Seattle's Brand-New Building Emissions Performance Standard:

What You Need to Know Now

BOMA – October 2, 2024

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OFFICE OF SUSTAINABILITY & ENVIRONMENT

City of Seattle

What's on Tap Today

Part 1: Seattle BEPS Background

- Why this policy?
- Benefits

Part 2: Seattle BEPS Requirements

- Requirements
- Compliance Timeline

Part 3: Pathways to Compliance

- Paths A, B and C
- Penalties

Part 4: Estimate a Building's Greenhouse Gas Intensity (GHGI) & GHGI Target

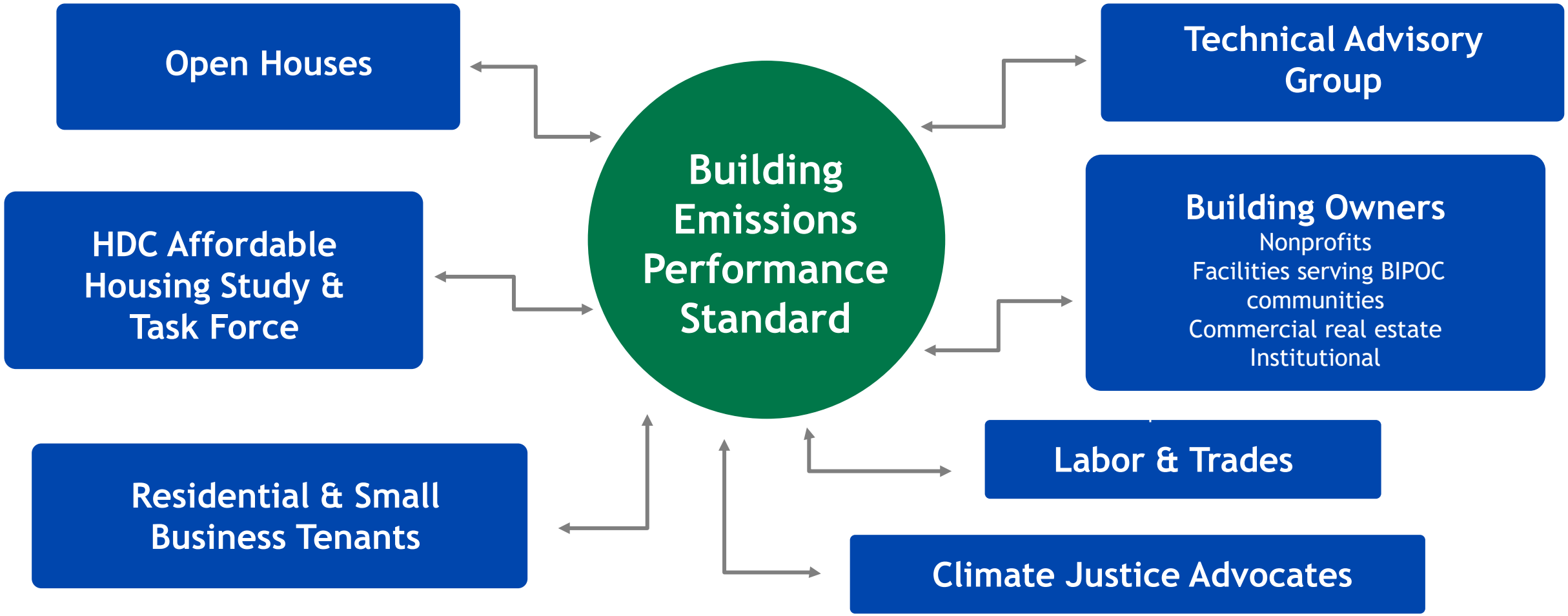
Part 5: Net-Zero Emissions Examples

"The Building Emissions Performance Standards (BEPS) policy continues Seattle's leadership on climate action and represents a milestone for our city's efforts to reduce greenhouse gas emissions and build healthy communities," said Mayor Bruce Harrell.

"This bold legislation will not only create cleaner buildings for people to live, work, and play in, but also hundreds of local jobs and build pathways to careers in the green economy…"

Mayor Bruce Harrell,
BEPS Press Release, December 13, 2023

Many voices helped shape this policy



Policy addresses multiple priorities

Climate crisis and pollution

Environmental justice

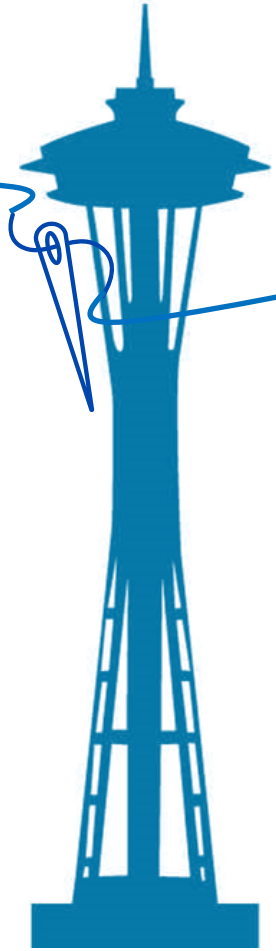
Downtown revitalization

Equipment life cycles and market signals

Workforce and a just transition

Affordable housing and human services

City-owned building portfolio



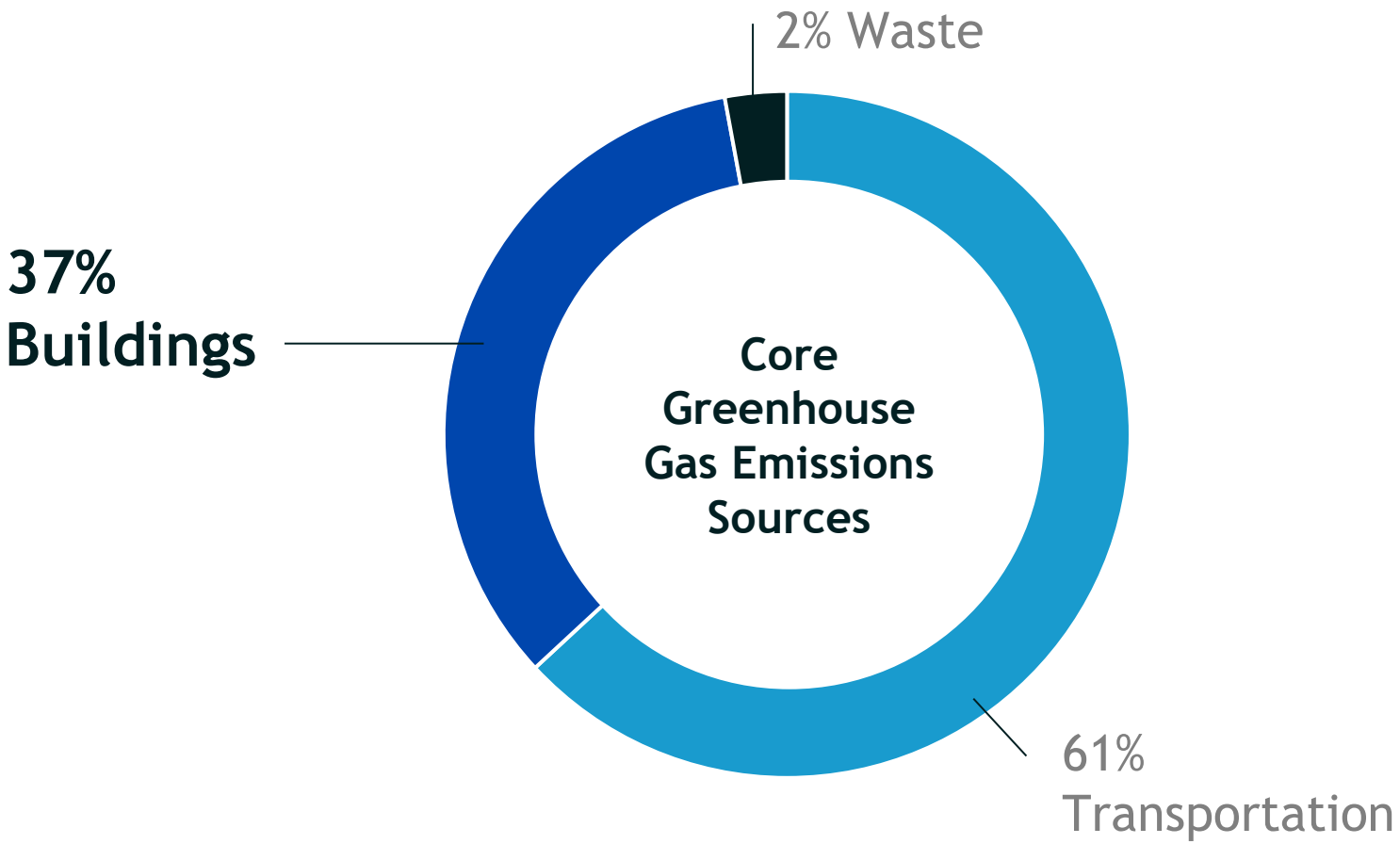
What is a Building Performance Standard (BPS)?

