSEKEEPING ITEMS:

- This webinar is being recorded.
- We are expecting about 150 participants today.
- Participants are joining in "listen only" mode with cameras off and chat is disabled.
- Please use the "Q&A" button for questions.
- To "upvote" questions, give the question you like a "thumbs up."
- If you would like closed captions (CC), please click on the "Live Transcript" button.

## Proposed Seattle Building Emissions Performance Standard (BEPS) Estimating GHGI and GHGIT Metrics (Based on draft BEPS)

March 23, 2023



## Agenda

### Part 1: BEPS Proposal Overview

- What is BEPS?
- Proposed Timeline

### Part 2: Seattle "BEPS" Metrics

- Greenhouse Gas Intensity (GHGI)
- Proposed GHGI Targets (GHGITs)
- Proposed Emissions Factors

### Part 3: Estimate GHGI & GHGIT

- Benchmarking Map
- Calculate Your Building's Estimated GHGI and GHGIT

### Q & A Break: Clarifying Questions

### Part 4: Get ENERGY STAR Portfolio Manager Data

- Weather normalized energy data
- Total GFA & Space Uses

### Q & A Break: Clarifying Questions

## Part 1

# Seattle Building Emissions Performance Standard (BEPS) Proposal Overview

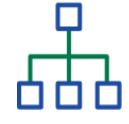
Office of Sustainability & Environment

The most effective near-term action is enacting a Building Emissions Performance Standard policy for larger, existing buildings.

# 27% emissions reduction by 2050.



Sets carbon-emissions-reduction targets that buildings must meet over time.



Provides a framework for owners to improve energy efficiency and transition to cleaner energy sources.

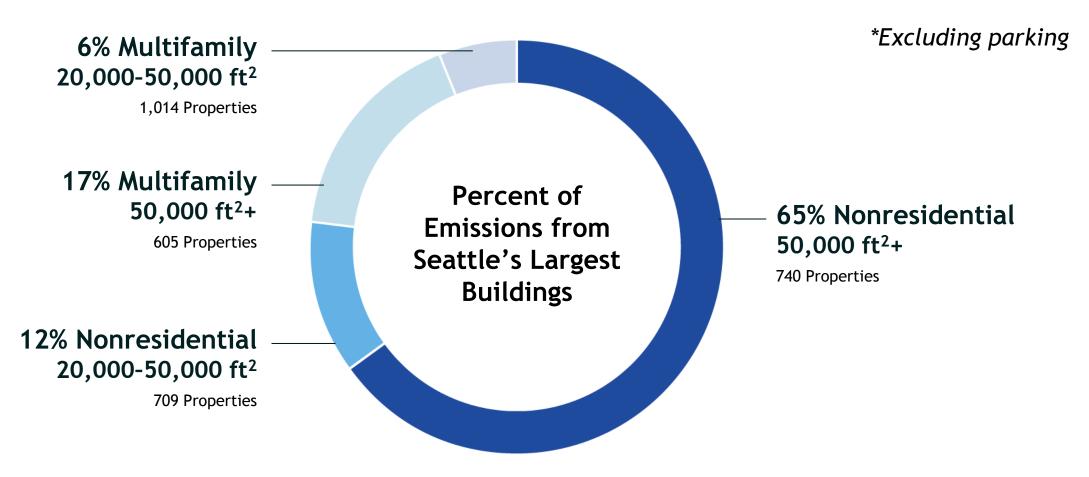


Offers flexibility to choose technologies and operational strategies that work best for owners.

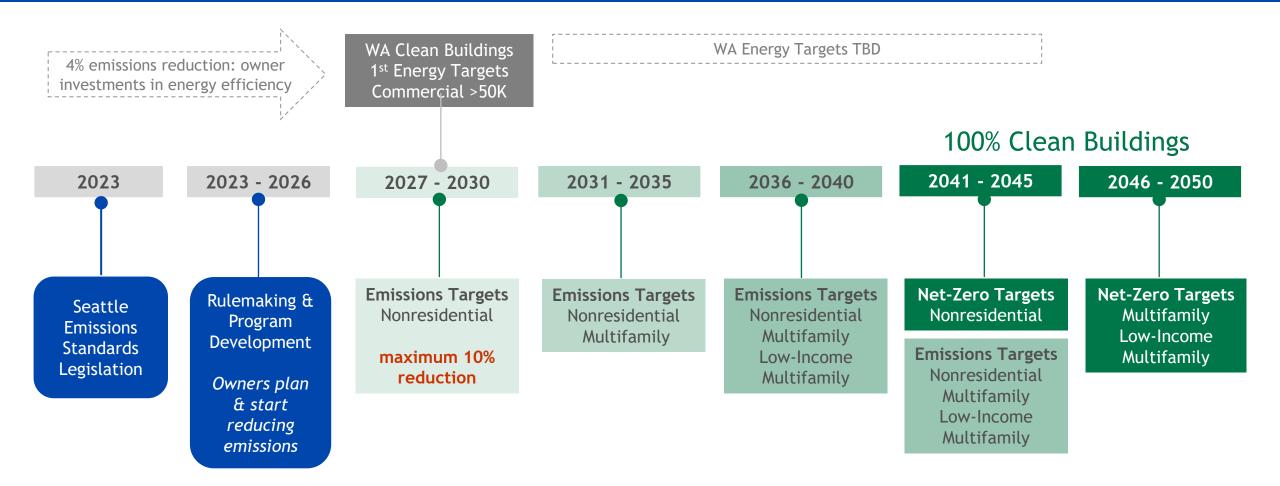


Identifies long-term expectations so owners can plan for upgrades.

