

Municipal Buildings Decarbonization Plan



Seattle
Office of Sustainability
& Environment

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Glossary

City Departments and Partners

AQU	Seattle Aquarium
BEN	Benaroya Hall
CBO	City Budget Office
CEN	Seattle Center
FAS	Finance and Administrative Services
OSE	Office of Sustainability and Environment
SCL	Seattle City Light
SDOT	Seattle Department of Transportation
SPL	Seattle Public Library
SPR	Seattle Parks and Recreation
SPU	Seattle Public Utilities
WPZ	Woodland Park Zoo

Other Terms and Acronyms

AHU	Air handling unit
BEPS	Building Emissions Performance Standard
DOAS	Dedicated outside air system
EO	Executive Order
ERV	Energy recovery ventilator
EV	Electric vehicle
HP	Heat pump
HVAC	Heating, ventilating, and air conditioning
IDT	Interdepartmental team
MEEP	Municipal Energy and Emissions Program
PRTU	Packaged rooftop unit
PTHP	Packaged terminal heat pump
RCMP	Resource Conservation Management Plan
REET	Real Estate Excise Tax
SEC	Seattle Energy Code
SME	Subject matter expert
UH	Unit heater
VAV	Variable air volume
VRF	Variable refrigerant flow

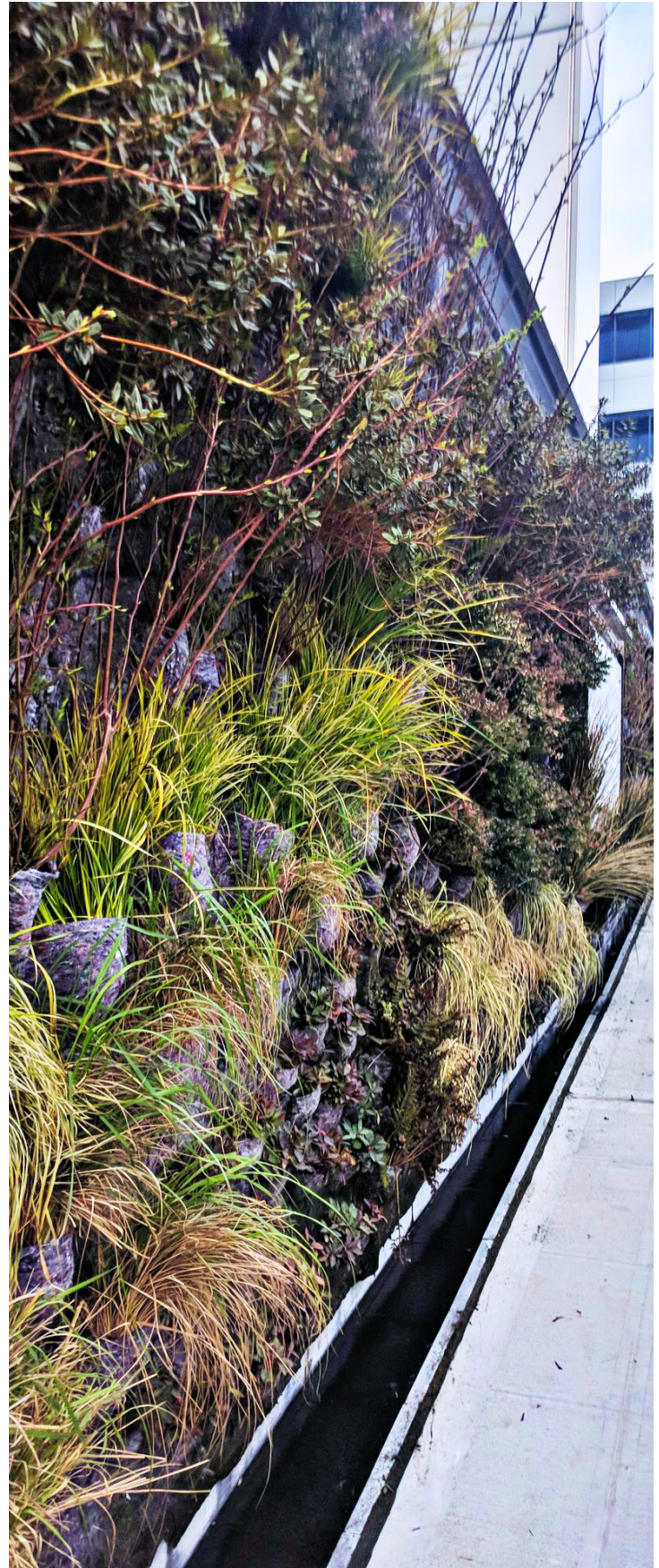




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Executive Summary

This Municipal Buildings Decarbonization Plan (Plan) charts a path toward eliminating climate pollution from fossil fuels in the City’s municipal building portfolio. Removing fossil fuels from the portfolio will advance Seattle’s net zero emissions goal while reducing municipal building energy use by 48%.

Climate science underscores the urgency of immediate action to mitigate climate change impacts and protect vulnerable populations. The International Panel on Climate Change emphasizes that greenhouse gas emission reductions this decade will determine whether global warming can be limited to 1.5°C or 2°C.¹ By achieving zero emissions in its building portfolio, the City can lead and accelerate market transformation.

With more than 650 buildings totaling approximately 10 million square feet (SF), the City is uniquely positioned to lead by example in transitioning to clean energy for heating, cooling, and appliances. Seattle has demonstrated its commitment to climate leadership through multiple policy initiatives, including the 2013 Climate Action Plan, the 2013 Resource Conservation Management Plan, the 2018 Climate Action Strategy, Executive Order [2020-01](#): Advancing a Green New Deal

for Seattle, Executive Order [2021-09](#): Driving Accelerated Climate Action, and Executive Order 2022-07: One Seattle Climate Justice Actions to Reduce Emissions from the Transportation Sector. The City has already achieved substantial results: a 27% reduction in energy use, a 26% reduction in carbon emissions, and full decarbonization of 20 municipal buildings.

This Plan covers 176 City buildings with fossil fuel systems and equipment as of June 30, 2024.² The approach identifies a proactive and cost-effective plan and schedule to renew, improve, and fully decarbonize these buildings that currently use fossil fuels by 2042, in alignment with regulations and City commitments. It prioritizes right-sizing equipment and reducing energy loads to mitigate or eliminate the need for electrical capacity upgrades, incorporating energy efficiency to reduce utility costs, installing efficient equipment that uses clean energy, improving indoor air quality, and providing cooling for community resilience. **Combined with work already completed, the building renewals and upgrades will reduce portfolio-level greenhouse gas emissions by approximately 87% (11,451 MTCO₂e) and reduce municipal energy use by 48% (2008 baseline).³**

¹ [Climate Change 2023 Synthesis Report: Summary for Policymakers](#). Intergovernmental Panel on Climate Change, 2023.

² A follow-up report will outline recommendations for 14 additional buildings at the Seattle Center campus, consistent with the approaching end of useful service life for the campus central energy plant.

³ Remaining carbon is from gas at Seattle Center and SCL electricity based on 2019 emissions factors.



The Office of Sustainability and Environment (OSE) developed this Plan collaboratively with key capital departments: Finance and Administrative Services, Seattle Parks and Recreation, Seattle Public Library, Seattle Department of Transportation, Seattle City Light, and Seattle Public Utilities. The Plan is based on an evaluation of existing municipal buildings with fossil fuels, identification of building equipment replacement needs and costs, and the expected timeline for building upgrades according to departmental asset management plans, community priorities, and the proposed [Building Emissions Performance Standard \(BEPS\)](#) requirements. In addition, the evaluation included a preliminary identification of buildings that will likely need electrical infrastructure upgrades to support City vehicle fleet electrification. Cost estimates include routine system and equipment renewals and standard asset management

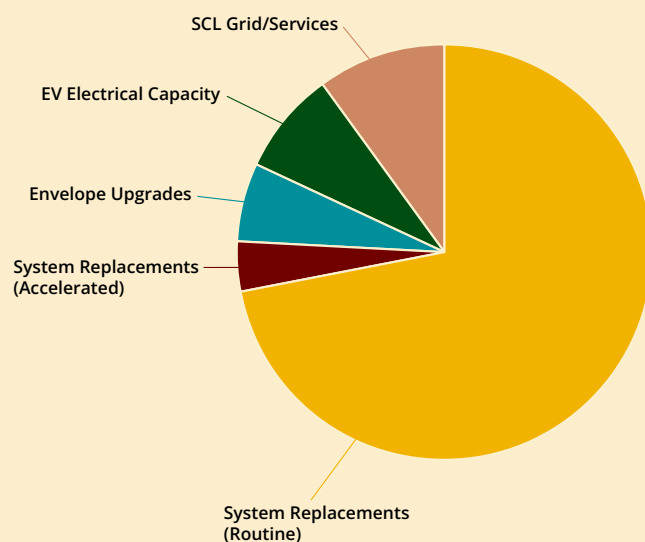
investments, as well as electrical capacity upgrades to accommodate both mechanical system decarbonization and new electrical vehicle loads.

The estimated cost to renew and improve these 176 buildings ranges from \$437 to \$535 million (2022 dollars), with a midpoint of \$486 million. This translates to approximately \$27 million in annual investments from 2025 through 2042. The estimated cost is based on building-by-building analysis and detailed walkthroughs of 24% of the covered buildings. The phasing of renewals is based on expected end-of-life of building systems and equipment, so encompasses standard asset management as well as upgrades in electrical service for new equipment and electric vehicle charging, where needed. See [Appendix C](#) for a full list of buildings equipment life expectancy, and planned renewal dates.

Strategic Renewal: Our Approach to Cost-Effective Decarbonization

This Plan centers on decarbonization at renewal—replacing fossil fuel systems with electric alternatives when equipment reaches end-of-life. This strategic timing maximizes cost-effectiveness while meeting climate goals and regulatory requirements.

Estimated Cost Breakdown



Integration with Existing Systems and Requirements

- Asset Management: Aligns with routine maintenance and systems renewal cycles
- Right-Sizing: Matches building systems to current operational needs
- Code Compliance:
 - Meets energy efficiency standards
 - Addresses indoor air quality requirements
 - Aligns with Building Emissions Performance Standard (BEPS)
 - Supports Clean Buildings Performance Standard Compliance

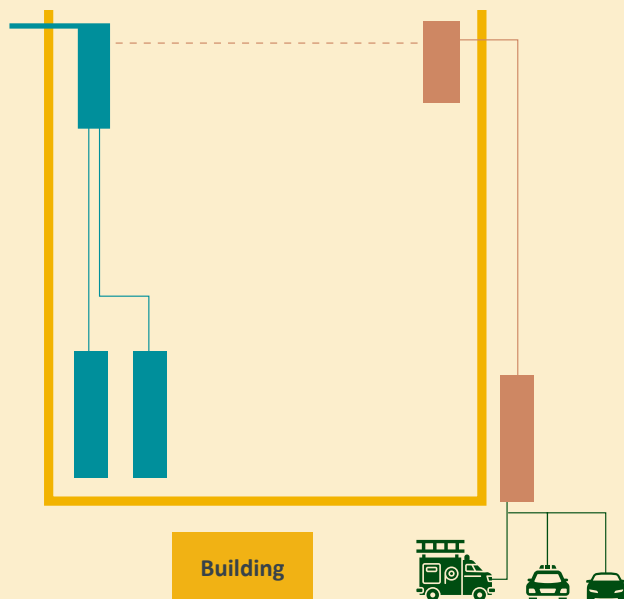
Enhanced Building Performance

- Cooling Systems: Adds efficient cooling to occupied spaces
- Resilience: Supports future Resilience Hub functionality
- Envelope Improvements: Eliminates conditioning of uninsulated spaces
- Electric Vehicle (EV) Ready: Includes electrical capacity for future charging



Strategic Renewal: Our Approach to Cost-Effective Decarbonization

EV infrastructure scope



Included

- EV Electrical Capacity
- Service upgrades
- Main panel capacity

Excluded EV charging electrical infrastructure

- Subpanels
- Branch circuits
- Charging equipment
- Installation costs

Key financial notes

- Base estimates in 2022 dollars
- Many costs already incorporated into existing short-term capital renewal budgets*
- Exceptions:
 - SDOT (limited buildings, reactive management)
 - Shops/O&M pathway projects (emergency replacements)

* 2025-26 capital department budgets are aligned with this Plan. The Plan identifies renewal projects that would fall under anticipated 4- and 6- year departmental CIPs.

Special considerations

- Includes buildings with special owner-tenant relationships**
- Includes cost of improvement to local utility electrical infrastructure

**Benaroya Hall, Seattle Aquarium, and Woodland Park Zoo

Included in cost estimates:

- Electric heat pumps
- Heat pump water heaters
- Branch circuits
- Main electrical panel and service sized for building electrification and planned EV loads

Not included in cost estimates:

- EV and tool charging equipment
- Electrical subpanels
- Branch circuits
- Installation

Funding this Plan will come from a variety of sources, including City resources, federal and state grants, and other funding opportunities. Near-term efficiency and decarbonization investments are included in City's 2025-2026 Capital Improvement Program, in OSE's Municipal Energy and Emissions (MEEP) budget (\$1.5M annually), and in recent grant applications, some of which have been awarded. Looking ahead, we have stability with state-level funding opportunities via the Washington State Climate Commitment Act. OSE will collaborate with City and community partners to leverage City investment and secure federal and state grants as well as available utility rebates.

The scale of work to renew and improve 176 buildings requires substantial financial investment and staff engagement, as well as some realignment in MEEP implementation responsibilities. We will also need to use all available implementation channels to deliver projects and manage the overall cost. Key recommendations of the Plan include establishing a finance strategy team, instituting greater accountability and performance tracking, providing planning assistance and plan review, verifying equipment sizing, providing guidance, and developing operating standards.



Background

Seattle's municipal portfolio encompasses over 650 buildings spanning 10 million SF—from the 1.2-million SF Seattle Municipal Tower to small storage facilities. While offices, community facilities, and operations buildings make up the majority of total space, the City also maintains numerous smaller facilities, including libraries, police stations, and fire stations.

Much of the City's building portfolio is older, including buildings from pre-1900, and most were built before the first state commercial energy code became a requirement in 1985. These buildings typically have inefficient envelopes requiring upgrades alongside equipment modernization. City capital departments⁴ have invested in energy efficiency and resource conservation, with significant gains over the last decade. However, the climate crisis requires a doubling down on reducing carbon pollution by moving away from fossil gas in

addition to energy efficiency—at those opportune moments when equipment is approaching its end-of-life.

Buildings generate over 40% of Seattle's greenhouse gas emissions, with fossil fuels—particularly fracked gas⁵—accounting for 90% of this impact. Buildings must transition away from climate-polluting fossil fuels. This transition will not only reduce emissions but also improve air quality and enhance community resilience. Strategic timing of these upgrades to align with equipment end-of-life cycles will optimize cost-effectiveness.

To understand the scope and urgency of Seattle's municipal building decarbonization efforts, it's essential to examine the current state of the City's building portfolio and its historical context.



⁴ Capital departments include Finance and Administrative Services, Seattle City Light, Seattle Center, Seattle Dept. of Transportation, Seattle Public Library, Seattle Parks and Recreation, and Seattle Public Utilities

⁵ [2022 Community Greenhouse Gas Emissions Inventory: Seattle](#). Seattle Office of Sustainability and Environment, Dec. 2024.