A BPS requires existing buildings to meet carbon emissions or energy performance targets by specific deadlines.

Decarbonization - another word for reducing emissions.

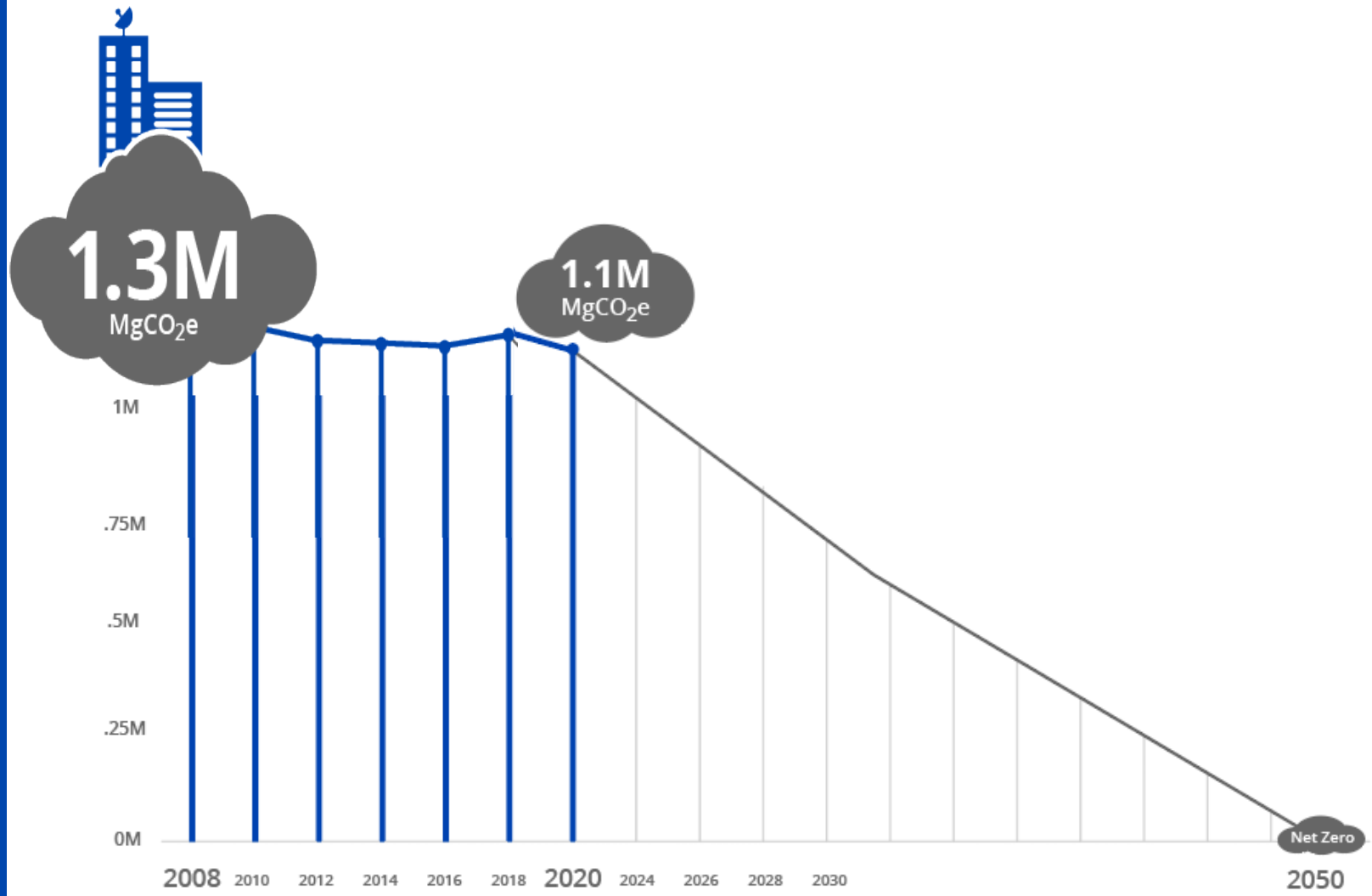
IMT
INSTITUTE FOR MARKET TRANSFORMATION

Buildings are one of the largest sources of Seattle's climate pollution



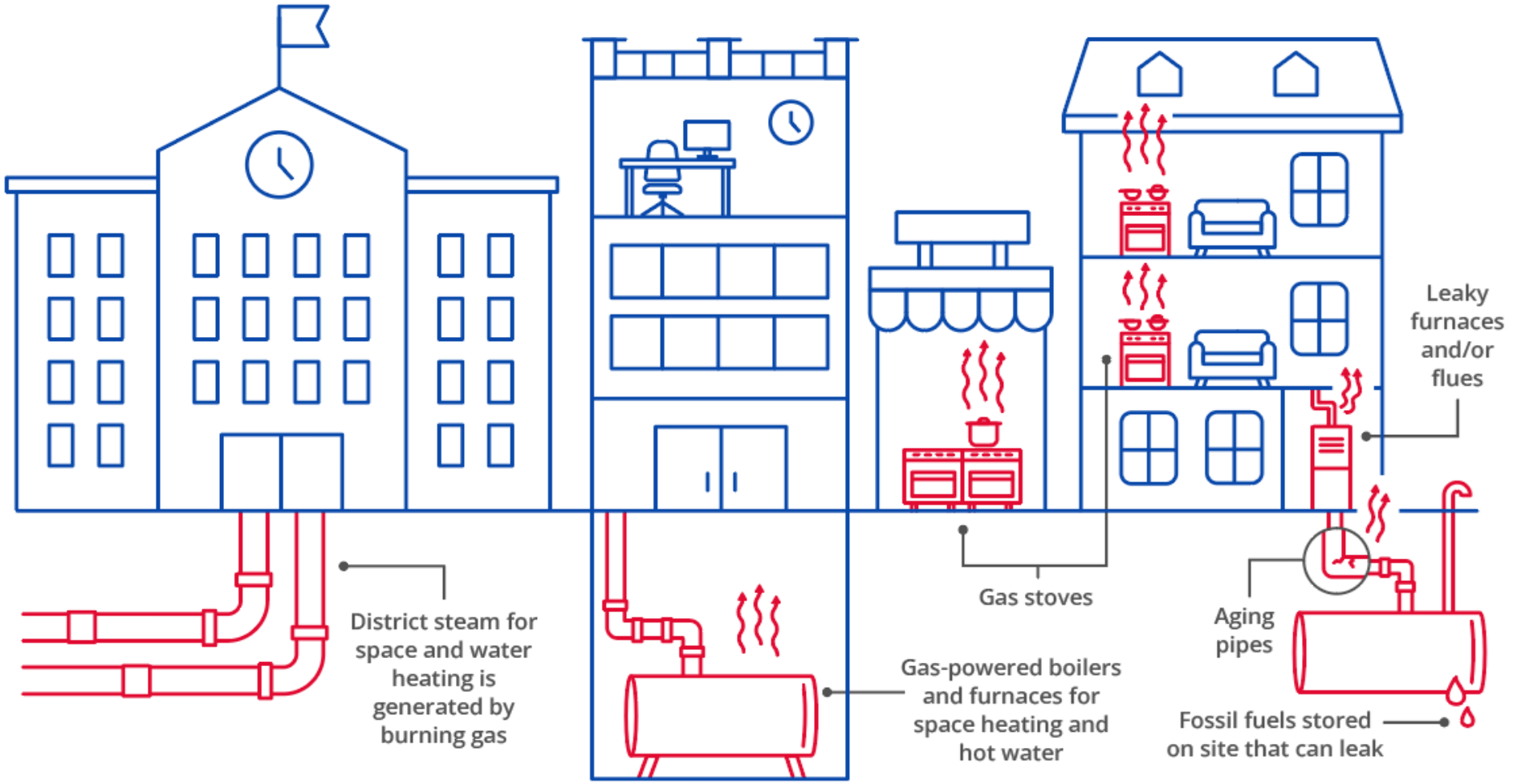
Source: 2020 Seattle Greenhouse Gas Emissions Inventory