## Applicability: Nonresidential and multifamily buildings >20,000 SF\*



# BEPS Proposal: Set emission targets now to inform planning and implementation.

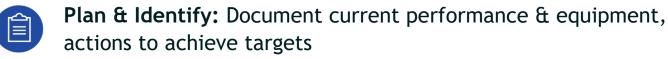


## Proposed Seattle Building Emissions Performance Standards

### Building Owner Requirements - Every 5 years:



**Verify Benchmarking:** by someone who meets qualifications (like Building Tune-Ups Specialist approach)





**Meet GHGI Emissions Targets (or Alternative Compliance):** Phased in by building size and type (2027-2049)



Achieve: <u>Net-zero</u> emissions or alternative compliance (2041-2050)



Building Tune-Ups requirement proposed to sunset after the 2023-2026 compliance cycle is done.



## **BEPS Proposal: Compliance Intervals by Cohort**

Each five-year cycle:

Year 1	Year 2	Year 3	Year 4	Year 5
>220,001	90,001 - 220,000	50,001 - 90,000	30,001 - 50,000	20,001 - 30,000
SF	SF	SF	SF	SF

Policy guides for the draft proposal and more details at:

seattle.gov/building-performance-standards

## **Current Policy Timeline**

- ✓ 2022: Open houses, stakeholder engagement, draft policies
- March April 2023 Continued stakeholder engagement and policy updates
- □ Late Spring 2023 State Environmental Policy Act (SEPA) public comment period (Dates TBA)
  - Updated proposed policy guides available
- □ June 2023 Policy recommendations and proposed legislation delivered to Mayor's Office
- □ July September 2023 City Council review and legislative process
- □ Fall 2023 to 2025 Rulemaking, including public engagement, and program development



# Support: OSE is launching programs, growing them, and securing funding.

### Seattle Clean Buildings Accelerator

Coaching and educational resources for building owners and managers, prioritizing non-profits and those serving BIPOC communities to:

- Meet WA State Clean Buildings energy mandate
- Plan for emissions reduction
- Identify incentives and financing
- <u>www.seattlebuildingsaccelerator.com</u>

Next Light Coaching cohort starts in May - all City Light customers eligible. Email <u>cleanbuildings@stillwaterenergy.com</u> for details.

### **Growing Staff Resources**

• Additional technical support from Office of Housing and Office of Sustainability coming 2023.

### **Capital Investments**

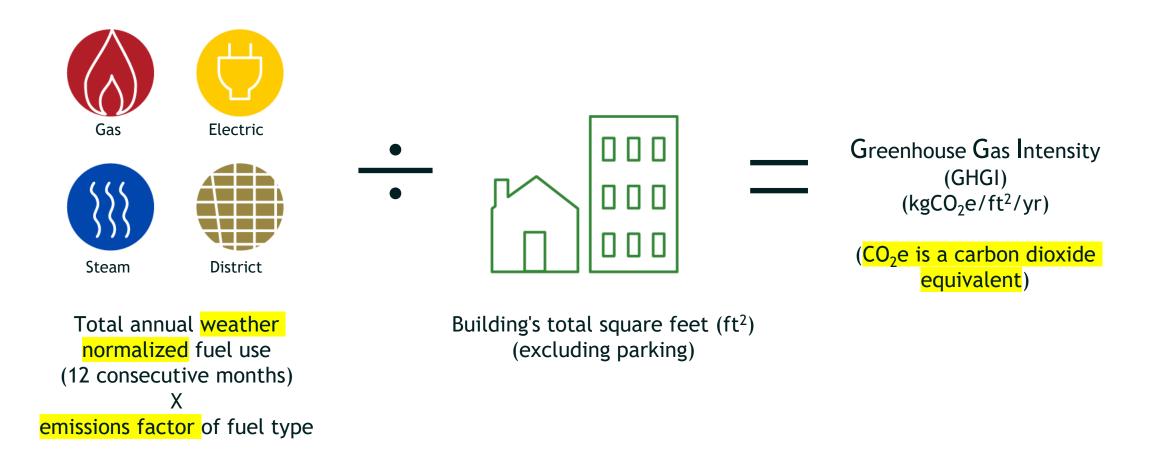
- ✓ \$520K AARA loan funds reallocated for affordable housing
- ✓ Awarded \$1.8M Dept. of Energy grant for decarbonizing affordable housing
- ✓ Green New Deal 2022 Opportunity Fund: \$2M for affordable housing electrification
- ✓ 2023 budget: \$4.5M / year for nonprofits and affordable housing
- Preparing to pursue federal infrastructure funds, inflation reduction act funds, and other opportunities

## Part 2

## **Seattle BEPS Metrics**

Office of Sustainability & Environment

### Greenhouse Gas Intensity (GHGI) Metric



## Greenhouse Gas Intensity Targets (GHGIT) by Building Activity Type

### Why:

• Provides defined, publishable targets with clear metrics for owners and city staff.

### How:

- Targets for multi-use buildings calculated on pro-rated mix of spaces (e.g., office, retail etc.). Like WA Clean Buildings EUIt.
- Target normalizations to account for weather (using weather normalized energy data), hours of operation and multifamily housing occupancy density (TBD in Rule).