Seattle's Municipal Energy and Emissions Program

In December 2013, the Seattle City Council adopted the Citywide Resource Conservation Management Plan (RCMP) with Resolution [31491](#) to further improve resource efficiency and establish a coordinated approach to driving energy efficiency across Seattle's municipal building portfolio. The RCMP outlined the actions necessary to meet the City's goal of achieving a 20% reduction in energy use by 2020 (2008 baseline) across the City's portfolio. The RCMP also called for the establishment of a Municipal Energy and Efficiency Program (MEEP), with a dedicated capital budget.

MEEP helped capital departments accelerate efficiency and achieve early compliance with two Seattle building energy policies: Energy Benchmarking and Reporting, requiring larger commercial and multifamily building owners to report energy data; and Building Tune-Ups, requiring actions to optimize energy use through operational improvements. By the end of 2019, the City had met its 20% by 2020 energy reduction goal, primarily through projects that improved energy efficiency of existing fossil fuel systems and significant LED lighting upgrades. Seattle's 2018 Climate Action Strategy expanded these goals, calling for a 40% reduction in both energy use and carbon emissions by 2025 (2008 baseline). With specific carbon reduction targets for municipal buildings, MEEP evolved into the Municipal Energy and Emissions Program.

MEEP's initial 2015 funding of \$2.5 million annually, combined with departmental investments, successfully supported the 2020 energy reduction goals. While the 2018 directive's more ambitious targets prompted plans to increase funding to \$4.5 million annually by 2021, pandemic-related budget constraints reduced the allocation to \$1.5 million per year starting in 2022—a level that continues today. MEEP continues to drive Seattle's climate and energy goals through strategic partnerships with capital



departments. The program prioritizes projects that simultaneously reduce climate pollution, enhance indoor air quality, and lower utility costs. By 2023, these efforts achieved significant results, including:

- 27% reduction in energy use
- 26% reduction in carbon emissions
- \$4 million per year in avoided energy utility costs
- 64 decarbonization projects initiated (56 completed, four sites had two projects)
- 32 buildings partially decarbonized
- 20 buildings fully decarbonized, including five branch libraries

These achievements demonstrate MEEP's successful integration with the City's capital departments.

A full list of the projects and their status can be found in [Appendix A](#).



The Fossil Fuel Transition

Seattle has a history of progressive climate action dating back to its first-in-the-nation green building policy for all new municipal facilities, adopted in 2011 and updated in 2020 (Resolution [31326](#)). The City was one of the first in the nation to adopt a Climate Action Plan. In 2011, Seattle adopted its climate protection vision to reach zero net greenhouse gas (GHG) emissions by 2050 (Resolution [31312](#)), followed by the 2013 Seattle Climate Action Plan (Resolution [31447](#)), which included an interim target to reduce GHG emissions from the commercial buildings sector 45% by 2030. In 2019, Council adopted the Green New Deal for Seattle (Resolution [31895](#)) calling on the City to “make Seattle free of climate pollutants... by 2030 and prioritize investment in communities historically most harmed by economic, racial, and environmental injustice.” Executive Order (EO) [2020-01](#): Advancing a Green New Deal for Seattle, adopted in January 2020, included a Fossil Fuel-Free Municipal Buildings directive, which prohibits fossil fuels in new construction and major renovations. The EO also charged OSE—in collaboration with City capital departments—to develop a plan to eliminate fossil fuels from existing buildings. Executive Order [2021-09](#): Driving Accelerated Climate Action called for all municipal buildings to operate without fossil fuel systems and appliances no later than 2035, while the subsequent Executive Order [2022-07](#): One Seattle Climate Justice Actions to Reduce Emissions from the Transportation Sector called for actions to accelerate emission reductions in the transportation sector, including to transition to a zero-emission City fleet by 2030, to build a green economy, and to invest in community resilience. The increasing reliance on electricity for transportation and cooling highlights the need for continued efficiency investments while proactive planning and upgrades to decarbonize buildings in ways that better support operating mission and

resilience needs, such as added cooling.

Multiple climate regulations are influencing how the City manages its buildings into the future. In 2019, the Washington State Clean Buildings Act (CBA) was signed into law, which requires non-residential buildings over 50,000 SF to meet energy performance targets beginning in 2026. The law was later expanded in 2022 to require nonresidential and multifamily buildings over 20,000 SF to meet energy operations and planning requirements, with energy targets to be implemented after 2030. Changes to the 2018 Seattle Energy Code (SEC)—adopted in 2021—effectively prohibit the planned replacement of existing fossil fuel systems.⁶ In December 2023, the City adopted its own performance standard for existing buildings. [Building Emissions Performance Standard \(BEPS\)](#) requires existing nonresidential and multifamily buildings larger than 20,000 SF to undertake new benchmarking verification and GHG reporting requirements by 2027-2030 in preparation to meet greenhouse gas intensity (GHGI) targets by 2031-2035, depending on building size.

Strategic Implementation

Meeting Seattle's climate justice goals while ensuring cost-effective regulatory compliance requires:

1. Comprehensive understanding of building system needs
2. Strategic alignment of energy transition with planned capital investments
3. Integration of emerging priorities:
 - EV charging infrastructure
 - Enhanced cooling systems
 - Improved air quality
 - Right-sized, high-efficiency equipment

This integrated approach optimizes investments while managing utility costs and ensuring long-term resilience.

⁶ Individual pieces of failing fossil fuel equipment may be replaced like-for-like, [2018 Seattle Energy Code](#) section C503.4.6, C404.2.3 Exemption #8.



Pathway to Building Decarbonization

This Municipal Buildings Decarbonization Plan builds on work to date, responds to policy and regulatory requirements, and integrates facility assessments to design a cost-conscious approach to phasing necessary improvements to meet current building needs. The analysis provides a capital investments schedule to decarbonize 176 municipal buildings by 2042. The 14 additional Seattle Center buildings principally served by a gas-fired district energy system, which is approaching end of useful service life, will be addressed in a separate strategy.

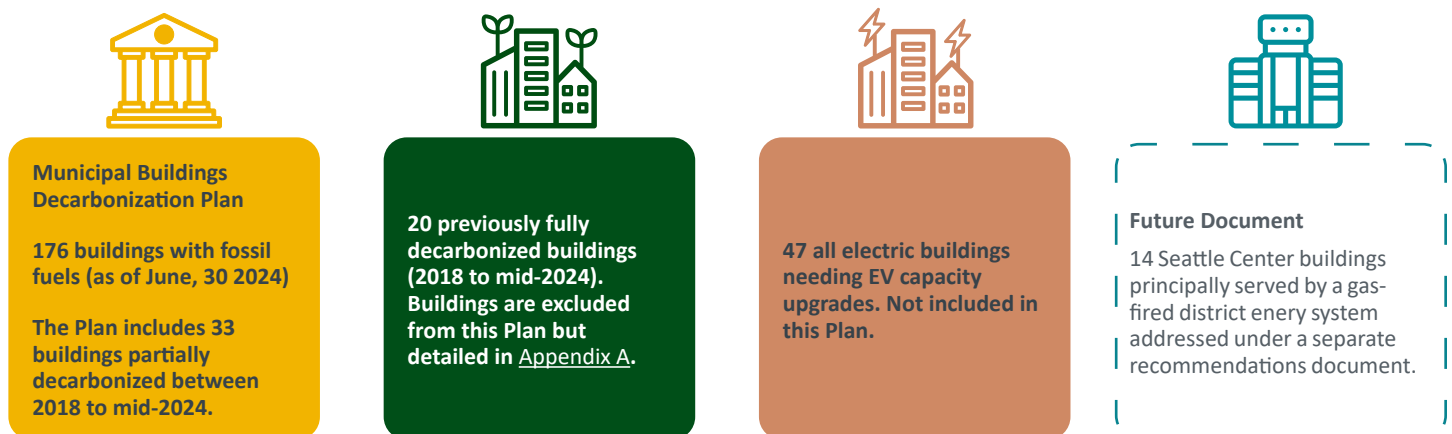
The sequencing is designed to replace fossil fuel systems with electric systems largely when the former systems fail. Other considerations include facility condition assessments, emerging premature failures, the timing of planned mechanical system upgrades, and replacements, as well as other building upgrades, such as roof replacements, community resilience goals and strategies, EV energy supply projects, existing and proposed regulatory requirements, and other climate and social justice commitments. As outlined in Figure 2, key electrical elements, such as electric heat pumps, heat pump water heaters, branch

circuits, main panel and service sized for building decarbonization and planned EV loads, are included in business-as-usual capital costs. Other EV-specific infrastructure elements, such as subpanels and branch circuits, are not included here and will need to be addressed as part of the Fleet Electrification Strategy.

The decarbonization of these 176 buildings will deliver significant environmental and operational benefits. The Plan projects a 87% reduction in building emissions, a 48% decrease in energy use, and a 3.6% reduction in energy utility costs.⁷ Importantly, the transition to electrified systems is expected to be operations cost-neutral, with annual utilities and maintenance costs remaining stable or decreasing compared to fossil fuel systems.

The benefits extend beyond direct cost savings. Building occupants will experience improved air quality and comfort due to reduced air pollutants, including particulate matter, carbon monoxide, nitrogen oxides, and volatile organic compounds. The upgraded mechanical systems will be more operable and maintainable, while enhancing climate resilience. Cost estimates include electrical capacity upgrades to support both building decarbonization and new EV loads, though an additional 47 all-electric buildings may require separate capacity upgrades not covered in this analysis.

Figure 1. Buildings Included in This Municipal Buildings Decarbonization Plan



Note: Fairview Building (SDOT), which has inoperable systems, and Lake City Community Center (SPR), which no longer exists.

⁷ Based on 2022 utility rates.



Funding the Transition

The current MEEP funding of \$1.5 million annually, combined with existing capital department investments, forms a base for funding this work going forward. Stable funding streams are available through the Washington State Climate Commitment Act, while federal funding remains uncertain. Several existing federal grant awards face potential clawbacks or reversals under the current administration. To bridge these gaps, OSE will work strategically with City departments and community stakeholders to maximize the impact of City investments while pursuing additional federal and state funds and utility rebates. OSE and capital departments have already demonstrated success in securing external funding. Recent achievements include:

- \$2.7 million in state grants for projects including Green Lake Branch Library decarbonization (\$1.8 million), the Brig at Magnuson Park, and efficiency improvements for Mutually Offsetting Benefit (MOB) sites
- A Solar Plus Battery Storage planning grant for South Park and Bitter Lake Community Centers
- \$5.25 million Federal Emergency Management Agency (FEMA) grant for library branch decarbonization and cooling
- Pending \$2 million state grant for University Branch Library decarbonization
- Over \$1.1 million in utility rebates for energy efficiency investments

The City continues to refine its grant strategy, effectively demonstrating climate and health benefits to align with funding agency priorities. Moving forward, this Plan emphasizes the need for stronger coordination between OSE, the Mayor's Office, and the City Budget Office (CBO) to maximize funding opportunities and ensure successful implementation of the Plan.

Departments have been planning for decarbonization as part of building renewal projects and the City's annual budget process, including the Capital Improvement Program (CIP). The Plan calls for 21 buildings, with estimated costs of \$20 million, to be decarbonized through 2026. Those efforts are reflected in the 2025-2026 budgets, while some of the projects scheduled for 2027 and beyond do not yet have complete funding plans. In particular, decarbonization projects for some of the non-regular budget items are unlikely to be covered in developed budgets and include properties such as Benaroya Hall, Woodland Park Zoo, and the Seattle Aquarium.

Spotlight: Community Center Improvements

Seattle Parks and Recreation (SPR) and OSE are implementing specific strategies to enhance facility resilience, including:

- Installing large destratification fans in community center gyms
- Adding localized exhaust fan controls
- Improving air circulation and thermal comfort
- Enabling better ventilation control for large gatherings and shelter events

These improvements position our buildings to serve as effective resilience hubs – community gathering spaces that provide shelter, resources, and services during extreme weather events or other emergencies.

Note: While specific resilience hub locations are still being determined, these energy efficiency and decarbonization improvements create the foundation for future hub designation and operation.



Building Resilience Through Decarbonization

The transition to fossil fuel-free buildings provides a unique opportunity to enhance our facilities' ability to serve community needs during both normal operations and crisis events. Many municipal buildings are over a century old, and while some were purpose-built (like fire stations), others have been adapted from their original uses. Few were designed with climate resilience in mind.

Key Improvements for Space Conditioning

- Creating smaller, more controllable zones
- Enabling flexible space use
- Improving energy efficiency through targeted conditioning

Key Improvements for Community Resilience

Cooling Systems

- Adding efficient heat pump cooling to public-facing buildings
- Improving community protection during extreme heat events
- Providing year-round comfort for building occupant

Building Envelope

- Installing insulation in previously uninsulated walls
- Moderating interior temperatures
- Improving shelter capability during power outages
- Reducing energy consumption

Air Quality

- Installing dedicated outside air systems
- Ensuring proper fresh air delivery to all spaces
- Enhancing indoor air quality for occupant health

Methodology

The Plan prioritizes replacing fossil fuel equipment with efficient electrical systems at the end of their useful life. While most systems will require replacement well in advance of the 2042 BEPS target, there are some replacements that will be needed ahead of their expected failure dates. Additionally, some facilities will need electrical infrastructure upgrades earlier than equipment replacement to accommodate planned EV charging capabilities.

In developing this analysis, OSE and capital departments identified those buildings in the City's portfolio with fossil fuel systems and reviewed key information for each, including facility condition assessments, energy audit reports, currently scheduled fossil fuel system replacements, and operating staff expectations of remaining system life. Energy efficiency/decarbonization assessments were conducted for a sample of buildings, focusing on unique and typically representative buildings to identify the key opportunities and approaches applicable to most City buildings (see [Appendix E](#)). Department teams also reviewed

the added electrical loads at each site to align with the [Green Fleet Action Plan](#) and forthcoming Fleet Electrification Report and ensure fleet electrification needs were included.

A separate but parallel analysis is underway for the Seattle Center campus, following the same methodological approach to develop timelines and cost estimates for facility upgrades.

The assessment teams, comprised of consultants and City staff, developed estimated scopes of work with associated schedules and budgets for all building decarbonization projects. Some estimates relied heavily on preliminary decarbonization cost estimates provided by capital departments.

Implementation cost estimates were developed through a systematic methodology that accounts for equipment, installation, and associated infrastructure needs. Equipment costs were based on recent vendor quotes and extrapolated across similar facilities using unit capacity or square footage metrics. The analysis calculated total electrical loads needed to support both new



mechanical systems and EV charging capabilities, though specific EV charging equipment and installation costs are not included in these estimates. Building envelope improvements, including wall insulation at 30 sites and window upgrades at one location, account for \$23.3 million of the total cost.

Project costs were modeled according to their likely implementation path—either through capital or operations channels. Each path carries different cost implications due to variations in project management, development costs, and administrative requirements. The analysis applies specific cost multipliers to contracted costs (excluding sales tax) to account for:

- Project management requirements
- City contingency funds
- Development soft costs
- Tax considerations

Understanding Project Cost Multipliers

The total project cost is calculated by applying specific multipliers to the base contracted costs (excluding sales tax). These multipliers vary by project type to reflect different implementation requirements and complexity levels.