Bold action is needed to significantly reduce climate emissions from buildings



Source: City of Seattle. 2020 Community Greenhouse Gas Emissions Inventory. *https://www.seattle.gov/environment/climate-change/climate-planning/performance-monitoring*

Building-related emissions mostly come from burning fossil fuels, like gas and oil



BEPS is one of the most effective actions we are taking.

BEPS is projected to:

- **Reduce greenhouse gas emissions by about 325,000 metric tons by 2050** from existing large buildings.
- Or **27% decrease in building related emissions** from a 2008 baseline.
- Or the equivalent **72,322 gasoline-powered cars taken off the road** for a year.

Benefits of emissions-based building performance standards and energy efficiency

Greater efficiency can mean cost savings for owners and tenants

Improved comfort

New well-paying jobs in clean energy and energy efficiency

Safer communities — reduced risk of gas leakage, accidents, and contamination

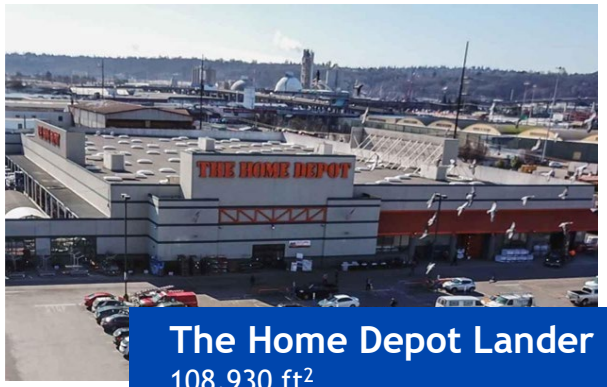
Cleaner air indoors and outdoors

Lower carbon emissions

Part 2
Seattle Building Emissions Performance Standard Requirements

Covers about 4,100 Nonresidential & Multifamily Existing Buildings >20,000 square feet

F5 Tower
960,655 ft²

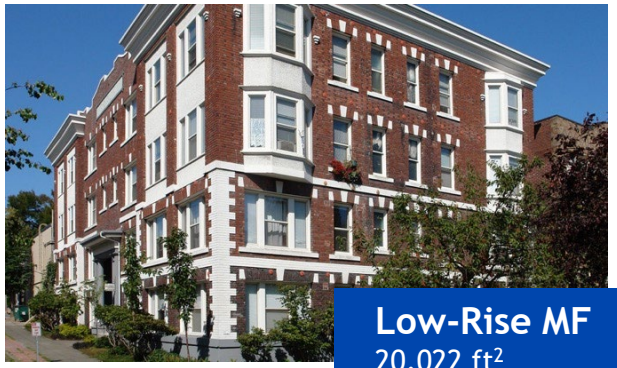


The Home Depot Lander
108,930 ft²

Yesler Community Center
29,500 ft²

High-Rise MF
314,000 ft²

Mid-Rise MF
103,100 ft²



Low-Rise MF
20,022 ft²

(Buildings not included: new construction (covered by Energy Code), industrial/manufacturing, small commercial and multifamily, single-family)

What does Seattle BEPS Require of Building Owners?

Every 5 years:

Energy Benchmarking Verification: Verify previous year's building energy use and emissions. *Starts 2027–2030*

GHG Report: Document current GHGI/GHGIT and equipment, and plan actions to achieve targets. *Starts 2027–2030*

Meet Greenhouse Gas Intensity Targets (GHGIT). *By 2031–2035*

Achieve net-zero emissions with narrow exceptions. *By 2041–2050 (depending on building type and size)*

NOTE: Building Tune-Ups will sunset after its 2023-2026 compliance cycle is done.

www.seattle.gov/building-performance-standards

What's the Timeline for Compliance?

Seattle Building Emissions Performance Standard (BEPS)

2022 - 2026	2027 - 2030	2031 - 2035	2036 - 2040	2041 - 2045	2046 - 2050
Policy Development / Support Program	Verify Energy & Emissions, Plan, and Start Reductions	Nonresidential Emissions Targets		Net-Zero Targets	
		Multifamily Emissions Targets*			Net-Zero Targets
Director's Rule Mid-2024-2025	Support & Early Adopter Incentives →				

*Extension for affordable housing & human services until 2036-2040 to meet targets.

State of WA Clean Buildings Performance Standard

2026 - 1st Energy Targets Commercial >50K	2031 >> Future Energy Targets - To be Determined by Rule Commercial & Multifamily >20K

WA CBPS & Seattle BEPS Requirements Comparison

	WA CBPS (2019)	Seattle BEPS (Dec 2023)
Performance Target	Energy (EUIt) *kBtu/sf/yr*	Emissions (GHGIT) *co2e/sf/yr*
Covered Building Sizes	>20,000 SF[1]	
Building Types	Nonresidential & Multifamily	
Requirements	**Reporting:** Operations & Maintenance and Energy Management Plans **Target:** Meet EUIt (NR >50K SF)	**Reporting:** Benchmarking Verification and GHG Report **Target:** Meet GHGIT
1st Reporting Deadline	2026-2028 (all)	2027-2030 (all)
Meet 1st Target Deadline	2026-2028 (NR >50K SF)	2031-2035 (all)

1 – WA "Tier 2" buildings (MF >20K SF and NR >20-50K) reporting reqs. only.

Reporting Timelines by Building Size

- Energy Benchmarking Verification
- GHG Report
- Meet GHGIT (or alternative compliance)
- Achieve Net-Zero

By October 1st of each year listed:

	1st Interval	2nd Interval	3rd Interval	4th Interval (NR Net-Zero)	5th Interval (MF Net-Zero)
Requirements					
>220,001 SF	2027	2031	2036	2041	2046
>90,001 - 220,000 SF	2027	2032	2037	2042	2047
>50,001 - 90,000 SF & campus, portfolios and connected buildings	2028	2033	2038	2043	2048
>30,001 - 50,000 SF	2029	2034	2039	2044	2049
>20,001 - 30,000 SF	2030	2035	2040	2045	2050

Who is qualified to report for BEPS?

Qualified Person: means a person having training, expertise, and at least three years professional experience in building energy use analysis and any of the following certifications or licenses:

- **Licensed professional architect or engineer** in the State of Washington
- **Building Energy Assessment Professional** (BEAP) certified by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- **Certified Energy Auditor** (CEA) certified by the Association of Energy Engineers (AEE)
- **Building Operator Certification** (BOC) Level II by the Northwest Energy Efficiency Council
- **Certified Commissioning Professional** (CCP) who is certified by an ANSI/ISO/IEC 17024:2012 accredited organization
- **Certified Energy Manager** (CEM) in current standing certified by the Association of Energy Engineers (AEE)
- **Energy Management Professional** (EMP) certified by the Energy Management Association.