### **BEPS PROPOSAL**

### Alternative Compliance:

- √10% Reduction (2027-2030)
- ✓ Alternative Compliance Payment (2027-2035 only)
- ✓ Custom Targets
- ✓Hardship Plan
- $\checkmark$  And Others

### **Extensions/Exemptions:**

 ✓ For certain situations like new construction

### **Deductions:**

 ✓ For certain end uses like emergency back-up

## Building Activity Types Used for GHGIT

Building Activity Types	Portfolio Manager Building / Space Types Included
College/University	College/University
Data Center	Data Center
Entertainment/Public Assembly	Convention Center, Lifestyle Center, Movie Theater, Other - Entertainment/Public Assembly, Social/Meeting Hall, Performing Arts, Museum, Transportation Terminal/Station, Stadium (Open), and Pre-school/Daycare
Fire/Police Station	Fire Station, Police Station
Hospital	Hospital (General Medical & Surgical), Other/Specialty Hospital
Hotel	Hotel, Other-Lodging/Residential
K-12 School	K-12 School
Laboratory	Laboratory
Multifamily Housing	Multifamily Housing
Non-Refrigerated Warehouse	Non-Refrigerated Warehouse, Distribution Center
Office	Office, Medical Offices, and Other-Financial Offices
Other	Courthouse, Adult Education, Other – Education, Prison/Incarceration, Other, Other – Utility, and Energy/Power Station, Outpatient Rehabilitation/Physical Therapy, Urgent Care/Clinic/Other Outpatient.
Recreation	Fitness Center/Health Club/Gym and Other – Recreation
Refrigerated Warehouse	Refrigerated Warehouse
Residence Hall/Dormitory	Residence Hall/Dormitory
Restaurant	Restaurant, Food Service, Other - Restaurant/Bar
Retail Store	Retail Store, Automobile Dealership, Bank Branch, Enclosed Mall, Other – Mall, Strip Mall
Self-Storage Facility	Self-Storage Facility
Senior Living Community	Senior Living Community, Residential Care Facility
Services	Library, Repair Services (Vehicle, Shoe, Locksmith, etc), Other – Services, Other - Public Services, Mailing Center/Post Office, and Personal Services (Health/Beauty, Dry Cleaning, etc)
Supermarket/Grocery Store	Supermarket/Grocery Store
Worship Facility	Worship Facility

		Draft Standard GHGI Targets (KGCO2e/SF/YR)			/SF/YR)			Draft Sta	andard GF	IGI Target	s (KGCO2e	/SF/YR)	
Building	2019 Baseline	2026	2031	2035	2041	2046	Building	2019 Baseline	2026	2031	2035	2041	2046
Activity Type	Average	2030	- 2035	- 2040	- 2045*	- 2050*	Activity Type	Average	2030	- 2035	- 2040	- 2045*	- 2050*
College/University	3.66	2.83	2.00	1.17	0		Other	2.76	2.13	1.51	0.88	0	
Entertainment/ Public Assembly	1.62	1.25	0.89	0.52	0		Recreation	4.21	3.25	2.29	1.34	0	
Fire/Police Station	3.15	2.44	1.72	1.00	0		Refrigerated Warehouse	0.49	0.38	0.27	0.16	0	
Hospital	6.63	5.12	3.62	2.11	0		Residence Hall/ Dormitory	1.53	1.18	0.84	0.49	0	
Hotel	2.87	2.22	1.57	0.91	0		Restaurant	7.57	5.85	4.13	2.41	0	
K-12 School	1.26	0.98	0.69	0.40	0		Retail Store	1.18	0.91	0.64	0.38	0	
Laboratory	8.77	6.78	4.79	2.79	0		Self-Storage Facility	0.32	0.25	0.17	0.10	0	
Multifamily Housing	0.84	-	0.65	0.46	0.27	0	Senior Living Community	2.74	2.12	1.50	0.87	0	
Non-Refrigerated Warehouse	0.84	0.65	0.46	0.27	0		Services	1.89	1.46	1.03	0.60	0	
Office	0.81	0.63	0.44	0.26	0		Supermarket/ Grocery Store	4.58	3.54	2.50	1.46	0	
							Worship Facility	1.54	1.19	0.84	0.49	0	

Source: Targets in proposed Seattle BEPS – Jan 2023 (Table A).

\* Net zero emissions by the compliance year required.

### Seattle BEPS Proposed Emissions Factors

• Using local emissions factors to convert from weather normalized energy to kg CO2e

Table B for 22.925.070: Greenhouse gas emissions factors							
	Emissions factors (kgCO2e/kBtu)						
Energy source	2019, 2022, 2023, 2024, 2025	2026 - 2030					
Seattle City Light electricity	.0055	.0026					
Puget Sound Energy natural gas	.053	.053					
CenTrio district thermal energy	.083	.083					

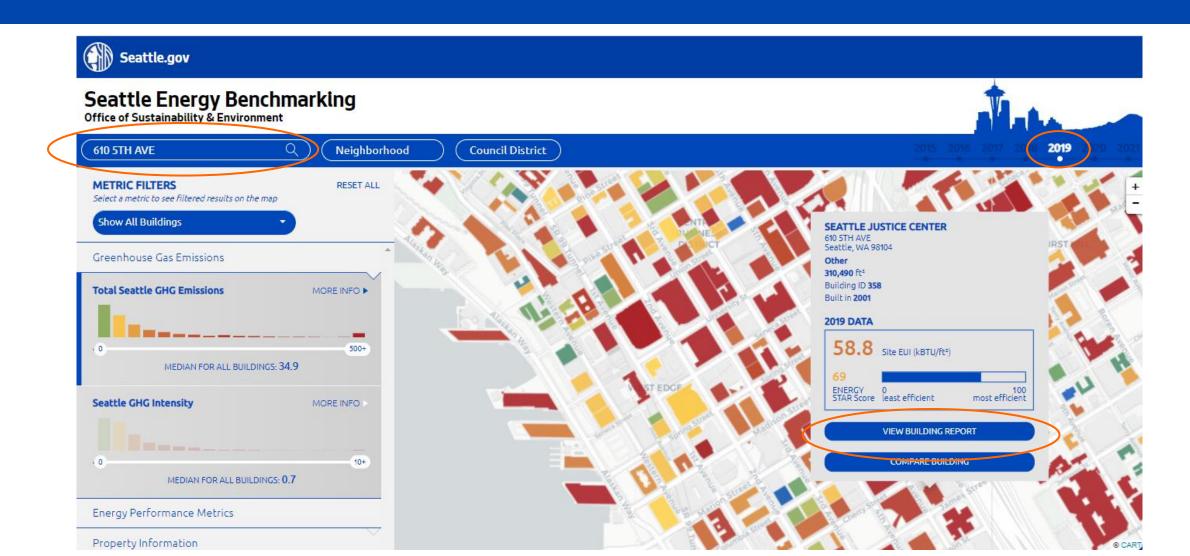
**IMPORTANT:** ENERGY STAR Portfolio Manager uses different emissions factors for City Light electric and CenTrio steam. Don't use ESPM GHG metrics.