Multiplier Breakdown

Project Type	Multiplier	Key Factors
Cooking Equipment	1.0	<ul style="list-style-type: none"> • Simple replacement • Minimal design needs • Standard procurement
Domestic Hot Water	1.3	<ul style="list-style-type: none"> • Some engineering required • Basic commissioning • Limited coordination
Insulation/Windows	1.6	<ul style="list-style-type: none"> • More complex design • Multiple trades • Increased coordination
HVAC Systems	1.8	<ul style="list-style-type: none"> • Complex engineering • Full commissioning • Multiple systems integration

Example Application

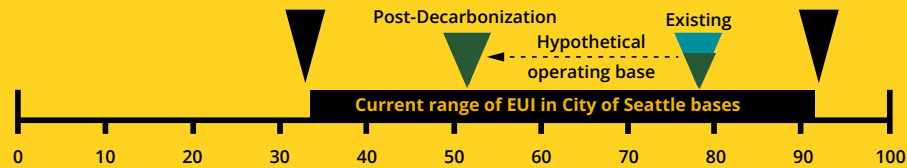
- Base Cost × Multiplier = Total Project Cost
- \$100,000 HVAC project × 1.8 = \$180,000 total
- \$28,000 cooking project × 1.0 = \$28,000 total

Note: These multipliers reflect an estimated portfolio-wide mix of delivery channels by project type. For example, some HVAC projects may have actual multipliers of 2.0 or more in the Capital Projects channel while other, smaller HVAC projects may have a 1.2 multiplier in the Shops channel. Many of the water heaters will be replaced through the Shops channel as is currently the case. The 1.0 multiplier for Cooking Equipment reflects a lump sum approach to kitchen renewals, with a \$28,000 estimate per non-restaurant site typical for most fire stations.



What Are the Performance Impacts of Efficient Building Decarbonization?

To understand the effects of efficient building decarbonization, imagine a 70,000 SF operating base with a gas boiler-based HVAC system. Operating bases are facilities with offices, distribution warehouses, and shops, which currently have an energy use intensity (EUI) range of 33 – 93 kBTU/SF/year within the City of Seattle portfolio. Through decarbonization efforts, this facility is expected to achieve an EUI reduction from 79 to 52 kBTU/SF/year, dramatically increasing building efficiency.



Decarbonization Strategy

The HVAC system will be decarbonized using:

- Dedicated outside air system with energy recovery ventilator
- Variable refrigerant flow system for space conditioning (heating and cooling)

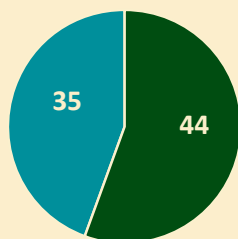
	Current		Decarbonized	
	EUI (kBTU/SF/Year)	Proportion of Load	EUI	Proportion of Load
Equipment, lights, and cooling*	44 electric	56%	40 electric	77%
Space heating	30 gas	38%	10 electric	19%
Water heating	5 gas	6%	2 electric	4%
Total (all energy)	79 mixed	100%	52 electric	100%

Total energy use is projected to decline as all fossil fuels are replaced with electric equipment.

Projected outcomes:

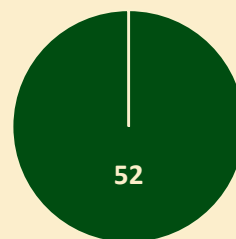
- Annual Energy Use -34%
- Annual Electric Energy +18%
- Annual Gas Energy -100%
- Annual Energy Bill (2023 rates) -4%
- Annual Carbon Change -128 MTCO₂e/year
- Annual Carbon Change -89% (nominal 2019 factor of 0.00582 kgCO₂e/kBTU)
- Annual Carbon Change -100% (SCL 100% clean energy by 2045, per WA State CETA)

* A decrease in equipment, lights, and cooling energy is partially offset by tempering of shop and warehouse spaces. This is the source of the four point EUI decrease in this electrical end use element.



Pre-electrification

■ Electric EUI
■ Gas EUI
Total = 79



Post-electrification

■ Electric
Total = 52



Findings

Analysis of the 176 decarbonization projects reveals two major impacts: a 87% reduction in portfolio-level carbon emissions (11,451 annual MT CO₂e) and a 48% decrease in municipal building energy use.⁸ The majority of these projects—166 buildings totaling 4.5 million SF—align with expected equipment end-of-life before 2042. Only 10 buildings—totaling 186,000 SF—would need to replace equipment before anticipated end-of-life to meet the 2042 decarbonization goal. Additionally, some facilities will need electrical infrastructure upgrades earlier than equipment replacement to accommodate planned EV charging capabilities.

The total cost estimate ranges from \$437 to \$535 million (2022 dollars), with a midpoint of \$486 million, averaging \$27 million annually from 2025 through 2042. Most of this investment—approximately \$466 million or 96%—represents already anticipated replacements under standard asset management. Only \$20 million requires acceleration, moving planned 2042-2050 investments earlier to achieve complete decarbonization and accommodate planned EV charging capabilities by 2042.

A summary of impacted buildings, estimated costs, and energy and carbon reductions by department is included in Table 1 below. Building-level project details are included in [Appendix B](#).

⁸ Remaining carbon is from gas at Seattle Center and SCL electricity based on 2019 emissions factors.

Table 1. Overall Results of Decarbonization Analysis by Department

Dept./Partner	Decarb Projects	Building Area (SF)	Cost (2022 Dollars)	Annual Utility Cost Savings	Carbon Emissions Reductions (MTCO ₂ e)	Energy Savings (kBTU/Year)
AQU	1	69,400	\$5,428,000	\$(7,725)	230	2,688,423
BEN	1	172,411	\$25,408,285	\$129,357	549	4,168,937
FAS	56	1,600,009	\$250,481,110	\$172,458	3,107	44,735,075
SCL	5	313,368	\$8,392,650	\$(7,183)	214	2,499,810
SDOT	3	35,411	\$2,898,920	\$3,703	28	481,038
SPL	17	540,102	\$17,823,800	\$(20,748)	375	5,321,911
SPR	76	1,557,984	\$161,018,691	\$40,306	6,206	78,090,519
SPU	12	315,886	\$8,186,500	\$28,012	316	4,932,974
WPZ	5	52,944	\$6,800,034	\$(14,263)	425	4,963,724
Totals	176	4,657,515	\$486,437,990	\$323,918	11,451	147,882,410



The figures below provide details by year and reflect the portfolio costs, number of buildings electrified, carbon emissions reductions, and energy savings by year under this Plan to decarbonize municipal buildings by 2042. The ten systems not expected to fail by 2042 were accelerated into this analysis period to be completed by that time. These are detailed in [Appendix C](#) and were brought forward in the schedule in conjunction with department priorities for continuity of service and operations (for example, only one pool closure at a time), neighborhood equity considerations, and implementation management (for example, some simple projects could happen sooner via operations paths rather than competing for capital team capacity). Ultimately, scheduling these projects will be determined in coordination with capital departments and integrated into their long-range planning.

The figures are based on simple assumptions, including that decarbonization of all building systems happens all at once. Realistically, in many cases, it will happen as a series of projects treating different systems as they fail; they are represented here as when the first major component upgrade occurs. Costs for electrical service capacity upgrades have been reflected as spent at the date of building systems decarbonization or large EV charging additions, whichever is earlier.

Figure 2. Building Decarbonization Projects by Year (All Departments)

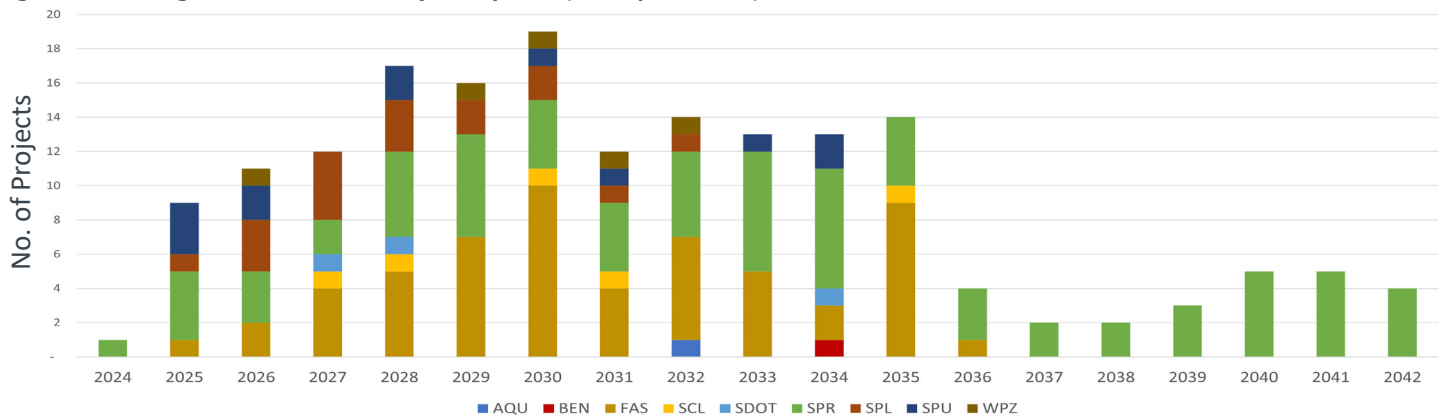


Figure 3. Building Area Decarbonized by Year (All Departments)

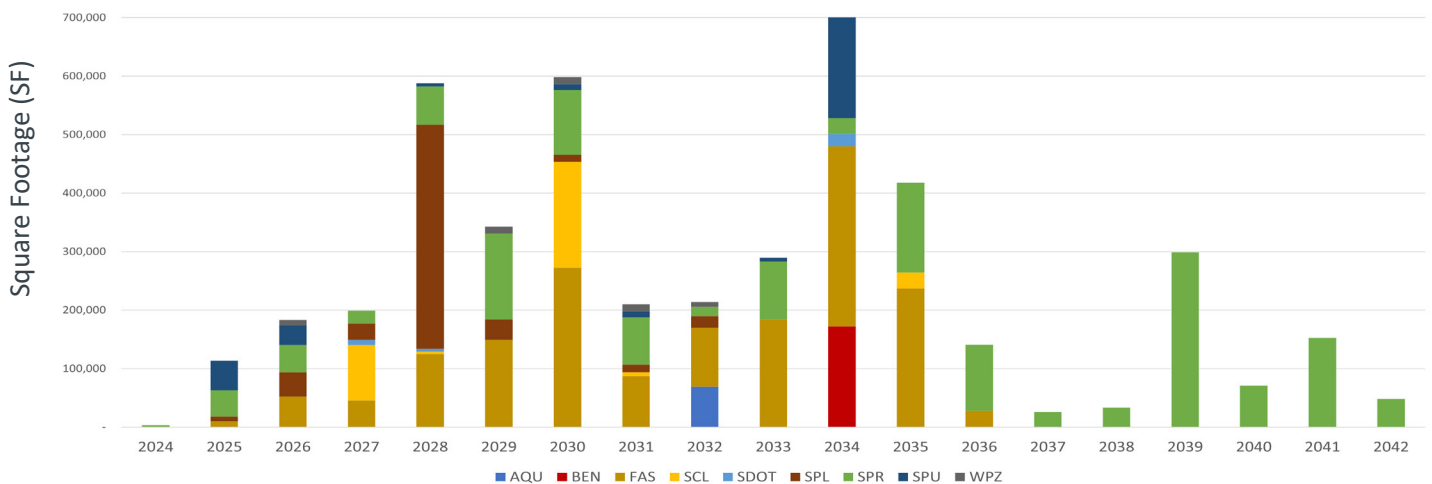




Figure 4. Building Project Costs by Year (All Departments)

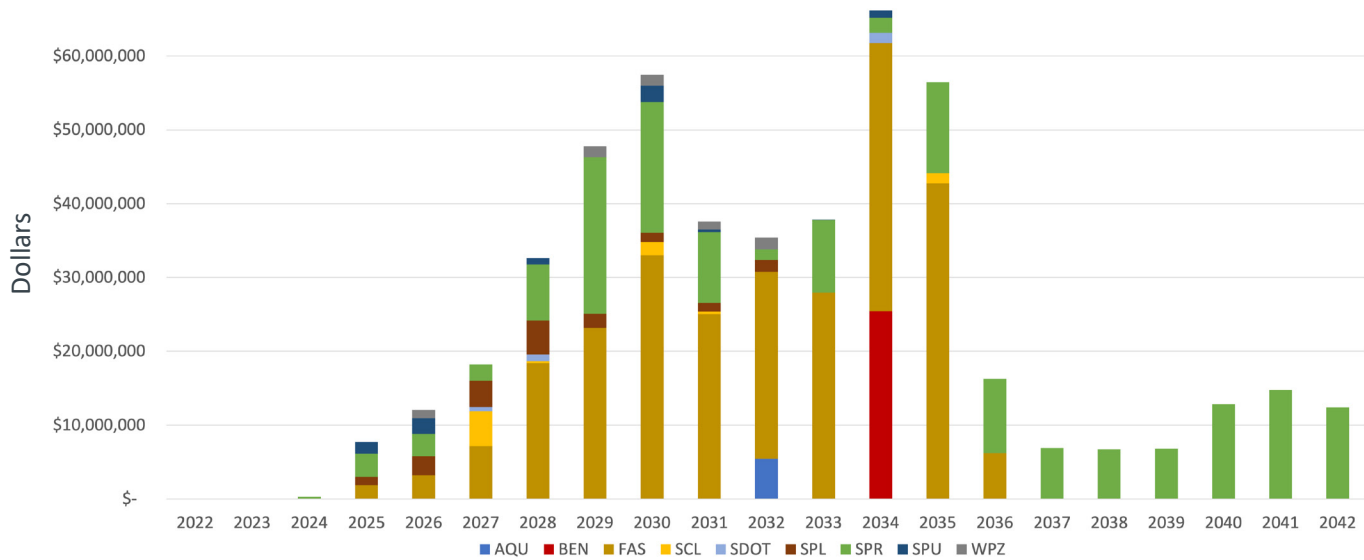


Figure 5 shows the reduction in emissions from each year's decarbonization projects. By 2042, municipal buildings would emit approximately 11,451 fewer MTCO₂e per year and would avoid 117,908 MTCO₂e of cumulative emissions between 2024 and 2042. The increase in emissions reduction impacts each year, through 2042, is shown in Figure 6.