Part 3

Pathways to Compliance for Seattle BEPS

Three compliance pathways for greatest flexibility

PATH A:
Meet standard or portfolio GHG emissions targets at each five-year compliance interval

Compliance includes:
Measure Energy & Emissions
Energy/Emissions Reduction Planning
Meet Targets
Achieve Net Zero by 2041-2050

Incentives and Technical Support

PATH B:
Small variances but overall can meet compliance with modifications.

Extensions:
Get a bye on one or more compliance intervals before returning to Path A

End Use Deductions:
Meet Path A with certain emissions deductions (e.g. restaurant cooking)

Compliance Payment:
Payment in lieu 2031-2035; revenue supports under-resourced buildings.

PATH C:
Special consideration and flexibility due to unique circumstances.

Decarbonization Plan:.
Must include energy/GHG emissions audit and cost analysis.
- Net-Zero by 2050
- Low-Emissions by 2050

Eligibility Criteria Include:
- Conflicts with historic status
- Sub-alt or seismic upgrade
- Infeasible structural/electric upgrades req. to meet net-zero
- And more…

PATHS A & B Most Buildings Will Meet Standard GHGI Targets (GHGIT)

Building Activity Type	2031 - 2035	2036 - 2040[1]	2041 - 2045[1, 2]	2046 - 2050[1, 3]
College/University	2.69	*1.57*	*0*	*0*
Entertainment/ Public Assembly	1.18	*0.69*	*0*	*0*
Fire/Police Station	2.23	*1.30*	*0*	*0*
Hospital	4.68	*2.73*	*0*	*0*
Hotel	2.06	*1.20*	*0*	*0*
K-12 School	0.95	*0.56*	*0*	*0*
Laboratory	6.30	*3.68*	*0*	*0*
Multifamily Housing	0.89	*0.63*	*0.37*	*0*
Non-Refrigerated Warehouse	0.77	*0.45*	*0*	*0*
Office	0.81	*0.47*	*0*	*0*

Building Activity Type	2031 - 2035	2036 - 2040[1]	2041 - 2045[1, 2]	2046 - 2050[1, 3]
Other	2.48	*1.45*	*0*	*0*
Recreation	3.22	*1.88*	*0*	*0*
Refrigerated Warehouse	0.98	*0.57*	*0*	*0*
Residence Hall/ Dormitory	1.16	*0.68*	*0*	*0*
Restaurant	5.73	*3.34*	*0*	*0*
Retail Store	1.03	*0.60*	*0*	*0*
Self-Storage Facility	0.31	*0.18*	*0*	*0*
Senior Living Community	2.11	*1.23*	*0*	*0*
Services	1.36	*0.79*	*0*	*0*
Supermarket/ Grocery Store	3.42	*2.00*	*0*	*0*
Worship Facility	1.20	*0.70*	*0*	*0*

1 – Targets may be revised by future rule, per subsection 925.070.A.
2 – Net-zero emissions by 2041-2045 for nonresidential.
3 – Net-zero emissions by 2046-2050 for multifamily housing.
4 – Pursuant to Section 22.925.110, owners of low-income housing, human service use, and low-rent housing may receive an extension from meeting the GHGITs in 2031-2035 but still must meet benchmarking verification and all other reporting obligations for 2031-2035.

Building Activity Types Used for GHGIT

Building Activity Types	Portfolio Manager Building / Space Types Included
College/University	College/University
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

Path A flexibility

Details, timeline to apply (if needed), documentation required, etc. to come with Director's Rule.

- **Electric-only buildings** are exempt from GHGIT requirements and reporting for all intervals. But must still verify benchmarking.
- **2031-2035 greenhouse gas intensity targets (GHGIT) are required.**
  - 2036 and later targets are provisional and may be adjusted by rule (in future years).
- **Portfolio, campus, connected buildings compliance allowed.**
  - GHGIT will be an aggregate of all space types in all the buildings.
- **Alternate GHGIT** based on baseline of individual building(s)
  - Uncommon building types that don't have a target type (e.g., ice skating rink)
  - Buildings with VERY high emissions (GHGI 3.5 times the standard target)
  - Campus, connected buildings, or public/nonprofit portfolio

Path B flexibility

Details, timeline to apply (if needed), documentation required, etc. to come with Director's Rule.

- **Alternative Compliance Payment** in 2031-2035
- **Extensions:**
  - new construction
  - financial distress
  - high vacancy (% TBD in rules)
- **Exemption:** demolition scheduled within 3 years of compliance deadline
- **End-use emissions deductions for <u>all</u> compliance intervals, such as:**
  - Emergency backup generators
  - Electric vehicle charging
  - Fossil fuel equipment within individual residential condominium units
- **End-use emissions deductions for <u>some</u> compliance intervals, such as**
  - Cooking in nonresidential and multifamily spaces (2031-2040)
  - District energy contract in place (e.g., CenTrio Customer) (2031-2035)
- **Multifamily**
  - Prescriptive Path: Convert hot water or HVAC equipment to heat pump or in-unit electric resistance (per code) (2031-2045)
  - Low-income / low-rent housing and human service uses eligible for GHGIT extension to 2036-2040.
  - Low-income housing eligible for GHGIT extension to 2041-2045 if not yet reached refinancing date.

Path C flexibility

Custom Decarbonization Compliance Plan:

- Net-Zero by 2050
- Low-Emissions by 2050

Apply to use based on eligibility. Details to come with Director's Rule.

Eligibility Examples:

- **District campus** (served by common energy system)
- Conflict with **landmark or historic district designation**
- Concurrent **substantial alteration** and/or **seismic** upgrade
- Actions to meet targets conflict with an **existing lease**
- **Structural and electric upgrades** required to meet net-zero emissions are infeasible
- Infeasibility in a **low-income housing** building

Compliance flexibility

- **Alternative Compliance Payment** option 2031-2035.
- **360-day grace period** after compliance deadline before any fines are issued.
- **May reduce penalty** if no more than 20% above target.
- Director has authority to **mitigate fines** and to **establish grace periods** for penalties.

OSE Best Practices for All Owners

- Coaching & Technical Assistance Support Program
- Education, Outreach and Training
- Helpdesk
- Incentives
- History with benchmarking and tune-ups of >95% compliance, primarily due to extensive outreach and compliance support