## Part 3

## **Estimate GHGI and GHGIT**

Office of Sustainability & Environment

## Seattle Energy Benchmarking Map www.seattle.gov/energybenchmarkingmap



### Seattle Energy Benchmarking Map www.seattle.gov/energybenchmarkingmap

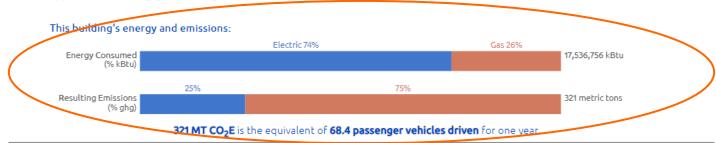


#### O New state requirement! Action is required.

This building likely must comply with Washington state's Clean Building Performance Standard. Learn more below.

#### CLIMATE POLLUTION IMPACT OF ENERGY USE

Over 90% of Seattle's building emissions come from burning fossil fuels like fracked gas and oil for furnaces, water heaters, and appliances - including gas used to generate steam. In Seattle, all-electric buildings have the lowest emissions.



## Example "Office" Building

### Example 75,000 SF "Office" Building

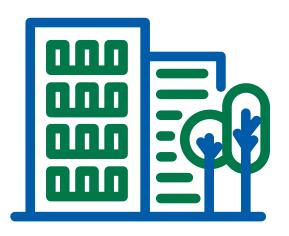
- 65,000 SF Office space
- 10,000 SF Retail space
- 5,000 SF Gym space



### Example "Office" Building: 3 Steps

- 1. Determine the building's GHGI
- 2. Estimate it's GHGIT
- 3. Determine if it meets or exceeds the target.

<b>1. Building's 2019 greenhouse gas intensity (GHGI)</b> (kg CO2e/sf/yr)	?
<b>2. Building's estimated target (GHGIT)</b> (kg CO2e/sf/yr)	?
<b>3. Does GHGI exceed or meet GHGIT?</b> (kg CO2e/sf/yr)	?



### Greenhouse Gas Intensity (GHGI) Formulas (draft proposal)

### GHG emissions (CO2e/yr) =

[WN energy use A (kBtu/yr) A \* emissions factor A (CO2e/kBtu)]

+

[WN energy use B (kBtu/yr) \* emissions factor B (CO2e/kBtu)]

+

[WN energy use C (kBtu/yr) \* emissions factor C (CO2e/kBtu)]

### GHGI =

[GHG emissions (CO2e/yr) – GHG deductions (CO2e/yr)] gross floor area (SF)

## Deductions - Further Defined in Rulemaking (Won't address today)

### **Proposed BEPS:**

- Fossil fuel...
  - Commercial cooking equipment\*
  - High intensity laundry equipment (hotels & healthcare)\*
  - High intensity process equipment (hospitals & labs)\*
  - Generators for emergency power back-up for back-up emergency heat (hospitals & labs)
  - HVAC & DHW permitted under the 2018 Seattle Energy Code (2027-30 only)
- EV charging equipment
- By rule: add end uses for special equipment & compliance intervals based on technology and market availability of low/zero GHG emissions alternatives.

\* 2027-2030 and 2031-2035

## Example Building's 2019 Greenhouse Gas Intensity (GHGI)

Fuel Source	2019 Annual WN Energy Use (kBtu/yr)	Fuel Emissions Factors (2019-2025) (kg CO2e/kBtu)	Annual GHG Emissions (kg CO2e/yr)				
Electric	2,350,000	× 0.0055	= 12,925.00				
Gas	1,200,000	0.053	63,600.00				
Steam	0	0.083	0.00				
Sub-Total	3,550,000		76,525.00				
Deductions (TBD)	0		0				
Totals	3,550,000		76,525.00				
Total Gross Floor Area (SF) – Excluding Parking ÷ 75,000							
		GHGI (kg CO2e/sf/yr)	1.02				

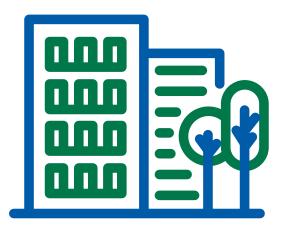
GHG emissions (kg CO2e/yr) ÷ gross floor area (SF)

Fuel Emissions Factors from Draft Seattle BEPS Proposal

### Example "Office" Building: 3 Steps

- 1. Determine the building's GHGI
- 2. Estimate it's GHGIT
- 3. Determine if it meets or exceeds the target.

<b>1. Building's 2019 greenhouse gas intensity (GHGI)</b> (kg CO2e/sf/yr)	1.02
<b>2. Building's estimated target (GHGIT)</b> (kg CO2e/sf/yr)	?
<b>3. Does GHGI exceed or meet GHGIT?</b> (kg CO2e/sf/yr)	?