Figure 5. New Annual Savings of MTCO₂e (by Department by Year)

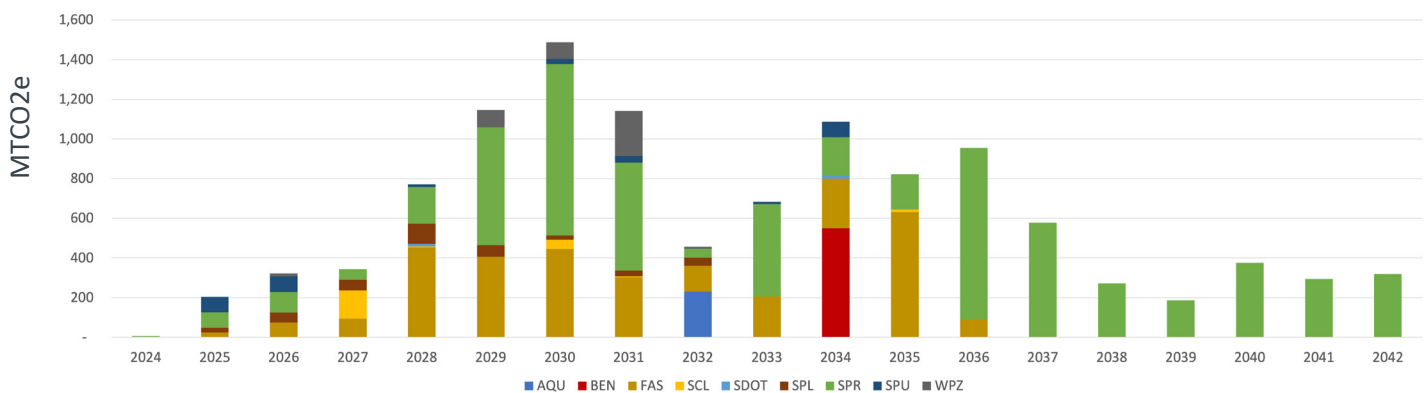
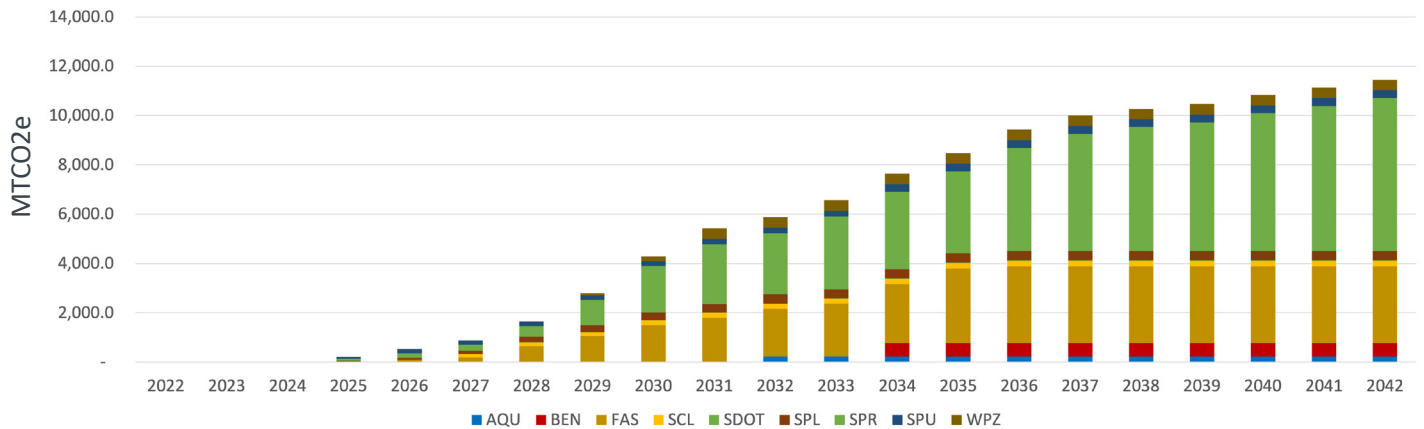




Figure 6. Increase in Annual Emissions Reductions (MTCO₂e)



Similarly, the new energy savings and increase in annual energy savings are shown in Figure 8 and Figure 9, respectively.

Figure 7. New Annual Energy Savings (kBtu) (by Department by Year)

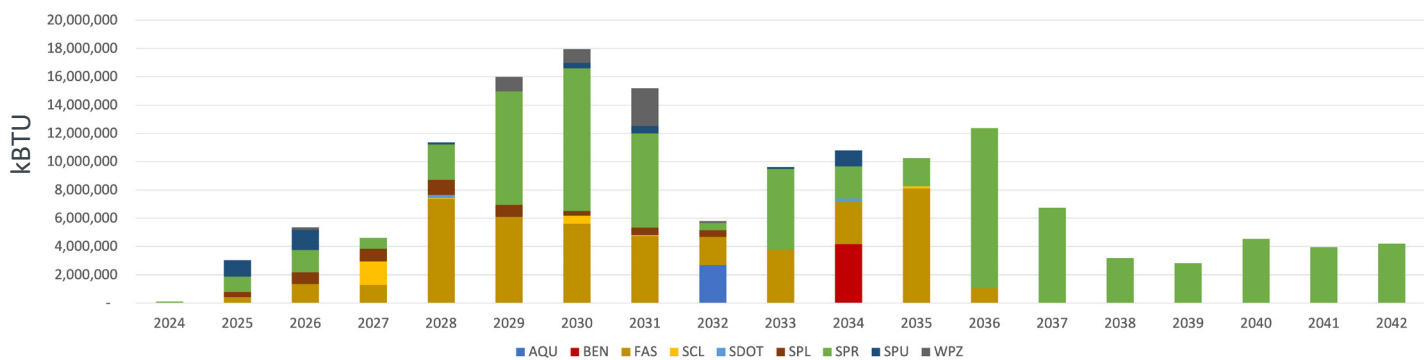
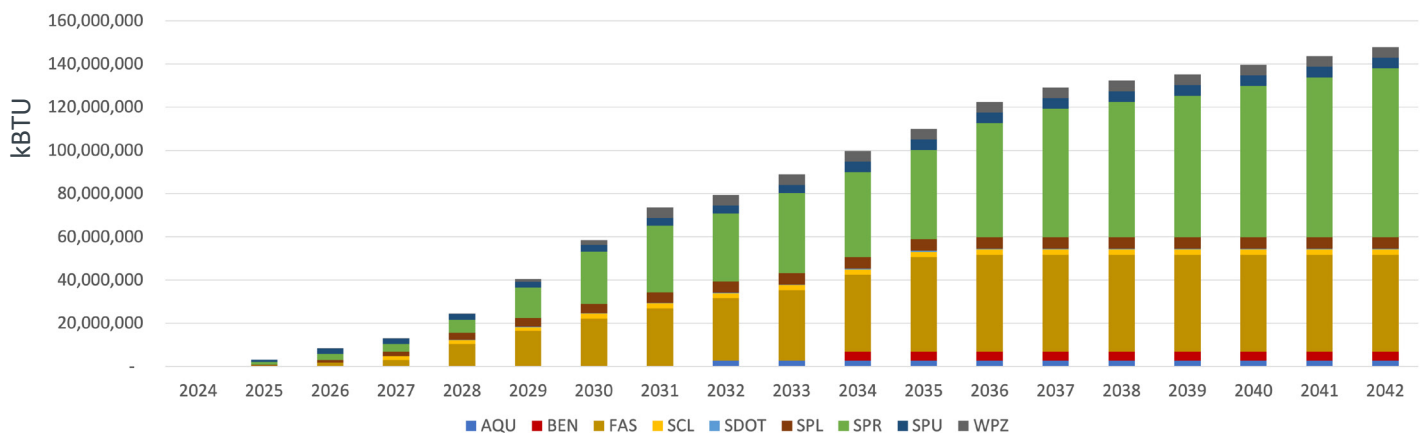


Figure 8. Increase in Energy Savings (kBtu) (by Department by Year)





How This Plan Compares to New Building Emissions Performance Standard (BEPS) Requirements

A separate assessment was conducted to review the emissions reductions using BEPS-prescribed emission factors (carbon values per unit of energy) for 2019 and 2033 and interpolates for future BEPS values in 2038 and 2042 based on assumptions that electricity will be 100% clean by 2045. This is different from a fixed electric emission factor based on 2019 values that is used in the main body of the report.**

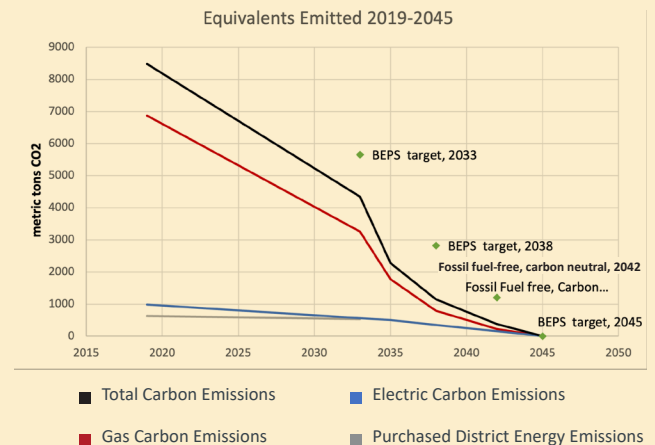
Using a portfolio compliance approach, the graph to the right shows this Plan significantly outperforming BEPS minimum requirements.

**100% renewable or non-emitting under the WA Clean Energy Transformation Act (CETA)*

*** Electric emissions factors (kgCO₂e/kBTU) are 0.00582 in 2019, 0.00291 in 2023, 0.0016975 in 2038, 0.0007275 in 2042, and 0 in 2045. Gas emissions factors (kgCO₂e/kBTU) are 0.053 from 2019 to 2045. Steam emissions factors (kgCO₂e/kBTU) are 0.083 from 2019 to 2045.*

Following this path will attain BEPS compliance for the municipal portfolio, in line with equipment renewals, and ahead of schedule in some cases.

Municipal Buildings Over 20,000 SF: MTCO₂e Emited 2019-2045



Washington Clean Buildings Performance Standard Compliance

The Washington Clean Buildings Performance Standard (CBPS) requires certain energy efficiency improvements in buildings over 20,000 SF. The first round of compliance begins in 2026 with buildings over 220,000 SF. Energy performance targets for the first compliance cycle have been identified. Many City-owned buildings will already be achieving the threshold energy use intensity target (EUI_t), which is pro-rated based on the space use types in the building. For buildings that beat the target, no further physical improvements are required, but a strategic energy management plan is a required element for compliance. For buildings not meeting the EUI_t standard, or for which one cannot be calculated, there is an assessment and investment test. Under this path to compliance, it is mandatory to install identified energy savings measures that have a Saving to Investment Ratio (SIR) of greater than one. Energy, emissions, and maintenance savings are all recognized benefits in the Life Cycle Costing Assessment.

Ongoing departmental upgrades, building tune-ups and elective measures and projects have served the core portfolio well. A number of the City's larger buildings already meet the State's energy targets, including Seattle Municipal Tower, Justice Center, and Central Library. The status of buildings owned by ratepayer-funded departments (SCL and SPU) will need further evaluation to understand how their EUI_ts will be calculated, especially facilities such as transfer stations. Generally, large operating bases do not appear to be meeting the energy targets, but that understanding may evolve with additional EUI_t calculations.

In most cases, we believe the CBPS will not require investments that we do not already intend to pursue.

Examples of projects that may be required under CBPS include:

- Typical LED lighting upgrades
- No-barrier/low-cost energy recovery ventilation (ERV) units

[Appendix F](#) reflects our preliminary assessment of EUI_ts and which buildings are on track to meet their EUI_t.



Recommendations

Achieving full decarbonization requires significant investment in both financial resources and staff capacity. Success depends on strategic alignment of MEEP implementation responsibilities and maximizing all available project delivery channels to manage costs effectively. OSE and capital departments bring valuable expertise from MEEP implementation to this expanded effort. While this analysis outlines the broader scope and costs of decarbonizing 176 buildings, detailed planning requires further refinement. OSE will partner with capital departments to develop specific approaches for individual buildings and create more precise cost estimates.

Our recommendations for successfully implementing and delivering municipal building decarbonization are outlined below. In formulating recommendations, we considered key challenges, including:



- **Budget-goal alignment: A mismatch between decarbonization goals and departmental budgets to replace fossil fuel equipment.** Departments understand—and the Seattle Energy Code (SEC) requires—that fossil fuel equipment should be replaced with efficient electric options at equipment renewal. While some systems are essentially the same installed cost with either gas or efficient electric heating, decarbonization of fossil fuel systems often includes at least a \$10/SF cost premium compared to replacing gas equipment like-for-like. Since departments have not generally been given additional funds to accommodate these costs, they may not be adequately budgeting for end-of-life replacements and unexpected failures.
- **Project cost management: Substantial costs beyond basic contractor construction vary depending on project delivery method.** Many larger decarbonization projects need all of the project support that comes with a full public works capital project, which can cause total project cost to approach twice the actual construction cost. Simpler packaged equipment projects and many domestic hot water heating systems can be handled more cost-effectively through a MEEP-supported operations path.
- **EV infrastructure needs: The dynamic nature of EV charging needs and the technologies to serve them.** The electrical loads associated with the high-capacity charging hubs at operations centers and fire stations are large and generally require significant new infrastructure. Vehicle home locations are in flux and approximately 30 light-duty EVs are currently in operation but not reflected in the most recent EV charging plans. Tracking changes in technology and its application will be an important aspect of electrification cost management.

Department staff need a clear mandate to refine planning assumptions related to timing, individual project scopes, cost estimates, and implementation pathways, while simultaneously moving forward with near-term decarbonization projects. Departments also need a base level of investment, while identifying additional near- and long-term funding resources and cost efficiency opportunities. It is critical to continue to build capacity, common guidelines, and accountability across City departments to meet Seattle's goals.



1. Establish a Finance Strategy Team with the City Budget Office (CBO) to develop a financial strategy to adequately fund the Municipal Buildings Decarbonization Plan.

MEEP and capital departments need more resources than are currently allocated annually for asset management and to fully decarbonize the municipal building portfolio. A Finance Strategy Team would be responsible for mapping the annual building asset improvement dollars currently being deployed and the budget gap for business-as-usual renewals and decarbonization. It would also be tasked with considering potential reprioritization of existing capital improvement resources, identifying grant opportunities and necessary match (for example from the Bipartisan Infrastructure Law, Inflation Reduction Act, and Climate Commitment Act), and identifying opportunities for new revenue such as bonds or other fees.

2. Strengthen MEEP and the City's overall energy efficiency and decarbonization approach across departments.

OSE and capital departments should continue to evolve their relationship and clearly outline roles and responsibilities, budget accountability, and expectations for implementing municipal building decarbonization. While the specifics of the collaboration will vary across departments and will be fully determined in coordination with capital departments, OSE proposes the following:

- Provide capital departments with the budget to take on the primary role and be accountable for decarbonizing the buildings under their purview.
- Include decarbonization goals in Directors' Performance Agreements and decarbonization implementation in all capital planning (in alignment with allocated budgets and project commitments).
- Underscore that capital departments, as asset managers, hold primary responsibility for meeting State and Seattle requirements, such as the [Washington Clean Buildings Performance Standard](#) and [Building Emissions Performance Standard](#).
- Establish an accountability and performance tracking and reporting framework. OSE intends to stand up a decarbonization public dashboard to track annual performance against the goal to decarbonize the 176 buildings with fossil fuel systems and equipment.





- Affirm OSE's continued role to provide coordination, facilitation, and performance tracking, as well as project implementation where relevant. OSE's role would include:
 - Sponsoring smaller and more cost-effective building energy and emissions projects.
 - Providing technical support for smaller decarbonization and efficiency projects, including:
 - ✓ Providing technical support for facilities teams to compete for internal departmental funds, including helping to define the request and impacts.
 - ✓ Monitoring and addressing building energy and emissions performance issues.
 - ✓ Assessing buildings and related metadata on end uses and system types.
 - ✓ Applying for and processing utility rebates to leverage additional revenue to support projects, technical support, and key partnerships with trade and industry training programs.
 - ✓ Supporting ongoing development, refinement, and interdepartmental collaboration on operating standards and best practices.
- Reviewing decarbonization projects to ensure adequate design and implementation performance, with specific attention and review of equipment sizing and efficiency to ensure we maximize efficiency and reduce cost as we decarbonize the portfolio.
- Providing assessments in support of municipal policy development (for example solar, distributed energy, demand response, etc.).
- Coordinating workforce development opportunities (for example Sustainable Building Science Technology program at South Seattle College).
- Providing grant application preparation support.
- Funding solar projects.