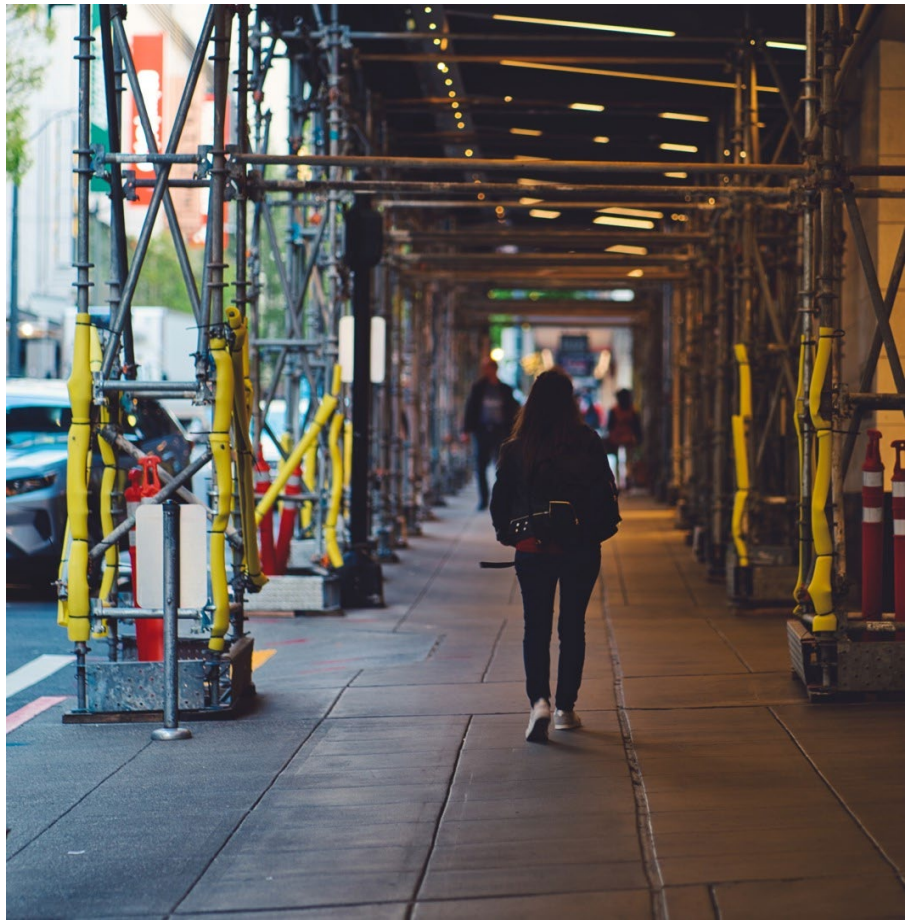
Penalties, a last resort

For each five-year compliance interval:

a. **Failure to report:**
   - $15,000 for buildings over 50,000 square feet
   - $7,500 for buildings over 20,000 square feet up to 50,000 square feet

b. **Inaccurate reporting:**
   - $15,000 for buildings over 50,000 square feet
   - $7,500 for buildings over 20,000 square feet up to 50,000 square feet

c. **Not achieving greenhouse gas intensity target:**
   - $10.00/square feet for nonresidential buildings
   - $7.50/square feet for multifamily buildings
   - $2.50/square feet for low-income or low-rent multifamily housing



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

BEPS Support

- Helpdesk
- Technical support
- **City awarded $17.2 million from US DOE to implement BEPS**

Seattle Clean Buildings Accelerator (launched!)

Coaching, education & resources and financial support for building owners and managers, with most funding **prioritized toward non-profits, and those serving frontline communities** to:

- Meet WA State Clean Buildings energy mandate
- Plan for emissions reductions under BEPS
- Identify utility and other incentives
- **Up to $4.5M beginning 2024 for financial support (affordable housing and nonprofits)**

Engineering & Capital Investments

- ✓ **Approx. $600K 2024 for engineering analysis and design** (City and DOE EECGB)
- ✓ **Awarded $2.3M** in Dept. of Energy funding for decarbonizing low-income housing (Office of Housing)
- ✓ **$2M to decarbonize low-income housing** via Green New Deal 2022 Opportunity Fund
- ✓ **Partner with King County on $49M award** for electrification and efficiency, prioritizing affordable housing, multifamily, home-based care centers, municipal, and non-profit buildings (Seattle $ TBD)

Seattle Clean Building Accelerator Participants

- To date, 40 organizations in light coaching
- More than half representing Frontline communities, nonprofits, class B/C buildings

Email cleanbuildings@seattle.gov to get on the list for program updates.

Part 5

Estimate a Building's GHGI and GHGIT

What is being measured or tracked?

Total annual weather normalized fuel use for each energy source (kBtu/year)
X
Emissions Factor of each energy source (kgCo2e/kBtu)

= total kgCO2e/year

÷

Building's total square feet (ft^2)
(excluding parking)

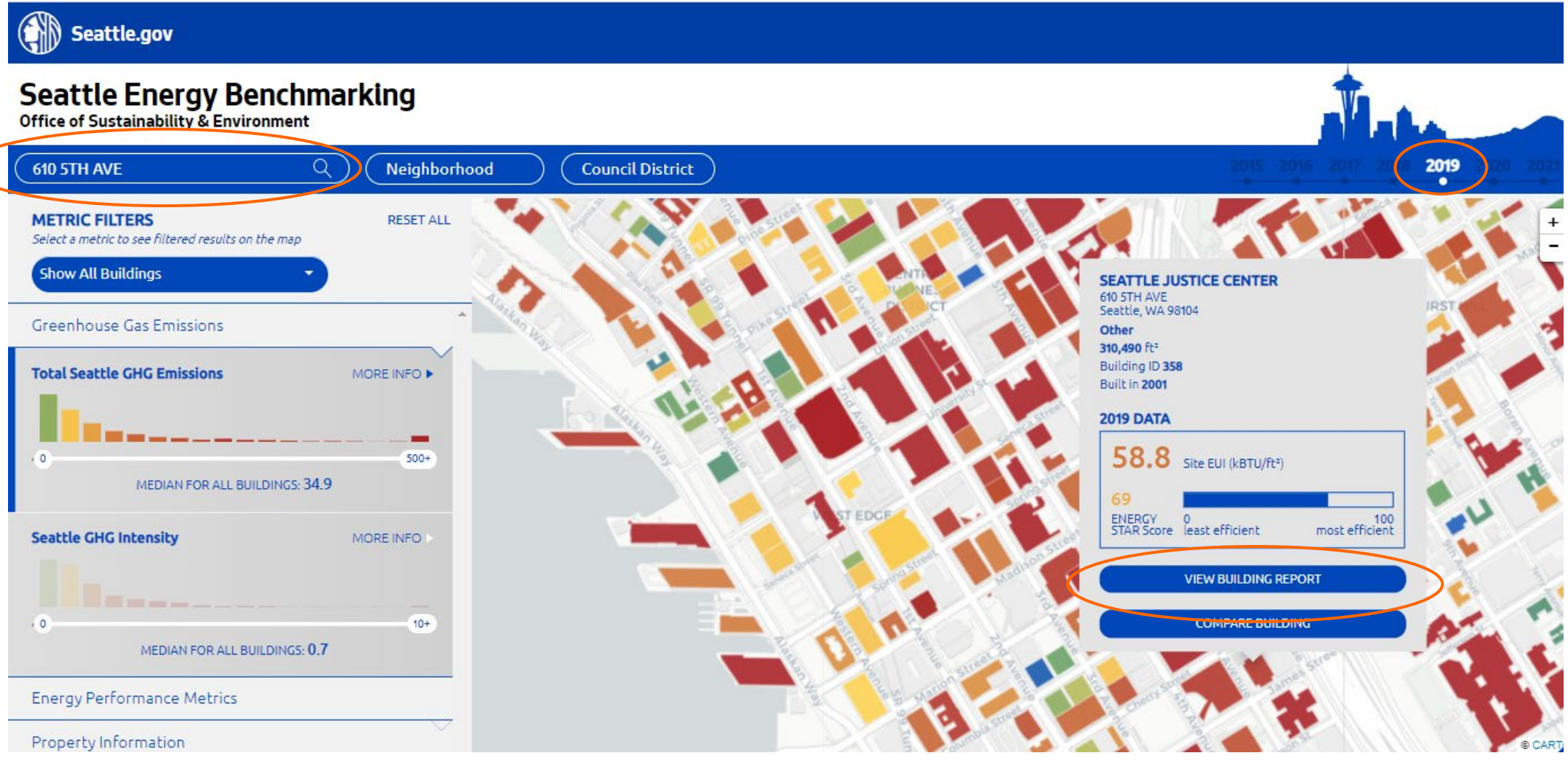
=

Greenhouse Gas Intensity (GHGI)
($kgCO_2e/ft^2/year$)