## Estimate the Target (GHGIT)

Building Activity Types Used for GHGIT

	Building Activity Types	Portfolio Manager Building / Space Types Included
	College/University	College/University
	Data Center	Data Center
	Entertainment/Public Assembly	Convention Center, Lifestyle Center, Movie Theater, Other - Entertainment/Public Assembly, Social/Meeting Hall, Performing Arts, Museum, Transportation Terminal/Station, Stadium (Open), and Pre-school/Daycare
	Fire/Police Station	Fire Station, Police Station
	Hospital	Hospital (General Medical & Surgical), Other/Specialty Hospital
	Hotel	Hotel, Other-Lodging/Residential
	K-12 School	K-12 School
	Laboratory	Laboratory
	Multifamily Housing	Multifamily Housing
	Non-Refrigerated Warehouse	Non-Refrigerated Warehouse, Distribution Center
	Office	Office, Medical Offices, and Other-Financial Offices
	Other	Courthouse, Adult Education, Other – Education, Prison/Incarceration, Other, Other – Utility, and Energy/Power Station, Outpatient Rehabilitation/Physical Therapy, Urgent Care/Clinic/Other Outpatient.
	Recreation	Fitness Center/Health Club/Gym and Other – Recreation
	Refrigerated Warehouse	Refrigerated Warehouse
	Residence Hall/Dormitory	Residence Hall/Dormitory
	Restaurant	Restaurant, Food Service, Other - Restaurant/Bar
$\langle$	Retail Store	Retail Store, Automobile Dealership, Bank Branch, Enclosed Mall, Other – Mall, Strip Mall
	Self-Storage Facility	Self-Storage Facility
	Senior Living Community	Senior Living Community, Residential Care Facility
	Services	Library, Repair Services (Vehicle, Shoe, Locksmith, etc), Other – Services, Other - Public Services, Mailing Center/Post Office, and Personal Services (Health/Beauty, Dry Cleaning, etc)
	Supermarket/Grocery Store	Supermarket/Grocery Store
	Worship Facility	Worship Facility

		Draft Standard GHGI Targets (KGCO2e/SF/YR)			/SF/YR)			Draft Sta	ndard GH	IGI Target	s (KGCO2e	/SF/YR)	
Building Activity Type	2019 Baseline Average	2027 - 2030	2031 - 2035	2035 - 2040	2041 - 2045*	2046 - 2050*	Building Activity Type	2019 Baseline Average	2027 - 2030	2031 - 2035	2035 - 2040	2041 - 2045*	2046 - 2050*
College/University	3.66	2.83	2.00	1.17	0		Other	2.76	2.13	1.51	0.88	0	
Entertainment/ Public Assembly	1.62	1.25	0.89	0.52	0		Recreation	4.21	3.25	2.29	1.34	0	
Fire/Police Station	3.15	2.44	1.72	1.00	0		Refrigerated Warehouse	0.49	0.38	0.27	0.16	0	
Hospital	6.63	5.12	3.62	2.11	0		Residence Hall/ Dormitory	1.53	1.18	0.84	0.49	0	
Hotel	2.87	2.22	1.57	0.91	0		Restaurant	7.57	5.85	4.13	2.41	0	
K-12 School	1.26	0.98	0.69	0.40	0		Retail Store	1.18	0.91	0.64	0.38	0	
Laboratory	8.77	6.78	4.79	2.79	0		Self-Storage Facility	0.32	0.25	0.17	0.10	0	
Multifamily Housing	0.84	-	0.65	0.46	0.27	0	Senior Living Community	2.74	2.12	1.50	0.87	0	
Non-Refrigerated Warehouse	0.84	0.65	0.46	0.27	0		Services	1.89	1.46	1.03	0.60	0	
Office	0.81	0.63	0.44	0.26	0		Supermarket/ Grocery Store	4.58	3.54	2.50	1.46	0	
							Worship Facility	1.54	1.19	0.84	0.49	0	

Source: Targets in proposed Seattle BEPS – Jan 2023 (Table A).

\* Net zero emissions by the compliance year required.

## Estimate a Building's Greenhouse Gas Intensity Target (GHGIT) for 1<sup>st</sup> Interval

### Pro-rate GHGIT by Building Activity Types (like WA CBPS EUI target)

	Space GFA (SF)	Percent of GFA (SF)		Activity GHGIT		Pro-rated GHGIT
Office	60,000	80%	Х	0.63	=	0.50
Retail	10,000	13%		0.91		0.12
Gym (Recreation)	5,000	7%		3.25		0.22
Total GFA	75,000			GHGIT		0.84

### TBD in Rulemaking:

- Normalization for operating hours (credit for more weekly hours, like WA CBPS)
- Normalization for occupancy density in multifamily (credit for smaller units/more tenants)
- Space use rules

## Example "Office" Building

Does it meet or exceed the target?

> It exceeds the target, so this building would need to reduce emissions to comply.

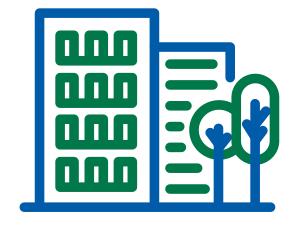
<b>1. Building's 2019 greenhouse gas intensity (GHGI)</b> (kg CO2e/sf/yr)	1.02
<b>2. Building's estimated target (GHGIT)</b> (kg CO2e/sf/yr)	0.84
<b>3. Does GHGI exceed or meet GHGIT?</b> ( kg CO2e/sf/yr)	0.18



• 0.18 is about a 17.6% reduction in emissions. Current proposed policy would allow this building to comply with just 10% reduction from 2019 baseline for 1st compliance interval.