3. Support and expand small projects implementation path to manage costs.

Capital departments should develop flexible project delivery methods to manage costs and staff capacity efficiently. For smaller projects like water heaters and rooftop units, departments can use standardized existing contracts (blanket vendors), direct equipment purchases, and informal solicitations. This approach reduces costs while maintaining quality. The City should also update spending limits on blanket contracts to reflect inflation and expand Job Order Contract opportunities.

4. Establish Operational Guidelines and Directives to support decarbonization.

The City has successfully electrified various fossil fuel systems over the last several years and compiled lessons learned into a series of practical guides for City project managers, designers, contractors, and other staff. These are intended to streamline the design process and support departments in planning for decarbonization. City departments should be directed to adhere to a prescriptive set of Operational Guidelines and Directives, which would further ensure healthy and efficient building maintenance and maximize decarbonization benefits. OSE has already developed several proposed guidelines for basic operations and maintenance (available in the [Addenda](#)), and SPR and OSE are developing updated swimming pool operating guidelines. Additional





directives would include items such as limiting the use of electric resistance heat, refraining from using code exemptions that allow like-for-like fossil fuel equipment replacements, refraining from comfort conditioning spaces that are uninsulated, and requiring that buildings added to the City's portfolio be free of fossil fuels (for normal operations) within 36 months of their acquisition.

5. Strengthen partnerships with Seattle City Light to streamline electrification projects.

Support City Lights' development of an efficient process for customer engagement and information flow on building decarbonization, especially where service upgrades are needed. This may include a dedicated Key Customer Account representative for City facilities. Reduce lead times, uncertainties, and costs for municipal decarbonization planning, and share knowledge and lessons learned through decarbonization planning with City Light on issues of capacity, infrastructure, cost estimates, requirements, tools, and processes. OSE and capital departments should also work with City Light to refine utility infrastructure charge estimates. Stronger coordination and process improvements with the utility are also being required by private building owners as part of BEPS policy development, program design, and implementation.



6. Align EV planning and building decarbonization.

Incorporate department fleet electrification leads in decarbonization project reviews and identify a subject matter expert (SME) to facilitate and navigate citywide fleet electrification issues.

- Continue to coordinate and share data with citywide Fleet Electrification interdepartmental team (IDT).
 - ✓ Provide existing load and electrical service capacity information collected in building decarbonization assessments.
 - ✓ Provide updated load and capacity information as building decarbonization progresses.
- Actively coordinate on electrical service additions to ensure adequate total required capacity (EVs and building systems) is provided at electrical service upgrade in support of the City goal that "100 percent of City Fleet is fossil-fuel free by 2030".



7. Continue refining and evaluating decarbonization strategies in coordination with capital departments.

This Plan is an important step on the path to full portfolio decarbonization, but implementation will require substantial additional analysis and plan refinement. While specific roles and responsibilities will be developed in coordination with capital departments, we can take the following immediate actions to continue making progress, including:

- OSE will lead additional analyses needed to better understand building-specific decarbonization needs, such as building audits at special use facilities including



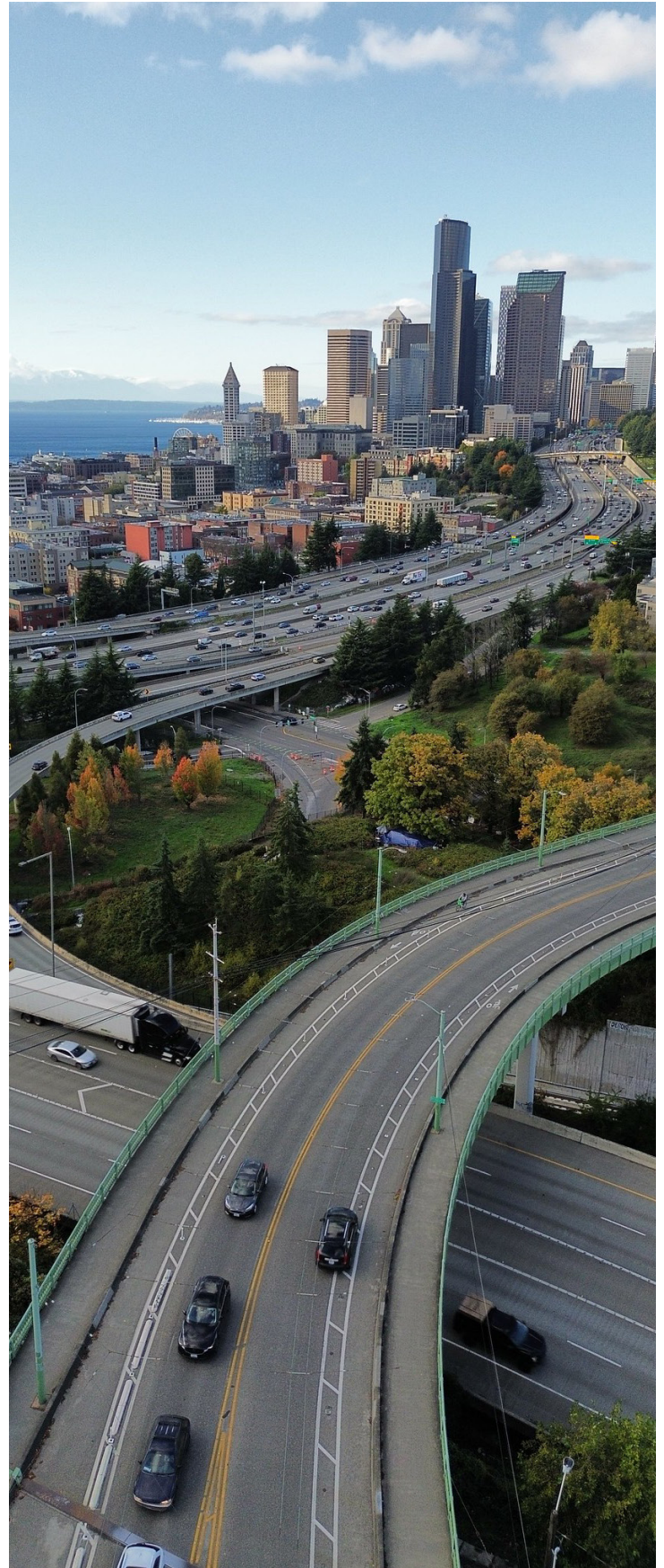


Benaroya Hall, the Seattle Aquarium, and Woodland Park Zoo,⁹ and thermal and electrical metering at multiple facilities to verify equipment loads and sizing.

- OSE will coordinate with capital departments to identify priority projects that might serve as resilience hubs and prioritize decarbonization and other efficiency improvements at those facilities.
- Capital departments will utilize the preliminary project schedule included in this Plan, as well as resilience hub and Washington CBPS priorities, to refine the specific projects to be included in their two-year, six-year, and twelve-year budget plans. This should include a special focus on building systems that are expected to fail in the near future.
- Capital departments will determine actual compliance pathways for their building portfolios.¹⁰
- OSE will coordinate with capital departments on near-term funding opportunities and grant proposals, such as the Washington State Dept. of Commerce Clean Energy Fund, Climate Commitment Act revenue, and State capital budget.

⁹ The City's capital departments do not do work in these City-owned facilities which have special ownership and governance structures.

¹⁰ This Plan calls for removing fossil fuels from municipal buildings ahead of the target dates mandated by the Seattle Building Emissions Performance Standard. This should provide departments with a strong foundation to achieve compliance for their buildings. Actual compliance pathways for various department portfolios and the City as a whole are to be determined, but departments will likely want flexibility for their own portfolio path.





Appendix A: Decarbonization Projects

Table 2. 2018-to Mid-2024 Funded Electrification Projects and Status

Building	Decarbonization Scope	Scope Scale	Year Expected	Status
Finance and Administrative Services (FAS)				
FAS Sponsored				
Airport Way Building D (Tenant: Seattle Policy Dept.)	Gas rooftop unit	Partial	2019	C
Fire Station 27 (Georgetown)	Gas packaged unit	Partial	2019	C
Fire Headquarters	Gas-fired district steam hot water	Partial	2019	C
Airport Way Building C (Tenant: Seattle Police Dept.)	Gas furnaces (3)	Partial	2020	C
Airport Way Building E (Tenant: SPU Water Quality Lab)	Gas domestic hot water	Partial	2020	C
Charles Street Complex Weights and Measures	Gas space heating	Full	2020	C
Fire Station 20 (Interbay)	Gas domestic hot water	Partial	2020	C
Fire Station 30 (Mount Baker)	Gas domestic hot water	Partial	2020	C
Fire Station 31 (Interim-Northgate)	Fossil fuel-free temporary station	Full	2021	C
Fire Station 30 (Mount Baker)	Gas space heating	Near Full	2021	C
Fire Station 17 (U-District)	Gas space heating	Partial	2021	C
Charles Street Complex Tire Shop	Gas heat freeze protection for spray wash	Partial	2021	C
Airport Way Building B	Gas space and domestic hot water	Partial	2021	C
Seattle Municipal Tower	14th floor gas freeze protection	Full	2023	C
Fire Station 14 (SODO)	Gas space heating	Partial	2024	C
MEEP Supported				
Southwest Precinct	Gas domestic hot water	Partial	2019	C
Fire Station 27 (Georgetown)	Gas domestic hot water	Partial	2022	C
Justice Center Domestic Hot Water	Gas domestic hot water	Partial	2023	C
City Hall Domestic Hot Water	Gas domestic hot water	Partial	2024	C
East Precinct	Gas domestic hot water	Partial	2024	C



Building	Electrification Scope	Scope Notes	Year Expected	Current Status
Finance and Administrative Services (FAS)				
MEEP Supported				
Fire Station 11 (Highland Park)	Gas domestic hot water	Partial	2019	C
Fire Station 6 (Chinatown/ID)	Gas domestic hot water	Partial	2024	C
Fire Station 35 (Crown Hill)	Gas space heating and domestic hot water	Near Full	2025	IP
Seattle Parks and Recreation (SPR)				
SPR Sponsored				
Seward Park Caretaker Quarters	Oil furnace	Full	2018	C
Ravenna Crew Quarters	Oil furnace	Full	2018	C
Golden Gardens Crew Quarters	Oil furnace	Full	2018	C
Jefferson Horticulture Building	Gas furnace (2 units)	Partial	2019	C
Central East Crew Quarters	Gas furnace	Partial	2019	C
Green Lake Small Craft Center	Fossil fuel-free new building	Full	2023	C
Magnuson Community Center	Gas space heating	Partial	2023	C
Yesler Community Center	Gas space heating – gym only	Partial	2024	IP
Jackson Golf Restaurant	Propane space heating	Full	2023	C
Jackson Golf Pro Shop	Oil space heating	Full	2023	C
Woodland Lawn Bowling	Oil space heating	Full	2023	C
Victory Heights Community Center	Oil space heating	Full	2023	C
MEEP Supported				
Magnuson Park Building 406 (Brig)	Gas space and domestic hot water	Full	2020	C
Jefferson Horticulture Building	Gas furnace and domestic hot water	Full	2021	C
Hiawatha Community Center	Gas space heating and domestic hot water	Full	2025	IP
South Park Community Center	Electrical service upgrade for space heating and hot domestic water	Full	2025	IP
Westbridge	Gas domestic hot water	Partial	2022	C



Building	Electrification Scope	Scope Notes	Year Expected	Current Status
Seattle Parks and Recreation (SPR)				
MEEP Sponsored				
SPR Heat Pump Water Heating Decarbonization Pilot Program (five planned, seven complete)				
Miller Community Center Yesler Community Center Garfield Community Center Rainier Community Center High Point Community Center Bitter Lake Community Center Delridge Community Center	Gas domestic hot water	Partial	2021-2022	
Jefferson Community Center	Multi-purpose room gas heating	Partial	2023	C
Climate Conscious Buildings (Green New Deal Allocation)				
Montlake Community Center	Gas domestic hot water	Partial	2024	C
Northgate Community Center		Partial	2024	C
Rainier Beach Community Center		Partial	2025	ID
Seattle Public Libraries (SPL)				
SPL Sponsored				
Broadview Branch Library	Gas rooftop units and domestic hot water	Full	2022	C
Capitol Hill Branch Library	Gas rooftop units and domestic hot water	Full	2023	C
Southwest Branch Library	Gas boiler and domestic hot water	Full	2023	C
MEEP Supported				
Maintenance Operation Center (MOC)	Electrical upgrades for space heating and hot water	Partial	2022	C
Northeast Branch Library	Gas domestic and domestic hot water	Full	2024	C
Green Lake Branch Library	Gas boiler and domestic hot water	Full	2024	C
Central Library	Gas-fired district steam-fired domestic hot water	Partial	2020	C
Seattle Center (CEN)				
CEN Sponsored				
International Fountain Pavilion	Campus steam-fired space heating	Full	2018	C



Building	Electrification Scope	Scope Notes	Year Expected	Current Status
Seattle City Light (SCL)				
SCL Sponsored				
North Service Center	Gas steam boiler (space heating)	Partial	2028	ID
North Service Center	Gas domestic hot water	Partial	2028	ID
South Service Center Building B	Used oil-burning heater in vehicle maintenance shop	Full	2022	C
Seattle Public Utilities (SPU)				
SPU Sponsored				
Operations Control Center (OCC) Warehouse Office	Gas space heating	Partial	2020	C
Lake Youngs Operation Center	Propane furnace	Full	2025	ID

Legend

Sponsored: funded in full

Supported: co-funded with department

Full: eliminated all fossil fuel equipment

Near Full: only gas cooking remains

Partial: fossil fuel space or water heating equipment replaced, but other uses remain

C: Complete

ID: In design

IP: In progress



Appendix B: 2024 – 2042 Decarbonization Projects

Table 3. 2024-2042 Decarbonization Projects

Building	Dept./ Partner	Estimated Cost (2022 Dollars)	Energy Savings (kBtu)	Carbon Emissions Reductions (MT CO ₂ e)	Decarb Date	HVAC Replacement Description	Annual Utility Cost Savings
North Service Center	SCL	\$4,714,400	1,659,113	142.1	2027	TBD	\$(4,767)
Equipment - Tolt Operations	SPU	\$200,000	89,986	7.7	2028	Per SPU planning.	\$(259)
Charles Street Complex Fire Garage (C)	FAS	\$2,180,000	679,671	40.1	2028	Replace UH with PRTU (Typ 5) and add splits for small spaces.	\$5,207
SDOT Traffic Shop	FAS	\$18,500,000	828,680	53.1	2032	Replace PRTUs gas packs w/ PRTU HP units (total 7 units, 2 at 12 tons, and 5 at 5 tons) and gas UHs with PRTUPHs (2 units, one at 8 tons, one at 12 tons).	\$4,697
Fire Station 11	FAS	\$1,600,000	173,549	12.1	2030	Replace rooftop units with PRTUHPs (2 typical), and replace gas UHs with a packaged rooftop heat pump. Replace bunker gear unit heater with split system HP and dehumidifier.	\$592
Densmore/NW NC Headquarters (North Service Center)	SPR	\$572,500	168,743	14.5	2028	TBD	\$(485)
Jefferson Golf Maintenance Headquarters	SPR	\$288,000	115,467	6.6	2024	Minisplit HP	\$967
Van Asselt Community Center	SPR	\$1,740,283	627,494	47.5	2025	Replace PRTU gas packs with PRTU HPs.	\$669
West Seattle Golf Course Clubhouse	SPR	\$430,000	174,233	6.9	2025	Replace crew quarters boiler with 4-ton split and ERV and 2-ton split for workshop. Full HVAC replacement with VRF + DOAS (14 ton outdoor unit).	\$70
SLU Street Car Maintenance	SDOT	\$579,000	-	-	2027	Demo and replace existing gas furnace serving workshop space. Replace with 2 split system HPs.	\$-