CO_2e is carbon dioxide emissions equivalent

Emissions Factor is the CO2e associated with a unit of energy

Seattle Energy Benchmarking Map
www.seattle.gov/energybenchmarkingmap



Seattle Energy Benchmarking Map
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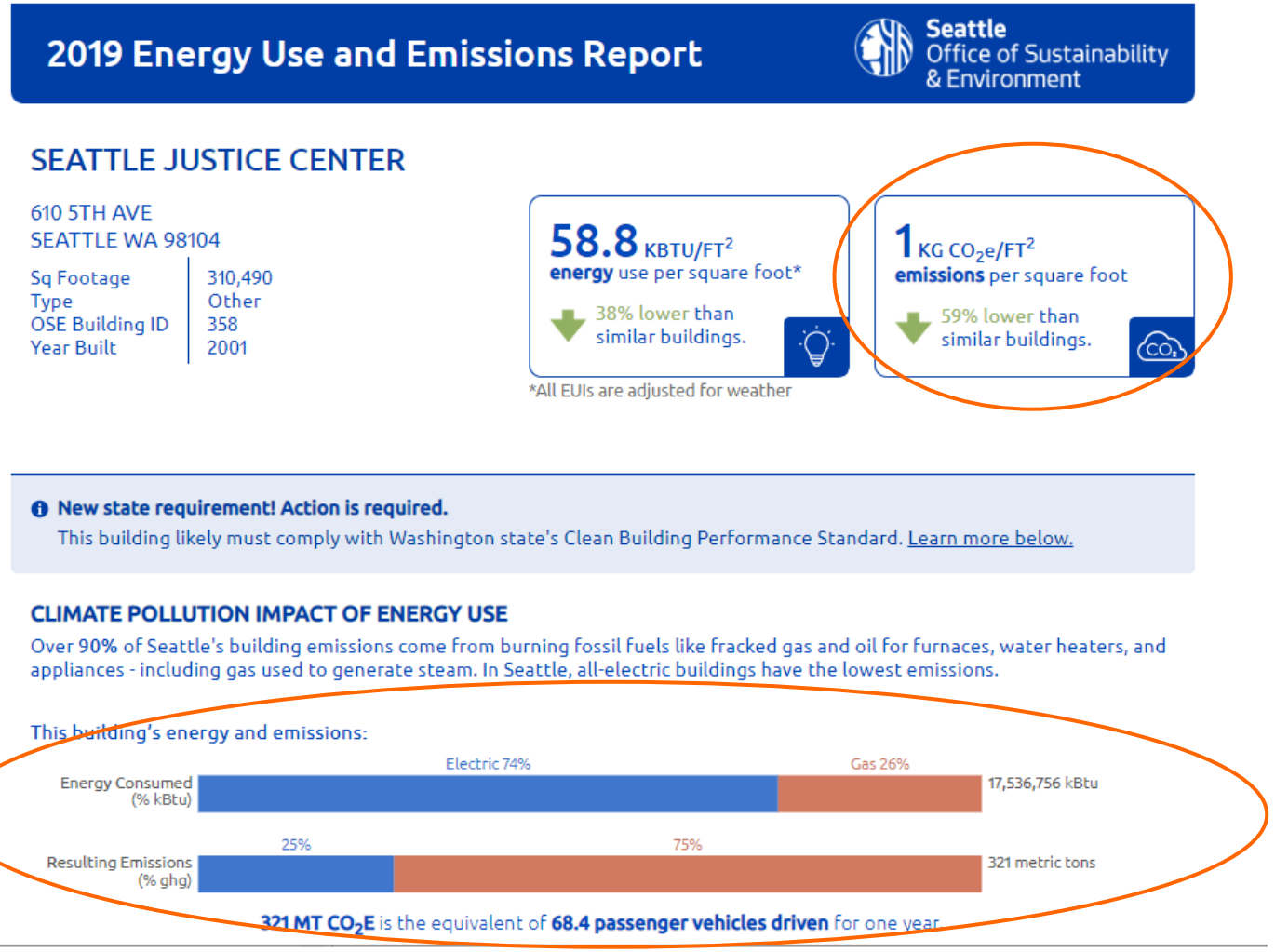


2019 Energy Use and Emissions Report

Seattle Office of Sustainability & Environment

SEATTLE JUSTICE CENTER

610 5TH AVE
SEATTLE WA 98104

Sq Footage	310,490
Type	Other
OSE Building ID	358
Year Built	2001

58.8 KBTU/FT² **energy** use per square foot*
38% lower than similar buildings.

1 KG CO_2e/FT² **emissions** per square foot
59% lower than similar buildings.

*All EUIs are adjusted for weather

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.

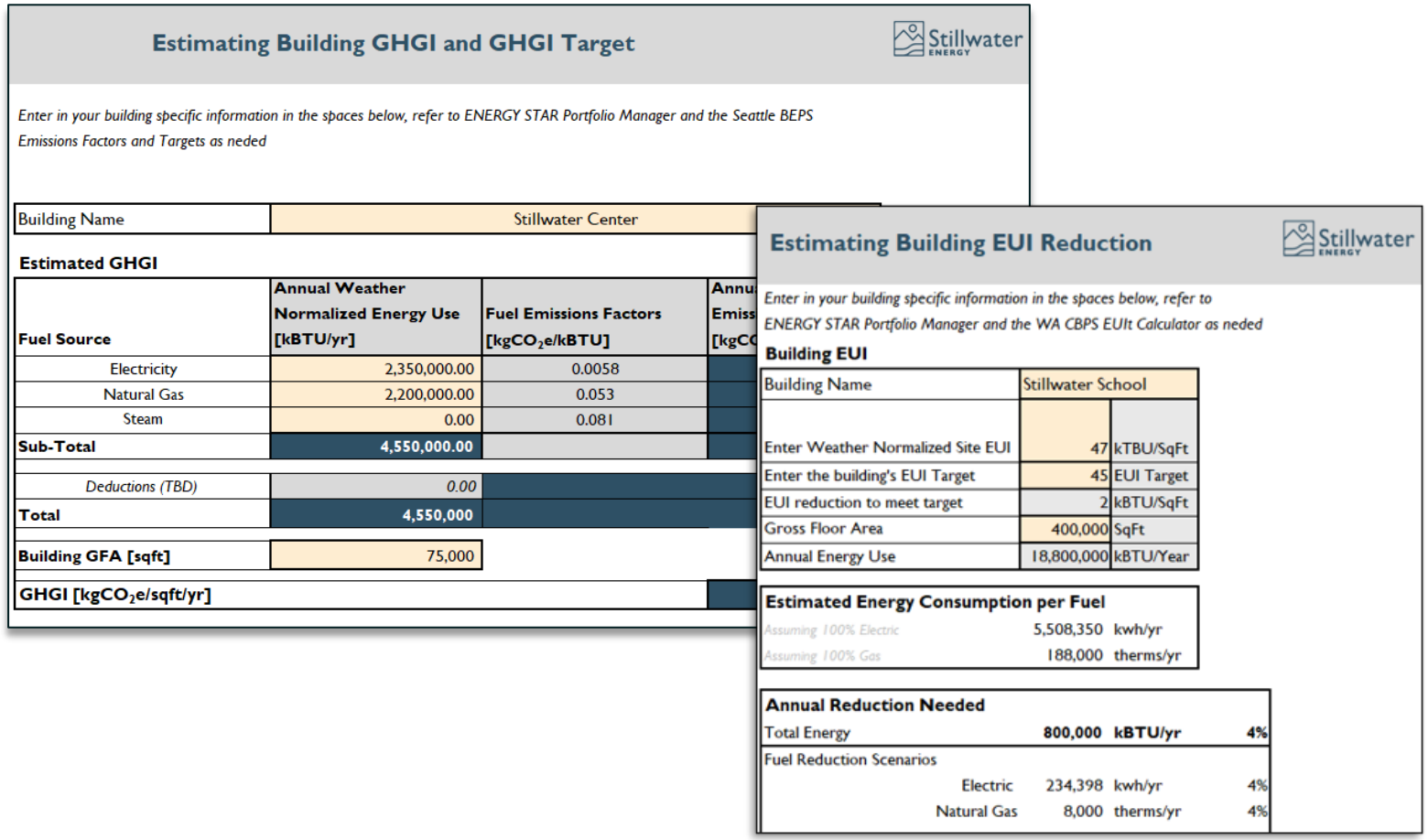
This building's energy and emissions:

321 MT CO_2E is the equivalent of **68.4 passenger vehicles driven** for one year

- High level estimate of GHGI

Accelerator Activity Examples

- Estimating your building's GHGI and GHGI target
- Estimating energy use reduction
- And lots more!