# What does reducing GHGI by 0.18 annually mean for climate impact?

- Savings of 13,500 kg CO2e each year for this one building. (0.18 x 75,000 sf)
- Or emissions equivalent to...
  Three cars off the road each year
  Or 1,500 gallons of gasoline
- Getting this building to net-zero emissions...
  - > 16 cars off the road each year
  - > Or 8,600 gallons of gasoline



Equivalencies calculated with https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

## Q&A: What clarifying questions do you have?

Additional policy info: www.seattle.gov/building-performance-standards

## Part 4

## Get Portfolio Manager Data

Office of Sustainability & Environment

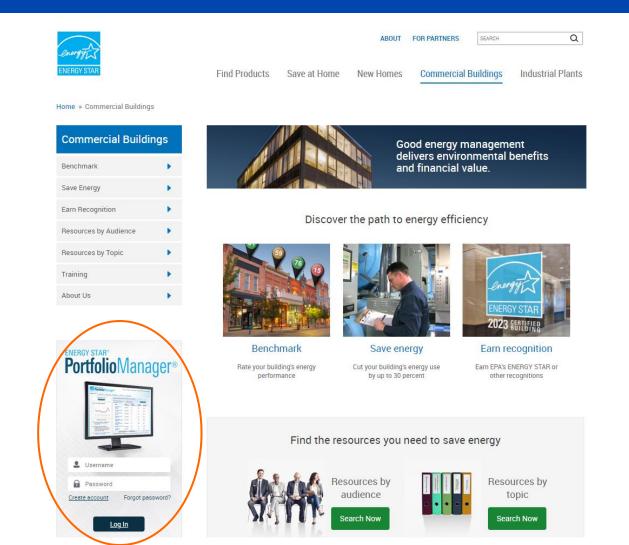
## **ENERGY STAR Portfolio Manager Account**

### https://www.energystar.gov/buildings

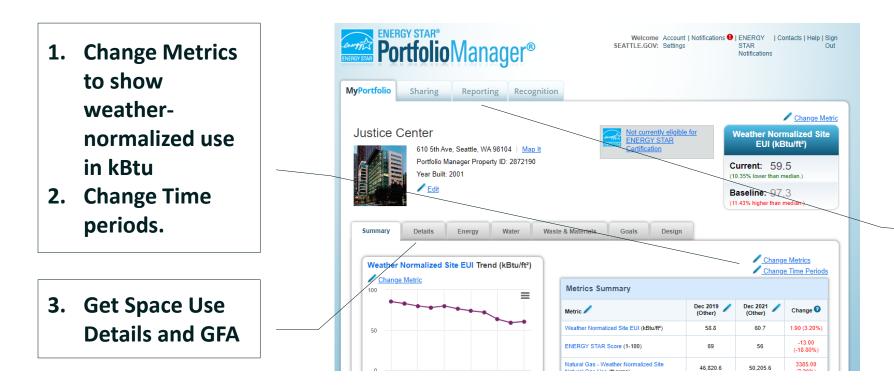
- Username
- Password

Seattle Energy Benchmarking Help (for general benchmarking help)

- www.seattle.gov/energybenchmarking
  instruction pages
- <u>energybenchmarking@seattle.gov</u>



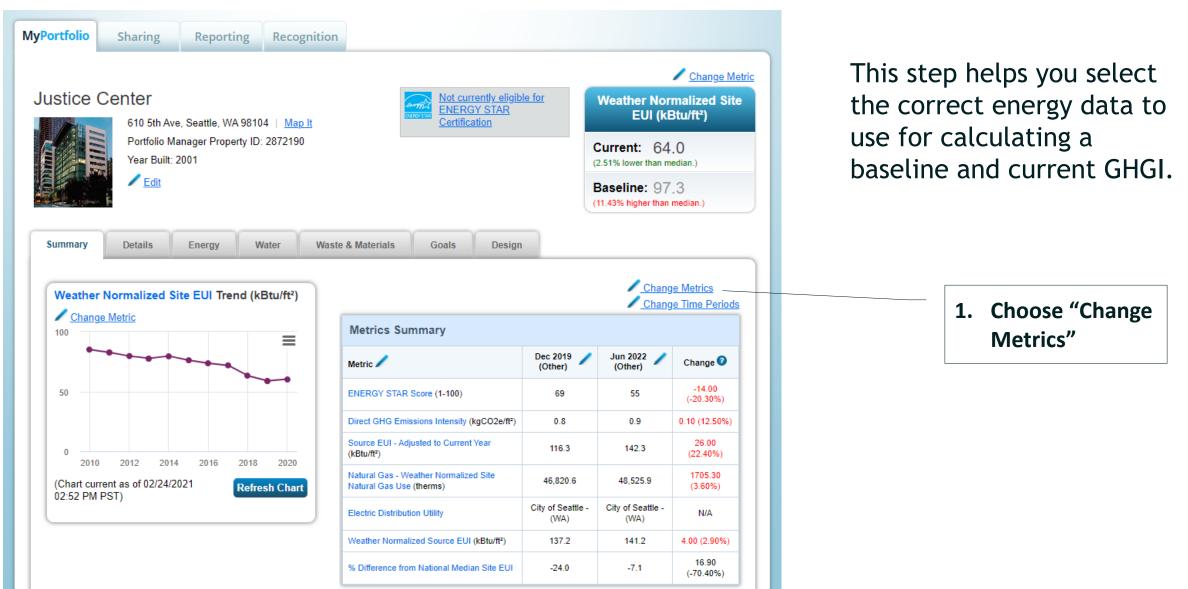
## Get Data from Portfolio Manager to Use for Seattle BEPS GHGI Estimates