Building	Dept./ Partner	Estimated Cost (2022 Dollars)	Energy Savings (kBTU)	Carbon Emissions Reductions (MT CO ₂ e)	Decarb Date	HVAC Replacement Description	Annual Utility Cost Savings
DWW-SOC 4500 W. Marginal Way SW	SPU	\$682,500	439,708	31.9	2025	Per SPU planning.	\$1,008
Central Library	SPL	\$3,300,000	416,567	56.4	2028	Per SPL planning.	\$14,078
Fire Station 02	FAS	\$3,200,000	1,550,647	95.9	2028	Replace makeup air and exhaust fans with DOAS w/ ERV. Replace UHs w/ split system VRF HPs.	\$10,157
Fire Station 25	FAS	\$4,634,300	769,718	49.5	2031	Replace existing PRTU gas packs with PRTUHPs (typical 2 at 5 tons). Add 2 PRTUHPs at 5 tons to serve apparatus bay w/ ducting. Add 4 split systems HPs to serve living spaces and bunker gear room and dehumidifier for bunker gear room.	\$4,283
Charles Street Complex Engineering (A)	FAS	\$1,500,000	1,816,869	108.3	2028	VRF + DOAS for lower floors, PRTUHP + DOAS for upper floor.	\$13,490
Seattle Police Dept. East Precinct	FAS	\$2,375,000	771,501	41.1	2026	Replace existing PRTU - HW unit with PRTUHP, 70 tons and 300,000 BTU/hr heating. Add air to water HP plant to provide additional 200 MBH for radiators.	\$7,668
Fire Station 41	FAS	\$1,850,000	208,574	14.3	2033	Replace apparatus bay UHs with split system HP.	\$819
Alki Beach Bathhouse	SPR	\$180,000	257,957	22.1	2028	Mini split system HP.	\$(741)
Alki Community Center	SPR	\$831,143	150,672	12.9	2025	TBD	\$(433)
Garfield Community Center	SPR	\$2,296,400	1,159,521	67.0	2026	Replace fan coils (Typ 12) with DOAS units. Add VRF to provide heating/cooling.	\$9,468
Operations Control Center Complex - Administration	SPU	\$1,815,000	1,320,954	72.1	2026	Per SPU planning.	\$12,452
Columbia Branch Library	SPL	\$1,189,650	341,219	22.0	2026	Per SPL planning.	\$1,868
West Seattle Branch Library	SPL	\$1,142,400	316,179	19.3	2026	Per SPL planning.	\$2,155
Charles Street Complex Materials Testing Lab (F)	FAS	\$50,000	1,212	0.1	2030	TBD	\$(3)



Building	Dept./ Partner	Estimated Cost (2022 Dollars)	Energy Savings (kBTU)	Carbon Emissions Reductions (MT CO ₂ e)	Decarb Date	HVAC Replacement Description	Annual Utility Cost Savings
Airport Way Center - Building A	FAS	\$17,500,000	1,153,958	98.9	2035	PRTU replacement (Typ 5) + zone hot water coil replacement	\$(3,316)
Hiawatha Community Center	SPR	\$149,000	129,362	11.1	2025	Replace PRTU gas pack w/ PRTU HP (typ 1 at 12 tons) (in progress). Replace 2 furnaces with split system HPs (2025).	\$(372)
Loyal Heights Community Center	SPR	\$5,931,848	738,563	54.8	2041	Replace coil in unit serving gym w/ custom hot water coil. Add DOAS unit to serve gym. Replace HW radiators w/ new units sized for 120 F EWT and all distribution piping, pumping, and controls.	\$1,234
Northgate Community Center	SPR	\$2,386,500	503,044	34.5	2028	Must synchronise with library as they share a boiler loop. Replace AHUs serving the childcare, gym, and office/multipurpose rooms with PRTU HPs. Replace radiators in the activity rooms with split system HPs. Replace small UHs and convectors with electric resistance heaters.	\$1,953
West Seattle Shops	SDOT	\$943,800	219,981	13.1	2028	Provide 7 split system HPs to serve each bay (0.75 tons each), provide 3-head split system for offices + small DOAS unit (110 CFM).	\$1,621
Beacon Hill Branch Library	SPL	\$1,216,900	332,075	17.9	2027	Per SPL planning.	\$3,213
Fremont Branch Library	SPL	\$1,040,550	222,781	13.8	2027	Per SPL planning.	\$1,441
High Point Branch Library	SPL	\$380,100	120,294	10.3	2028	Per SPL planning.	\$(346)
Maintenance and Operations Center (MOC)	SPL	\$265,000	175,734	8.1	2026	Per SPL planning.	\$2,255
Zoomazium	WPZ	\$1,114,500	169,876	14.6	2026	TBD	\$(488)
Seattle Police Dept. West Precinct	FAS	\$10,625,000	3,416,646	292.7	2035	Possibly replace all hot water coils and VAV boxes with new low temp equipment and replace chillers with air to water HPs.	\$(9,817)
Airport Way Center - Building B	FAS	\$2,800,000	347,412	29.8	2030	4 UHs replace w/ 2 split systems, 5 PRTU replacements w. PTHP, 1 AO Smith CAHP 120.	\$(998)
Fire Headquarters	FAS	\$16,234,546	2,823,602	186.2	2031	Full HVAC replacement w/ DOAS + VRF.	\$28,070



Building	Dept./ Partner	Estimated Cost (2022 Dollars)	Energy Savings (kBTU)	Carbon Emissions Reductions (MT CO ₂ e)	Decarb Date	HVAC Replacement Description	Annual Utility Cost Savings
Fire Station 34	FAS	\$1,900,000	242,590	18.1	2033	Replace PRTU gas pack with PRTUHP at 5 tons. Replace UHs in apparatus bay with split system HPs. Add split systems to serve watch office and officers office. Add split sysem for bunker gear and dehumidifier.	\$381
Fire Station 35 (New)	FAS	\$1,900,000	422,438	24.5	2025	Replace 100% gas vent unit w/ DOAS unit w/o tempering. Replace apparatus bay UHs with split system HP. Replace bunker gear UH with split system HP and dehumidifier.	\$3,414
Genesee/SC SE Headquarters	SPR	\$680,500	164,388	14.1	2026	TBD	\$(472)
Green Lake Community Center/Pool	SPR	\$6,901,983	5,857,068	501.8	2030	TBD	\$(16,829)
High Point Community Center	SPR	\$1,817,817	399,836	20.9	2027	DOAS + VRF retrofit, full HVAC replacement.	\$4,134
Queen Anne Community Center	SPR	\$6,067,800	1,404,856	94.5	2029	Replace coil in unit serving gym w/ custom hot water coil. Add DOAS unit to serve gym. Replace hot water radiators w/ new units sized for 120 F EWT and all distribution piping, pumping, and controls.	\$6,175
North Operations Center - Administration and Warehouse	SPU	\$2,184,000	364,819	25.0	2030	Per SPU planning. (Cost reflects improvements to existing building if replacement does not occur.)	\$1,442
Ballard Branch Library	SPL	\$653,100	374,395	32.1	2029	Per SPL planning.	\$(1,076)
Queen Anne Branch Library	SPL	\$1,059,450	245,307	16.2	2027	Per SPL planning.	\$1,191
University Branch Library	SPL	\$1,106,700	353,949	22.9	2025	Per SPL planning.	\$1,917
Charles Street Complex Vehicle Maintenance (E)	FAS	\$8,500,000	3,320,820	225.5	2029	Replace radiant gas heaters with PRTUHP, heating and ventilating units with PRTUHPs, and unit heaters with split system HPs.	\$13,792
Charles Street Complex Meter Shop (G)	FAS	\$2,200,000	1,084,673	65.3	2028	Replace 4 PRTUs with 3 PRTHPs, replace UHs and furnaces with split system HPs (9 total).	\$7,826
Fire Station 17	FAS	\$2,550,000	658,359	46.8	2027	Replace UHs in apparatus bays with 4 split system HPs.	\$1,888



Building	Dept./ Partner	Estimated Cost (2022 Dollars)	Energy Savings (kBTU)	Carbon Emissions Reductions (MT CO2e)	Decarb Date	HVAC Replacement Description	Annual Utility Cost Savings
Fire Station 26	FAS	\$2,000,000	230,005	13.9	2027	Replace 100% outside air fan coils w/ DOAS units w/ ERVs (typical 2). Full VRF retrofit for rest of building, including app bay.	\$1,623
Fire Station 40	FAS	\$1,900,000	271,357	18.2	2032	Replace 100% outside air fan coils w/ DOAS units w/ ERVs (typical 2). Full VRF retrofit for rest of building, including app bay.	\$1,203
Fire Station 39 (New)	FAS	\$2,000,000	310,269	21.6	2030	Replace gas UHs in apparatus bays with 2 split system HPs, and add third split system HP to serve bunker gear and workshop. Add a dehumidifier for bunker gear room.	\$1,065
Fire Station 06 (New)	FAS	\$2,600,000	280,082	24.0	2027	Replace apparatus bay UHs w/ split system HPs.	\$(805)
Fire Station 38 (New)	FAS	\$1,600,000	244,939	14.8	2035	Replace apparatus bay UHs with split system HP.	\$1,732
Colman Pool	SPR	\$8,782,000	2,571,715	220.3	2042	Air to water HP plant with buffer tank and heat exchanger.	\$(7,389)
Delridge Community Center	SPR	\$2,188,500	864,660	52.9	2041	Replace AHUs (typ 3) with DOAS w/ ERV. VRF to serve zones for heating/cooling.	\$5,874
Rainier Community Center	SPR	\$3,962,962	1,008,578	63.0	2029	Full HVAC replacement, DOAS + VRF.	\$6,347
Southwest Youth and Family Service Center	SPR	\$46,500	261,318	22.4	2026	7 split system HPs, 2 tons each, ducted indoor units, AO Smitch CAHP for DHW.	\$(751)
South Service Center Apprenticeship Shop	SCL	\$202,750	62,651	5.4	2028	TBD	\$(180)
Douglass-Truth Branch Library	SPL	\$1,240,050	468,995	25.6	2029	Per SPL planning.	\$4,437
Montlake Branch Library	SPL	\$375,900	87,457	7.5	2030	Per SPL planning.	\$(251)
Northgate Branch Library	SPL	\$931,350	532,655	34.6	2028	See Northgate Community Center.	\$2,821
Benaroya Hall	BEN	\$25,408,285	4,168,937	549.1	2034	TBD	\$129,357
Animal Shelter	FAS	\$3,900,525	886,666	47.9	2031	Full HVAC replacement w/ 5 DOAS units for outside air and VRF retrofit.	\$8,565



Building	Dept./ Partner	Estimated Cost (2022 Dollars)	Energy Savings (kBTU)	Carbon Emissions Reductions (MT CO ₂ e)	Decarb Date	HVAC Replacement Description	Annual Utility Cost Savings
Joint Training Facilities Campus	FAS	\$7,100,000	1,685,808	105.6	2029	Replace locker room unit w/ 100% outside air DOAS unit. Add custom hot water coils to 2 classroom and office units and provide air to water HP (replaces boiler and chiller) for coils. Replace all VAV boxes with new ones sized for 120 F EWT. Add 2 new PRTUHP at 5 tons to replace apparatus bay gas radiant heaters. Replace gas furnace with split system HPs.	\$10,494
Fire Station 16	FAS	\$1,632,800	77,849	3.5	2029	Replace UH in apparatus bay with split system HP.	\$1,014
Fire Station 24	FAS	\$1,400,000	7,881	0.7	2032	Cooking only.	\$(23)
Fire Station 21 (New)	FAS	\$3,289,430	144,641	9.0	2035	Replace gas UHs in apparatus bays with split system HPs, add a third split system HP to serve bunker gear and workshop. Add a dehumidifier for bunker gear room.	\$944
Northwest Senior Center	FAS	\$1,092,140	286,284	24.5	2035	TBD	\$(823)
Ballard Community Center	SPR	\$2,015,600	453,205	23.8	2029	Replace AHUs (typ 3) with DOAS w/ ERV. VRF to serve zones for heating/cooling.	\$4,653
Jefferson Community Center	SPR	\$3,587,800	853,923	53.2	2028	Full HVAC replacement, DOAS + VRF.	\$5,454
Magnuson, Magnuson Community Center	SPR	\$2,942,600	1,504,070	116.8	2029	Replace PRTU gas packs w/ PRTU HPs (typ 7) Gas furnaces (Typ 4): replace with split system HPs. UHs (Typ 1): replace w/ split system HPs.	\$447
Mounger Pool	SPR	\$4,342,000	2,577,053	220.8	2029	Air to water HP plant with buffer tank and heat exchanger.	\$(7,405)
Yesler Community Center	SPR	\$1,886,000	1,085,542	75.4	2029	Replace PRTU gas packs with PRTU HPs (Typ 6). Demo gas make-up air unit and replace w/ untempered supply fan, add MELINK control.	\$3,854
Lake City Branch Library	SPL	\$1,606,500	467,772	40.1	2032	Per SPL planning.	\$(1,344)
Magnolia Branch Library	SPL	\$894,550	241,651	12.6	2030	Per SPL planning.	\$2,520
Madrona Sally Goldmark Branch Library	SPL	\$265,600	96,758	5.8	2027	Per SPL planning.	\$718



Building	Dept./ Partner	Estimated Cost (2022 Dollars)	Energy Savings (kBtu)	Carbon Emissions Reductions (MT CO ₂ e)	Decarb Date	HVAC Replacement Description	Annual Utility Cost Savings
Animal Health Department	WPZ	\$1,533,334	1,021,561	87.5	2029	TBD	\$(2,935)
Justice Center	FAS	\$28,700,000	2,808,117	240.6	2034	Replace VAV boxes w/ new units w/ low temp coils (120 F EWT). Replace chillers and boilers with air source heat pumps.	\$(8,069)
Fire Station 13	FAS	\$1,850,000	102,730	5.6	2029	Replace UH in apparatus bay with split system HP.	\$973
South Park Redevelopment Center	FAS	\$952,919	181,848	15.6	2035	TBD	\$(523)
Charles Street Complex First Hill Street Car Maintenance Shop	SDOT	\$1,376,120	261,057	15.2	2034	Replace boilers w/ 7 air to water HPs and add DOAS units for ventilation.	\$2,082
Fire Station 20 (New)	FAS	\$1,850,000	52,029	4.5	2032	TBD	\$(149)
International District/ Chinatown Community Center	SPR	\$46,500	90,966	7.8	2030	Replace PRTU gas packs w/ PRTU HPs.	\$(261)
Magnolia Community Center	SPR	\$1,486,758	1,209,358	103.6	2030	Community Center: VRF + DOAS Gym: HP RTP and ERV	\$(3,475)
Miller Community Center	SPR	\$3,054,200	806,357	60.9	2040	Replace AHUs (Typ 2) with DOAS + ERV, add VRF for heating/ cooling.	\$923
Southwest Teen Life Center and Pool	SPR	\$9,292,600	2,942,709	252.1	2030	Pool: (4) 30-ton HP modules and 1000 gal buffer tank. Natatorium and locker rooms: ERVs with HP heating.	\$(8,455)
South Service Center Building A	SCL	\$1,760,500	555,313	47.6	2030	Replace office PRTUs (typ 3) w/ PRTU HPs.	\$(1,596)
Tolt/Duvall	SPU	\$500,000	104,943	7.5	2025	Per SPU planning.	\$296
Greenwood Branch Library	SPL	\$1,156,000	528,125	29.5	2031	Per SPL planning.	\$4,709
Feline House	WPZ	\$1,500,834	981,629	84.1	2030	TBD	\$(2,821)