Estimating Building GHGI and GHGI Target

Stillwater ENERGY

Enter in your building specific information in the spaces below, refer to ENERGY STAR Portfolio Manager and the Seattle BEPS Emissions Factors and Targets as neded

Building Name	Stillwater Center

Estimated GHGI

Fuel Source	Annual Weather Normalized Energy Use [kBTU/yr]	Fuel Emissions Factors [$kgCO_2e/kBTU$]	Annu Emiss [kgC
Electricity	2,350,000.00	0.0058	
Natural Gas	2,200,000.00	0.053	
Steam	0.00	0.081	
Sub-Total	**4,550,000.00**		
Deductions (TBD)	*0.00*		
Total	**4,550,000**		
Building GFA [sqft]	75,000		
GHGI [$kgCO_2e$/sqft/yr]			

Estimating Building EUI Reduction

Stillwater ENERGY

Enter in your building specific information in the spaces below, refer to ENERGY STAR Portfolio Manager and the WA CBPS EUIt Calculator as neded

Building EUI

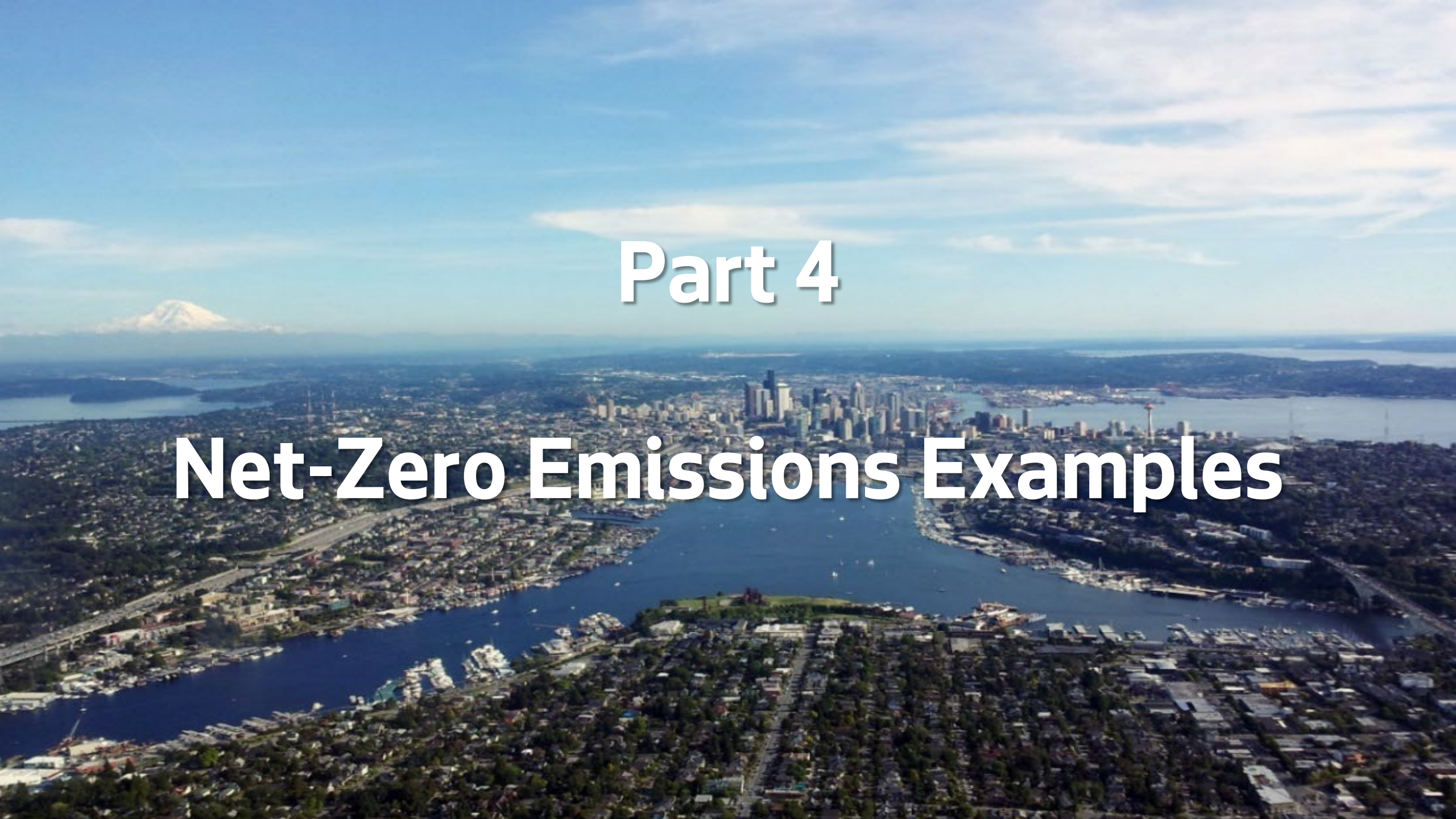
Building Name	Stillwater School	
Enter Weather Normalized Site EUI	47	kTBU/SqFt
Enter the building's EUI Target	45	EUI Target
EUI reduction to meet target	2	kBTU/SqFt
Gross Floor Area	400,000	SqFt
Annual Energy Use	18,800,000	kBTU/Year

Estimated Energy Consumption per Fuel

Assuming 100% Electric	5,508,350	kwh/yr
Assuming 100% Gas	188,000	therms/yr

Annual Reduction Needed

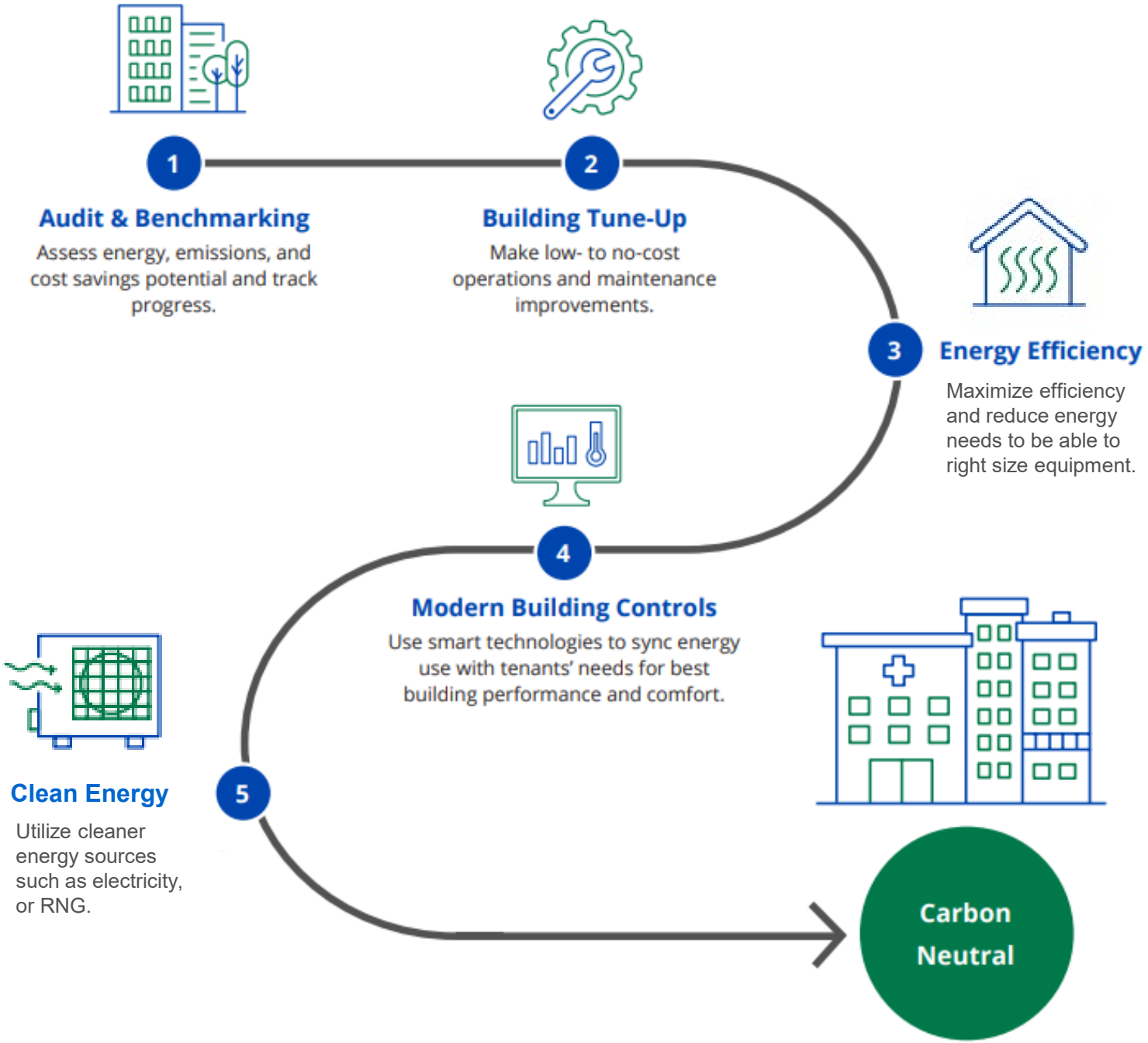
Total Energy	**800,000**	**kBTU/yr**	**4%**
Fuel Reduction Scenarios			
Electric	234,398	kwh/yr	4%
Natural Gas	8,000	therms/yr	4%