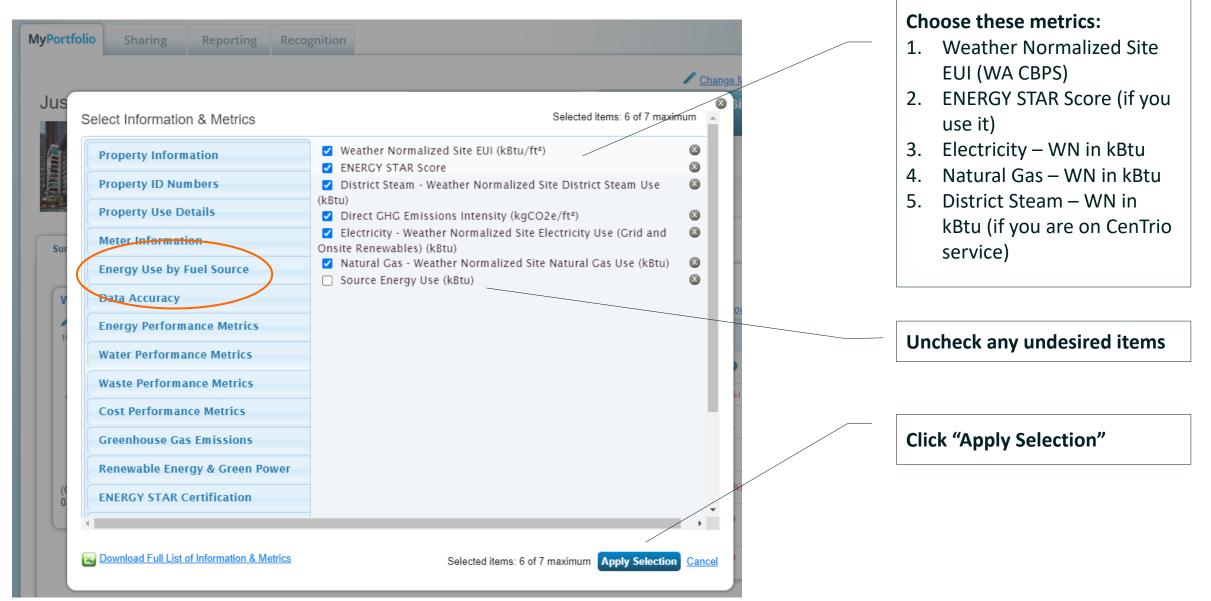
Another Option: Use ESPM Reporting Template Excel download

**NOTE:** These are methods to use for estimates now. As part of BEPS Program development, Seattle will be adopting or developing better tools.