Building	Dept./ Partner	Estimated Cost (2022 Dollars)	Energy Savings (kBtu)	Carbon Emissions Reductions (MT CO ₂ e)	Decarb Date	HVAC Replacement Description	Annual Utility Cost Savings
City Hall	FAS	\$19,500,000	3,140,511	269.0	2030	7 large custom AHU hot water heating coil replacements w/ roughly 100 VAV box replacements w/ low temp coils. Large air to water HPs to replace existing chillers.	\$(9,024)
Fire Station 10/FAC/EOC	FAS	\$12,250,000	1,937,123	109.1	2033	Replace RTUs with custom air source HPs (typ 3), replace all VAV boxes (60 typical) with low temp coil units and provide heating hot water with air source HPs, replace gas radiant heaters with split system equipment.	\$16,904
Airport Way Center - Building D	FAS	\$3,000,000	379,959	27.7	2035	3 PRTU HP replacements + 2 split system HP replacements.	\$844
Fire Station 14	FAS	\$2,350,000	602,002	42.0	2030	Replace apparatus bays UHs w/ 3 split system HPs.	\$2,064
Fire Station 08	FAS	\$1,850,000	271,872	23.3	2030	Replace boiler w/ air to water HPs.	\$(781)
Fire Station 27	FAS	\$1,850,000	215,432	15.4	2029	Replace existing PRTU gas pack with PRTUHP (typ 1 at 3 tons). Replace UHs w/ 2 split system HPs.	\$594
Fire Station 09 (New)	FAS	\$1,850,000	161,652	9.8	2034	Replace apparatus bay gas unit heaters w/ split system HP. Replace bunker drying room UH with split system HP and humidifier.	\$1,148
HLF SDOT Paint Shop (D)	FAS	\$980,000	199,033	13.8	2030	Replace UHs w/ split system HPs.	\$700
Bitter Lake Community Center	SPR	\$2,476,500	879,421	49.8	2031	Replace AHUs (typ 4) w/ DOAS w/ ERV. VRF to serve zones for heating/cooling.	\$7,591
Hutchinson Community Center	SPR	\$46,500	52,840	4.5	2031	TBD	\$(152)
Jefferson Park Golf Clubhouse and Driving Range	SPR	\$314,000	239,074	20.5	2031	HP RTU and DOAS.	\$(687)
Magnuson, Building 11	SPR	\$630,000	1,844,371	89.9	2036	No info on existing mechanical system. Assume VRF + DOAS retrofit.	\$21,631
Rainier Beach Community Center and Pool	SPR	\$6,777,000	5,486,140	470.0	2031	Pool: (4) 30-ton HP modules and 1000 gal buffer tank. Natatorium and locker rooms: ERVs w/ HP heating.	\$(15,764)
Blue Building (Safety)	SCL	\$349,000	63,599	5.4	2031	TBD	\$(183)



Building	Dept./ Partner	Estimated Cost (2022 Dollars)	Energy Savings (kBtu)	Carbon Emissions Reductions (MT CO ₂ e)	Decarb Date	HVAC Replacement Description	Annual Utility Cost Savings
Operations Control Center Complex - Fabrication Shop	SPU	\$350,000	541,483	31.8	2031	Per SPU planning.	\$4,225
Operations Control Center Complex - MEB	SPU	\$275,000	900,802	56.9	2034	Per SPU planning.	\$5,444
Tropical Rain Forest	WPZ	\$1,057,166	2,663,599	228.2	2031	TBD	\$(7,653)
Airport Way Center - Building C	FAS	\$11,200,000	1,165,598	48.8	2033	4 custom VRF coil replacements.	\$16,848
Fire Station 28 (New)	FAS	\$2,200,000	265,678	13.5	2030	Replace gas radiant heaters in apparatus bays with 2 split system HPs, add a third split system HP to serve bunker gear and workshop. Add a dehumidifier for bunker gear room.	\$2,910
Belltown Cottages	SPR	\$450,000	110,536	9.5	2032	Mini split system HP	\$(318)
Conservatory Hut	SPR	\$140,000	83,847	7.2	2032	TBD	\$(241)
Donald Graham Visitors Center	SPR	\$270,000	158,495	13.6	2039	TBD	\$(455)
Madison Park Bathhouse	SPR	\$216,000	80,963	6.9	2032	TBD	\$(233)
Madrona Park Bathhouse	SPR	\$270,000	88,906	7.6	2032	TBD	\$(255)
Magnuson, Building 30	SPR	\$5,148,000	1,062,812	79.1	2041	West Wing: replace boilers w/ air to water HPs, replace hot water fan coils (typ 4) with new units, and add radiators where necessary to meet capacity. Central event space: replace 4 UHs w/ PRTU-HPS at 15 tons each. East Wing: full VRF/DOAS retrofit, full HVAC replacement.	\$1,665
Meadowbrook Community Center/Pool	SPR	\$8,433,800	2,885,594	247.2	2040	Pool: (4) 300-ton HP modules and 1000 gal buffer tank. Natatorium and locker rooms: ERVs w/ HP heating. Community Center: VRF + DOAS and HP water heater.	\$(8,291)
Ravenna-Eckstein Community Center	SPR	\$752,000	343,534	26.2	2041	Replace gas furnaces w/ split system HPs.	\$303
Seward Park Bathhouse	SPR	\$95,500	59,990	5.1	2042	TBD	\$(172)



Building	Dept./ Partner	Estimated Cost (2022 Dollars)	Energy Savings (kBTU)	Carbon Emissions Reductions (MT CO2e)	Decarb Date	HVAC Replacement Description	Annual Utility Cost Savings
Seward Park Clay Studio	SPR	\$360,000	157,127	13.5	2032	TBD	\$(451)
Lake Youngs - Office/Shop	SPU	\$600,000	106,044	6.9	2026	Per SPU planning.	\$575
Seattle Aquarium	AQU	\$5,428,000	2,688,423	230.3	2032	TBD	\$(7,725)
West Entrance	WPZ	\$1,594,200	127,059	10.9	2032	TBD	\$(365)
Fire Station 18	FAS	\$1,950,000	276,474	18.2	2032	Replace gas radiant heaters in apparatus bays with 2 split system HPs, add a third split system HP to serve bunker gear and workshop. Add a dehumidifier for bunker gear room.	\$1,376
Fire Station 37 (New)	FAS	\$1,600,000	260,098	18.3	2031	Replace apparatus bay UHs with split system HP. Replace bunker gear UH with split system HP and dehumidifier.	\$843
Ballard Pool	SPR	\$3,460,000	2,024,013	173.4	2037	Pool: (4) 30-ton HP modules and 1000 gal buffer tank. Natatorium and locker rooms: ERVs w/ HP heating.	\$(5,816)
Bradner Gardens Park	SPR	\$180,000	28,849	2.5	2033	TBD	\$(83)
Conservatory and Upper Greenhouse	SPR	\$1,522,500	2,032,020	174.1	2033	Add additional radiators to allow for temperature maintenance with 120 F EWT. Add air to water HPs (Typ 4) to provide water heating.	\$(5,839)
Dexter Building	SPR	\$3,043,797	891,215	55.2	2042	DOAS + VRF retrofit, full HVAC replacement.	\$5,814
Green Lake Bathhouse Theater	SPR	\$360,000	166,102	14.2	2033	TBD	\$(477)
Helene Madison Pool	SPR	\$3,715,600	2,716,767	232.7	2038	Pool: (4) 30-ton HP modules and 1000 gal buffer tank. Natatorium and locker rooms: ERVs w/ HP heating.	\$(7,806)
Interbay Soccer Stadium Complex	SPR	\$1,170,000	804,245	46.3	2033	Mini Split HP + DOAS and 3 HP water heaters.	\$(1,551)
Magnuson, Building 138	SPR	\$857,160	715,155	61.3	2028	TBD	\$(2,055)
Pinehurst Playground	SPR	\$180,000	138,845	11.9	2033	TBD	\$(399)
Pritchard Beach Bathhouse	SPR	\$216,000	227,010	19.4	2033	TBD	\$(652)



Building	Dept./ Partner	Estimated Cost (2022 Dollars)	Energy Savings (kBTU)	Carbon Emissions Reductions (MT CO ₂ e)	Decarb Date	HVAC Replacement Description	Annual Utility Cost Savings
Queen Anne Pool	SPR	\$3,460,000	4,713,834	403.8	2037	Pool: (4) 30-ton HP modules and 1000 gal buffer tank. Natatorium and locker rooms: ERVs w/ HP heating.	\$(13,545)
Westbridge	SPR	\$6,237,000	2,136,807	128.3	2039	Replace PRTU gas packs with PRTU HPs. Replace 100% OA heating and ventilation units with DOAS w/ ERV equipment.	\$15,523
Beacon Hill Office (Old Water Lab)	SPU	\$55,000	139,304	11.9	2033	Per SPU planning.	\$(400)
Arboretum Headquarters Building	SPR	\$270,000	268,933	23.0	2034	TBD	\$(773)
Armory Building (MOHAI)	SPR	\$6,213,300	2,307,766	197.7	2033	TBD	\$(6,631)
Cascade Building YWCA	SPR	\$180,000	90,946	7.8	2034	HP RTU + DOAS, HP water heater.	\$(261)
Conservatory Cottage	SPR	\$180,000	29,640	2.5	2040	Install split system HP.	\$(85)
Conservatory Lower Greenhouse	SPR	\$765,000	947,334	81.2	2041	Add additional radiators to allow for temperature maintenance with 120 F EWT. Add air to water HPs (Typ 1) to provide water heating.	\$(2,722)
Dakota Place Building	SPR	\$342,500	59,990	5.1	2034	TBD	\$(172)
Discovery Park Environmental Learning Center	SPR	\$482,500	671,695	39.1	2042	DOAS + VRF retrofit, full HVAC replacement.	\$5,363
Interbay Golf Center	SPR	\$46,500	95,985	8.2	2034	4 split system HPs at 4 tons each, ducted indoor units, electric radiant heaters, AO Smith CAHP for domestic hot water.	\$(276)
Laurelhurst Community Center	SPR	\$746,000	297,607	19.4	2040	Replace heating and ventilation unit with DOAS unit, add radiators to meet load at 120 F EWT, add air source HP to provide hot water heating, demo boiler.	\$1,567
Lincoln Park Headquarters	SPR	\$180,000	10,174	0.9	2034	TBD	\$(29)
Magnuson, Building 2, Conservation Corps	SPR	\$302,500	528,335	45.3	2039	TBD	\$(1,518)



Building	Dept./ Partner	Estimated Cost (2022 Dollars)	Energy Savings (kBtu)	Carbon Emissions Reductions (MT CO ₂ e)	Decarb Date	HVAC Replacement Description	Annual Utility Cost Savings
Medgar Evers Pool	SPR	\$3,362,500	7,667,045	656.8	2036	Pool: (4) 30-ton HP modules and 1000 gal buffer tank. Natatorium and locker rooms: ERVs with HP heating.	\$(22,030)
Montlake Community Center	SPR	\$3,008,100	464,683	39.8	2038	Ccommunity Center: air to water HP + DOAS, HP water heater. Tudor Building: mini split HP + DOAS.	\$(1,335)
Pratt Fine Arts Center	SPR	\$495,000	215,102	18.4	2034	TBD	\$(618)
Seacrest Marina	SPR	\$509,500	1,527,891	130.9	2034	HPRTU, HP water heater, electric cook line (3 units).	\$4,390
Genesee Park Open Storage Shed	SPR	\$383,500	376,650	32.3	2027	TBD	\$1,082
North Transfer Station	SPU	\$750,000	239,952	20.6	2034	Per SPU planning.	\$(689)
Operations Control Center Complex - Meter Shop	SPU	\$400,000	629,309	39.0	2025	Per SPU planning.	\$4,078
Old Treatment - Tolt	SPU	\$375,000	55,671	4.8	2028	Per SPU planning.	\$(160)
Airport Way Center - Building E	FAS	\$4,000,000	2,181,881	140.6	2035	Coil replacements for 120 F in 2 large AHUs, replace boiler and chiller w/ air to water HP.	\$12,048
HLF FAS Vehicle Maintenance (A)	FAS	\$3,900,000	2,227,635	143.3	2028	Full VRF + DOAS retrofit.	\$12,399
Seattle Police Dept. Southwest Precinct	FAS	\$6,500,000	1,042,421	89.3	2036	Replace 2 hot water coils in AHUs w/ custom coils sized for 120 F EWT, replace all VAV boxes (26 total) w/ new boxes sized for 120 F EWT. Replace chiller w/ air to water HPs for heating and cooling.	\$(2,995)
Fire Station 05	FAS	\$2,200,000	115,964	9.9	2027	Replace apparatus bay UH w/ split system HP.	\$(333)
Fire Station 29	FAS	\$1,600,000	117,613	7.1	2035	Replace apparatus bay UHs w/ 1 split system HP.	\$840
Fire Station 33	FAS	\$2,600,000	307,324	20.2	2030	Full HVAC replacement, DOAS + VRF in whole building.	\$1,531
Fire Station 22 (New)	FAS	\$1,850,000	216,598	14.8	2033	Replace gas radiant heaters in apparatus bays with 2 split system HPs, add a third split system HP to serve bunker gear and workshop. Add a dehumidifier for bunker gear room.	\$867



Building	Dept./ Partner	Estimated Cost (2022 Dollars)	Energy Savings (kBTU)	Carbon Emissions Reductions (MT CO ₂ e)	Decarb Date	HVAC Replacement Description	Annual Utility Cost Savings
Fire Station 30 (New)	FAS	\$1,128,000	134,430	11.5	2029	Most work completed in 2022, replace gas cooking in 2023.	\$(386)
Fire Station 32 (New)	FAS	\$2,250,000	550,400	36.0	2032	Replace gas radiant heaters in apparatus bay w/ 2 split system HPs. Replace kitchen makeup AHU w/ supply fan sized at 300 CFM.	\$2,820
Charles Street Complex Tire Shop (D)	FAS	\$1,100,000	556,262	39.3	2029	Replace radiant gas heaters w/ PRTUHP and 2 split systems.	\$1,688
Langston Hughes Performing Arts Center	SPR	\$6,100,000	1,809,376	119.7	2036	Full HVAC replacement, DOAS + VRF.	\$8,782
Magnuson, Building 27, Arena Sports	SPR	\$450,000	1,515,048	137.2	2035	Replace 5 gas radiant heaters at 80 MBH each w/ 5 electric radiant heaters.	\$4,603
Seattle Asian Art Museum	SPR	\$11,538,140	336,154	28.8	2035	TBD	\$(966)
Tilth Rainier Beach Urban Farm	SPR	\$-	59,990	5.1	2035	TBD	\$172
West Seattle Golf Crew Quarters	SPR	\$368,000	74,652	6.4	2035	Replace with ductless split system.	\$(215)
Camp Long Environmental Learning Center	SPR	\$406,500	526,350	45.1	2040	TBD	\$(1,512)
Bakun Building	FAS	\$806,450	567,691	33.9	2026	Full HVAC replacement, DOAS + VRF.	\$4,183
Technical Metering Operations	SCL	\$1,366,000	159,135	13.6	2035	TBD	\$(457)