Part 4

Net-Zero Emissions Examples

Typical pathway to emissions reduction



Washington State Department of Services for the Blind

An energy efficiency and electrification path to carbon neutral

Credit: Seattle OSE

	Like for Like Replacement	Renewal & Decarbonization
Scope of Work (beginning 2018)	Gas Boiler & Chiller	**
Project Cost	$990,000	$2,723,000
City Light Incentives		$23,200
Total Cost of Ownership (30 years)	$5,034,754	$3,929,970

Services for the Blind Case Study

Owner: WA Dept. of Enterprise Services
Consultants: UMC
More Case Studies

****COMPLETE - Energy efficiency, health, and decarbonization strategies**

New Windows

Lighting Upgrade

Mechanical Controls & Distribution

Dedicated Outdoor Air Ventilation

Heat Pump Hot Water

Heat Pump Heating & Cooling

Energy reduction: 70%
Fossil fuel reduction: 100%

Stewart Manor Affordable Housing

An energy efficiency and electrification path to carbon neutral

Credit: UW Integrated Design Lab

Total Estimated Decarbonization Cost (2021): $205,500
Total Estimated Overall Cost (2021): $403,500

Stewart Manor Case Study
Owner: Seattle Housing Authority
Consultants: UW Integrated Design Lab, Solarc, Seattle Office of Housing
More Case Studies

CONCEPT PLAN - Energy efficiency, health, and decarbonization strategies

Heat Pump Water Heating

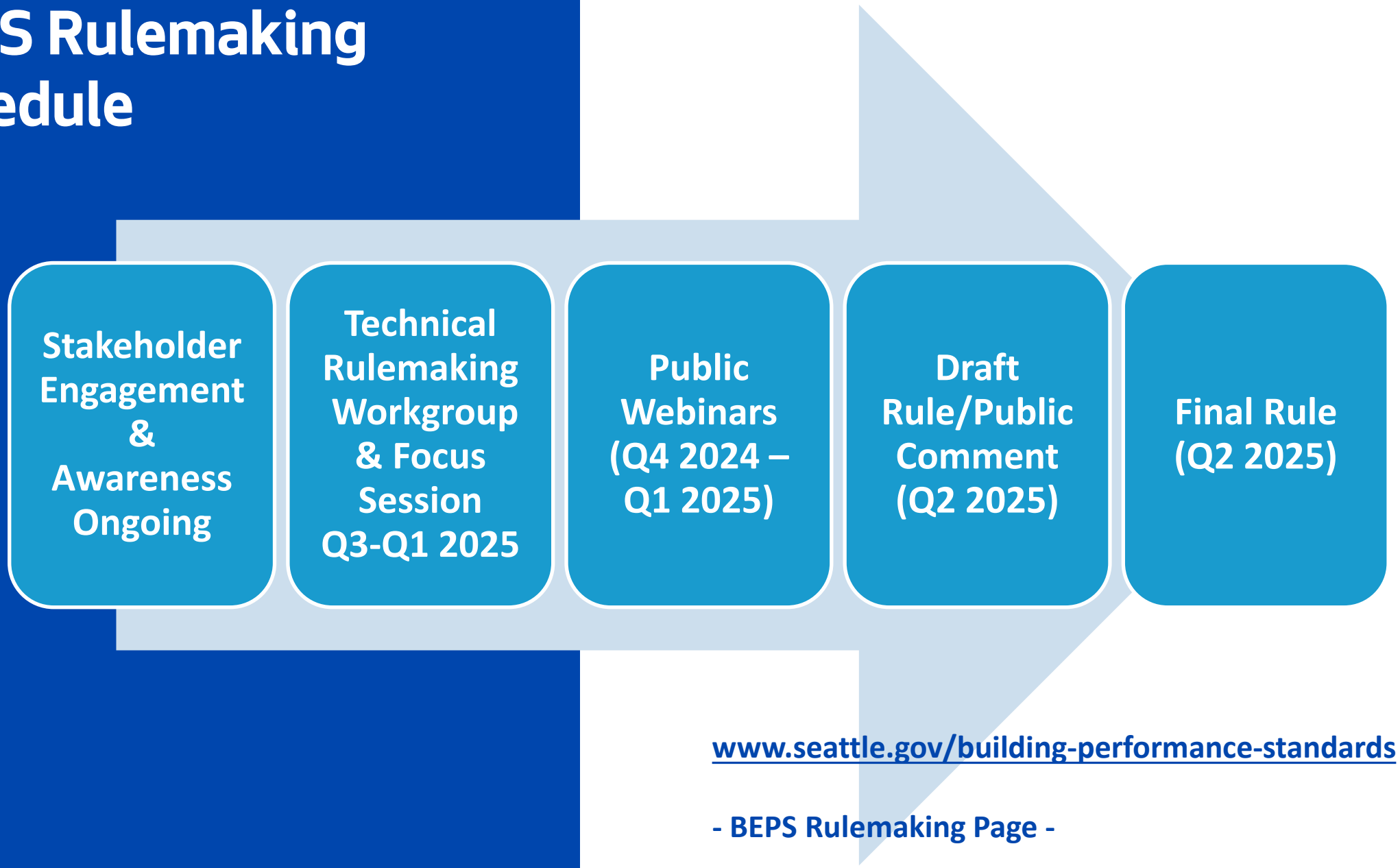
Energy Recovery Corridor Ventilation

Heat Pump Cooling in Community Room

Roof Insulation

Energy reduction:	35%
Fossil fuel reduction:	100%

BEPS Rulemaking Schedule



www.seattle.gov/building-performance-standards

- BEPS Rulemaking Page -

Resources

- Introduction to Seattle BEPS Policy
- Guide to New Policy
- GHGI Targets & Emissions Factors
- Director's Report
- Rulemaking Info
- BEPS Ordinance

Q and A

seattle.gov/building-performance-standards

Seattle
Office of Sustainability
& Environment