### Update ESPM Metrics Summary: Change Metrics

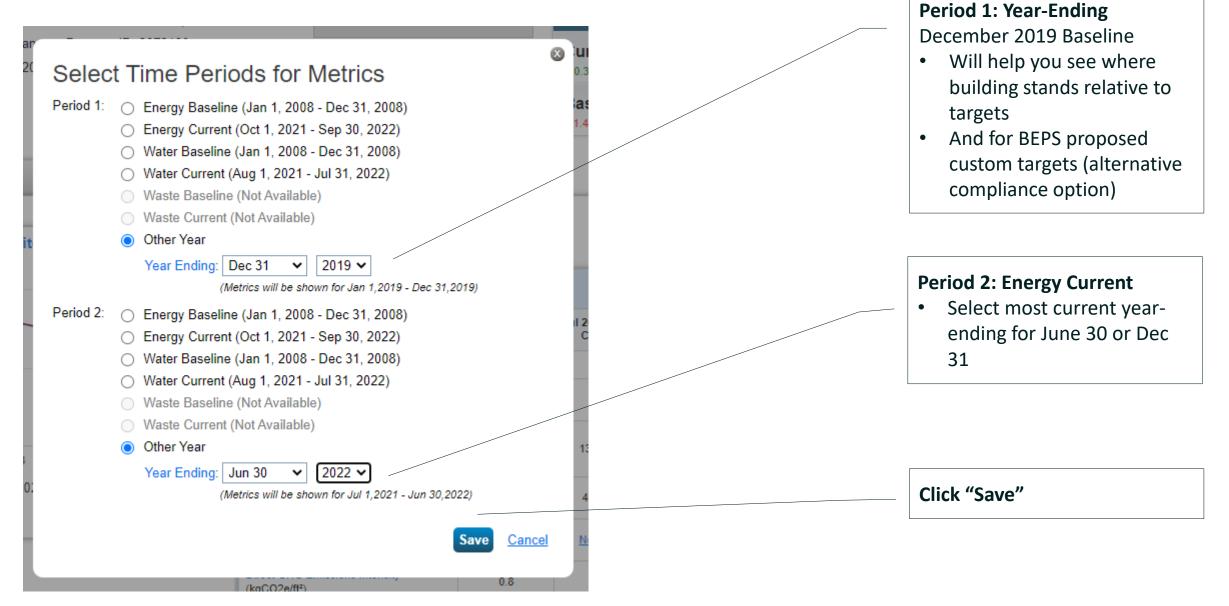


### Select Different ESPM Energy Metrics

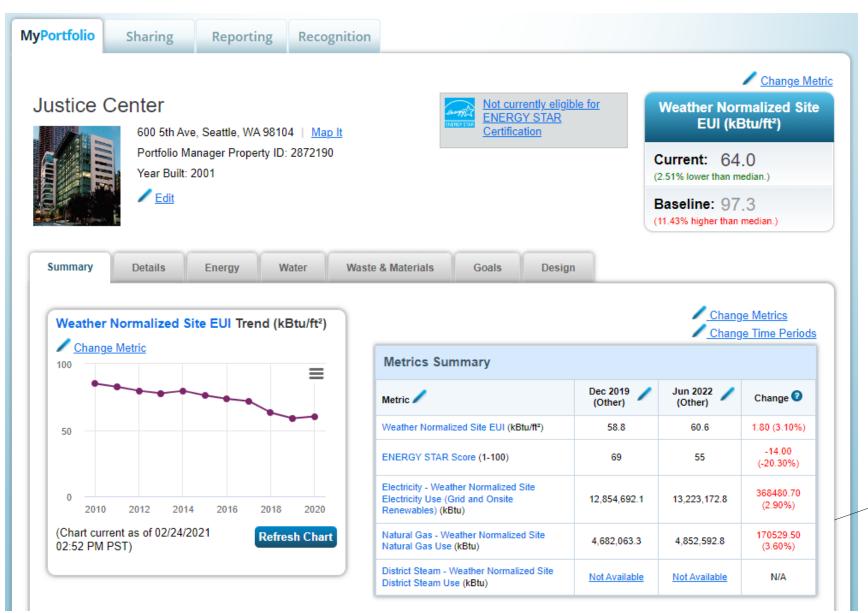


#### Update ESPM Metrics Summary: Change Time Periods **MyPortfolio** Reporting Sharing Recognition / Change Metric This step helps you set a Justice Center Not currently eligible for Weather Normalized Site baseline year and a ENERGY STAR EUI (kBtu/ft<sup>2</sup>) Certification 600 5th Ave, Seattle, WA 98104 | Map It current year for easy Portfolio Manager Property ID: 2872190 Current: 64.0 Year Built: 2001 (2.51% lower than median.) reference. 🖊 Edit Baseline: 97.3 (11.43% higher than median.) Waste & Materials Summary Details Energy Water Goals Design **Choose** "Change 1. **Time Periods**" Weather Normalized Site EUI Trend (kBtu/ft<sup>2</sup>) Change Time Perio Change Metric Metrics Summary 100 ≡ Dec 2019 Jun 2022 Metric 🥖 Change 🕜 (Other) (Other) Weather Normalized Site EUI (kBtu/ft²) 1.80 (3.10%) 58.8 60.6 50 -14.00 ENERGY STAR Score (1-100) 69 55 (-20.30%) Electricity - Weather Normalized Site 368480.70 0 Electricity Use (Grid and Onsite 12,854,692.1 13.223.172.8 (2.90%) 2010 2012 2014 2016 2018 2020 Renewables) (kBtu) (Chart current as of 02/24/2021 Natural Gas - Weather Normalized Site 170529.50 Refresh Chart 4,682,063.3 4.852.592.8 02:52 PM PST) Natural Gas Use (kBtu) (3.60%) District Steam - Weather Normalized Site Not Available Not Available N/A District Steam Use (kBtu)

### Select Baseline and Current Time Periods



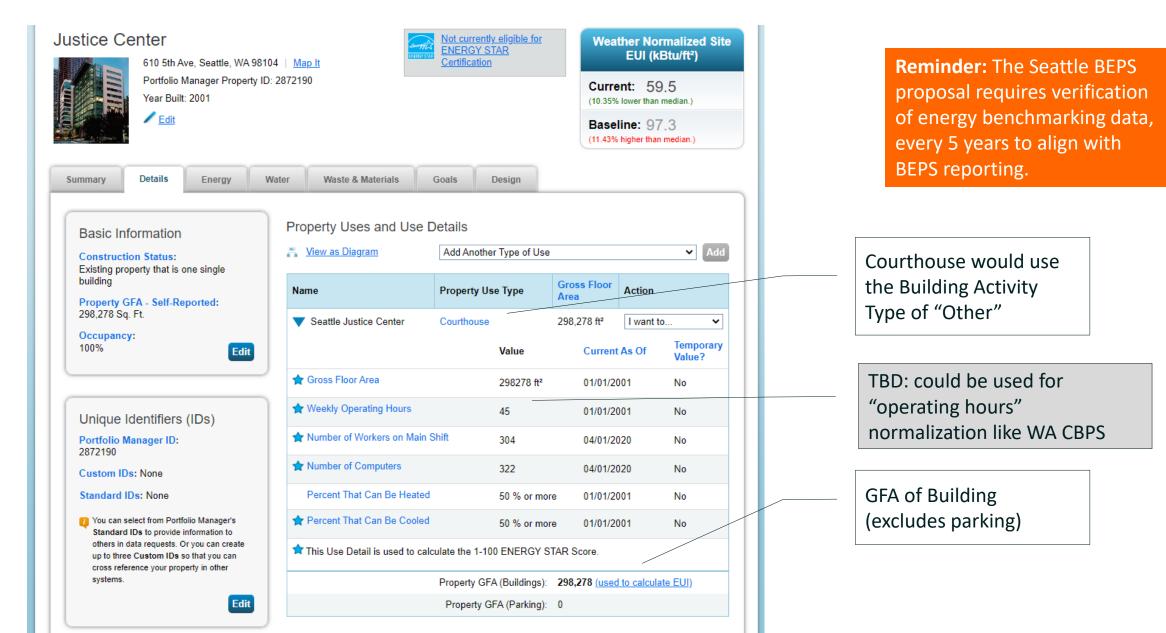
### ESPM Metrics Summary Better Aligned with Seattle BEPS Metrics



**Reminder:** The Seattle BEPS proposal requires verification of energy benchmarking data, every 5 years to align with BEPS reporting.

Note: Increased energy use during pandemic

### Get Space Use Details and GFA (for Building Activity Type targets)



### **Justice Center - 2022 Emissions**

### Does it meet or exceed the target?

It meets the target, so this building does not need to reduce emissions to comply with 1<sup>st</sup> targets.

<b>1. Building's 2022 greenhouse gas intensity (GHGI)</b> (kg CO2e/sf/yr)	1.11
<b>2. Building's estimated target (GHGIT) – "Other"</b> (kg CO2e/sf/yr)	2.76
<b>3. Does GHGI exceed or meet GHGIT?</b> ( kg CO2e/sf/yr)	-1.65



Photo by Eric Stuhaug

## Q&A: What clarifying questions do you have?

Additional policy info: www.seattle.gov/building-performance-standards

# Contact

City of Seattle Office of Sustainability & Environment

seattle.gov/building-performance-standards

cleanbuildings@seattle.gov



Seattle Office of Sustainability & Environment