Appendix C: Replacement Schedule with Acceleration Details

Table 4. Replacement Schedule with Acceleration Details

Building	Area (SF)	Baseline EUI (2019)	Baseline GHGI kgCO ₂ e/SF/Year (2019)	Expected Mechanical System End-of-Life	Scheduled Replacement Date	Schedule Justification	Carbon Emissions Reductions (MTCO ₂ e/Year)	Estimated Cost (2022 Dollars)
Benaroya Hall	172,411	96.9	3.50	2034	2034	End of Life	549.1	\$25,408,285
City Hall	184,042	75.4	1.83	2023	2030	End of Life	269.0	\$19,500,000
Airport Way Center - Building C	103,917	65.6	0.42	2031	2033	End of Life	48.8	\$11,200,000
Airport Way Center - Building A	99,950	144.7	0.91	2024	2035	End of Life	98.9	\$17,500,000
Fire Station 10/FAC/EOC	57,960	141.8	0.79	2031	2033	End of Life	109.1	\$12,250,000
Charles Street Complex Vehicle Maintenance (E)	67,772	91.8	1.38	2023	2029	End of Life	225.5	\$8,500,000
Justice Center	298,278	58.8	1.76	2025	2034	End of Life	240.6	\$28,700,000
Seattle Police Dept. West Precinct	50,755	254.4	1.93	2020	2035	End of Life	292.7	\$10,625,000
Airport Way Center - Building B	16,725	54.7	0.19	2022	2030	End of Life	29.8	\$2,800,000
Airport Way Center - Building D	22,803	40.4	0.17	2022	2035	End of Life	27.7	\$3,000,000
Airport Way Center - Building E	24,965	178.6	0.87	2022	2035	End of Life	140.6	\$4,000,000
Animal Shelter	10,868	155.7	0.30	2023	2031	End of Life	47.9	\$3,900,525
Charles Street Complex Engineering (A)	20,424	141.8	0.66	2022	2028	End of Life	108.3	\$1,500,000
Charles Street Complex Meter Shop (G)	19,930	105.6	0.40	2022	2028	End of Life	65.3	\$2,200,000
Seattle Police Dept. East Precinct	36,280	97.5	0.31	2023	2026	End of Life	41.1	\$2,375,000
Charles Street Complex Fire Garage (C)	18,545	72.6	0.25	2022	2028	End of Life	40.1	\$2,180,000
Fire Station 02	38,939	86.5	0.60	2022	2028	End of Life	95.9	\$3,200,000
Fire Station 14	18,084	92.0	0.27	2031	2030	Project Bundling	42.0	\$2,350,000
Fire Station 17	21,918	78.3	0.30	2028	2027	End of Life	46.8	\$2,550,000
Fire Station 18	18,832	46.9	0.12	2033	2032	Project Bundling	18.2	\$1,950,000
Fire Station 25	18,539	85.1	0.31	2022	2031	End of Life	49.5	\$4,634,300



Building	Area (SF)	Baseline EUI (2019)	Baseline GHGI kgCO2e/SF/Year (2019)	Expected Mechanical System End-of-Life	Scheduled Replacement Date	Schedule Justification	Carbon Emissions Reductions (MTCO2e/Year)	Estimated Cost (2022 Dollars)
HLF FAS Vehicle Maintenance (A)	26,994	133.0	0.87	2036	2036	End of Life	143.3	\$3,900,000
SDOT Traffic Shop	41,939	49.5	0.34	2022	2032	End of Life	53.1	\$18,500,000
Seattle Police Dept. Southwest Precinct	28,303	121.6	0.58	2020	2036	End of Life	89.3	\$6,500,000
Fire Station 28 (New)	14,031	92.2	0.10	2032	2030	Project Bundling	13.5	\$2,200,000
Fire Headquarters	48,381	110.3	1.14	2022	2031	End of Life	186.2	\$16,234,546
Joint Training Facilities Campus	47,000	76.4	0.66	2020	2029	End of Life	105.6	\$7,100,000
Fire Station 05	6,844	173.8	0.08	2036	2036	End of Life	9.9	\$2,200,000
Fire Station 08	7,790	92.2	0.15	2031	2030	End of Life	23.3	\$1,850,000
Fire Station 11	6,191	77.3	0.08	2022	2030	End of Life	12.1	\$1,600,000
Fire Station 13	5,605	81.6	0.04	2030	2029	Project Bundling	5.6	\$1,850,000
Fire Station 16	4,039	105.0	0.03	2029	2029	End of Life	3.5	\$1,632,800
Fire Station 24	4,936	107.5	0.02	2029	2032	End of Life	0.7	\$1,400,000
Fire Station 26	5,427	94.7	0.09	2029	2027	Project Bundling	13.9	\$2,000,000
Fire Station 27	6,329	87.6	0.10	2031	2029	Project Bundling	15.4	\$1,850,000
Fire Station 29	5,115	87.4	0.05	2038	2035	End of Life	7.1	\$1,600,000
Fire Station 30 (New)	9,417	67.4	0.08	2029	2029	End of Life	11.5	\$1,128,000
Fire Station 34	5,861	92.9	0.11	2022	2033	End of Life	18.1	\$1,900,000
Fire Station 40	6,639	78.0	0.11	2028	2032	End of Life	18.2	\$1,900,000
Fire Station 41	6,146	98.5	0.09	2026	2033	End of Life	14.3	\$1,850,000
Fire Station 33	6,506	93.3	0.12	2037	2037	End of Life	20.2	\$2,600,000
Fire Station 39 (New)	10,279	83.4	0.14	2028	2030	End of Life	21.6	\$2,000,000
Fire Station 35 (New)	9,901	100.8	0.16	2027	2025	End of Life	24.5	\$1,900,000
Fire Station 06 (New)	11,685	84.6	0.16	2032	2027	Project Bundling	24.0	\$2,600,000



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Fire Station 09 (New)	9,424	65.0	0.07	2031	2034	Project Bundling	9.8	\$1,850,000
Fire Station 21 (New)	8,654	60.6	0.06	2029	2035	End of Life	9.0	\$3,289,430
Fire Station 38 (New)	9,137	101.4	0.10	2028	2035	End of Life	14.8	\$1,600,000
Fire Station 37 (New)	9,375	75.2	0.12	2033	2031	Project Bundling	18.3	\$1,600,000
Northwest Senior Center	8,575	68.1	0.15	2029	2035	End of Life	24.5	\$1,092,140
South Park Redevelopment Center	7,236	73.6	0.10	2030	2035	End of Life	15.6	\$952,919
Charles Street Complex First Hill Street Car Maintenance Shop	20,983	50.2	0.11	2030	2034	End of Life	15.2	\$1,376,120
Fire Station 22 (New)	10,200	62.1	0.10	2035	2033	Project Bundling	14.8	\$1,850,000
Fire Station 20 (New)	9,990	53.5	0.04	2029	2032	End of Life	4.5	\$1,850,000
Fire Station 32 (New)	18,061	73.4	0.23	2040	2040	End of Life	36.0	\$2,250,000
Charles Street Complex Materials Testing Lab (F)	6,263	58.7	0.01	2026	2030	End of Life	0.1	\$50,000
Charles Street Complex Tire Shop (D)	9,404	120.7	0.24	2022	2029	End of Life	39.3	\$1,100,000
HLF SDOT Paint Shop (D)	2,677	133.4	0.08	2031	2030	End of Life	13.8	\$980,000
Bakun Building	16,129	80.0	0.21	2024	2026	End of Life	33.9	\$806,450
SPL Maintenance and Operations Center	19,773	33.5	0.06	2024	2026	End of Life	8.1	\$265,000
Central Library	365,987	42.8	0.71	2026	2028	End of Life	56.4	\$3,300,000
Ballard Branch Library	18,100	86.2	0.22	2027	2029	End of Life	32.1	\$653,100
Beacon Hill Branch Library	10,800	78.7	0.12	2026	2027	End of Life	17.9	\$1,216,900
Douglass-Truth Branch Library	16,493	72.0	0.17	2028	2029	End of Life	25.6	\$1,240,050
Columbia Branch Library	12,420	56.0	0.14	2025	2026	End of Life	22.0	\$1,189,650
Fremont Branch Library	6,840	70.4	0.09	2026	2027	End of Life	13.8	\$1,040,550
Greenwood Branch Library	12,806	101.7	0.19	2030	2031	End of Life	29.5	\$1,156,000



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High Point Branch Library	7,100	82.5	0.07	2026	2028	End of Life	10.3	\$380,100
Lake City Branch Library	20,017	76.3	0.26	2029	2032	End of Life	40.1	\$1,606,500
Magnolia Branch Library	7,000	91.6	0.08	2029	2030	End of Life	12.6	\$894,550
Montlake Branch Library	5,652	86.2	0.05	2028	2030	End of Life	7.5	\$375,900
Queen Anne Branch Library	7,931	60.6	0.10	2027	2027	End of Life	16.2	\$1,059,450
University Branch Library	8,140	88.3	0.14	2027	2025	End of Life	22.9	\$1,106,700
West Seattle Branch Library	9,460	73.7	0.12	2025	2026	End of Life	19.3	\$1,142,400
Madrona Sally Goldmark Branch Library	1,701	129.7	0.04	2029	2027	End of Life	5.8	\$265,600
Northgate Branch Library	9,882	108.6	0.21	2028	2028	End of Life	34.6	\$931,350
North Service Center	94,288	98.3	1.01	2021	2027	End of Life	142.1	\$4,714,400
SCL South Service Center Building A	180,725	51.3	0.49	2030	2030	End of Life	47.6	\$1,760,500
Technical Metering Operations	27,320	9.7	0.08	2035	2035	End of Life	13.6	\$1,366,000
Blue Building (Safety)	6,980	47.5	0.04	2031	2031	End of Life	5.4	\$349,000
South Service Center Apprenticeship Shop	4,055	60.2	0.04	2028	2028	End of Life	5.4	\$202,750
West Seattle Shops	5,000	100.0	0.08	2028	2028	End of Life	13.1	\$943,800
Street Car Maintenance	9,428	207.6	0.05	2027	2027	End of Life	-	\$579,000
DWW-SOC 4500 W. Marginal Way SW	37,460	28.7	0.20	2025	2025	End of Life	31.9	\$682,500
North Transfer Station	187,092	33.4	0.27	2034	2034	End of Life	20.6	\$750,000
Seattle Aquarium	69,400	237.1	1.68	2032	2032	End of Life	230.3	\$5,428,000
Zoomazium	8,500	109.5	0.10	2026	2026	End of Life	14.6	\$1,114,500
WPZ Animal Health Department	11,802	222.2	0.55	2029	2029	End of Life	87.5	\$1,533,334
WPZ Feline House	12,600	202.5	0.53	2030	2030	End of Life	84.1	\$1,500,834
WPZ West Entrance	7,998	91.4	0.08	2032	2032	End of Life	10.9	\$1,594,200



Building	Area (SF)	Baseline EUI (2019)	Baseline GHGI kgCO ₂ e/SF/Year (2019)	Expected Mechanical System End-of-Life	Scheduled Replacement Date	Schedule Justification	Carbon Emissions Reductions (MTCO ₂ e/Year)	Estimated Cost (2022 Dollars)
WPZ Tropical Rain Forest	12,044	475.5	1.40	2031	2031	End of Life	228.2	\$1,057,166
Alki Beach Bathhouse	3,216	146.9	0.13	2022	2028	End of Life	22.1	\$180,000
Alki Community Center	6,279	80.0	0.08	2022	2025	End of Life	12.9	\$831,143
Arboretum Headquarters Building	3,785	153.7	0.14	2022	2034	End of Life	23.0	\$270,000
Armory Building	52,690	145.3	1.28	2032	2033	End of Life	197.7	\$6,213,300
Ballard Community Center	16,795	52.7	0.15	2029	2029	End of Life	23.8	\$2,015,600
Ballard Pool	12,769	355.1	1.07	2037	2037	End of Life	173.4	\$3,460,000
Belltown Cottages	1,320	146.4	0.06	2022	2032	End of Life	9.5	\$450,000
Bitter Lake Community Center	20,595	78.3	0.31	2048	2031	Equity Priority	49.8	\$2,476,500
Bradner Gardens Park	909	92.9	0.02	2022	2033	End of Life	2.5	\$180,000
Camp Long Environmental Learning Center	4,416	228.2	0.27	2040	2028	End of Life	45.1	\$406,500
Cascade Building YWCA	3,790	80.0	0.05	2022	2034	End of Life	7.8	\$180,000
Colman Pool	29,811	160.0	1.33	2042	2042	End of Life	220.3	\$8,782,000
Conservatory and Upper Greenhouse	11,179	326.6	1.05	2033	2033	End of Life	174.1	\$1,522,500
Conservatory Cottage	1,658	74.0	0.02	2043	2040	Accelerated for 2042	2.5	\$180,000
Conservatory Hut	1,012	138.1	0.04	2022	2032	End of Life	7.2	\$140,000
Conservatory Lower Greenhouse	8,717	210.2	0.49	2042	2041	End of Life	81.2	\$765,000
Dakota Place Building	2,500	80.0	0.03	2022	2034	End of Life	5.1	\$342,500
Delridge Community Center	17,693	83.1	0.32	2045	2041	Accelerated for 2042	52.9	\$2,188,500
Densmore/NW NC Headquarters	19,246	28.2	0.09	2037	2028	Project Bundling	14.5	\$572,500



Building	Area (SF)	Baseline EUI (2019)	Baseline GHGI kgCO ₂ e/SF/Year (2019)	Expected Mechanical System End-of-Life	Scheduled Replacement Date	Schedule Justification	Carbon Emissions Reductions (MTCO ₂ e/Year)	Estimated Cost (2022 Dollars)
Dexter Building	7,381	203.0	0.34	2050	2042	Accelerated for 2042	55.2	\$3,043,797
Discovery Park Environmental Learning Center	8,752	137.2	0.24	2048	2042	Accelerated for 2042	39.1	\$482,500
Donald Graham Visitors Center	6,605	80.0	0.09	2044	2039	Accelerated for 2042	13.6	\$270,000
Garfield Community Center	20,050	104.1	0.41	2046	2026	Equity Priority	67.0	\$2,296,400
Genesee/SC SE Headquarters	15,398	36.7	0.09	2030	2026	Project Bundling	14.1	\$680,500
Green Lake Community Center and Pool	39,717	300.8	3.06	2025	2030	End of Life	501.8	\$6,901,983
Green Lake Bathhouse Theater	6,922	80.0	0.09	2022	2033	End of Life	14.2	\$360,000
Helene Madison Pool	17,407	315.6	1.42	2044	2038	Accelerated for 2042	232.7	\$3,715,600
High Point Community Center	18,261	57.9	0.14	2027	2027	End of Life	20.9	\$1,817,817
Hutchinson Community Center	2,202	80.0	0.03	2022	2031	End of Life	4.5	\$46,500
Interbay Soccer Stadium Complex	22,500	80.0	0.29	2022	2033	End of Life	46.3	\$1,170,000
International District/Chinatown Community Center	16,000	36.7	0.06	2030	2030	End of Life	7.8	\$46,500
Jefferson Community Center	16,447	111.7	0.33	2043	2028	Equity Priority	53.2	\$3,587,800
Jefferson Golf Maintenance Headquarters	3,130	152.9	0.05	2022	2024	End of Life	6.6	\$288,000
Jefferson Park Golf Clubhouse and Driving Range	9,963	201.2	0.16	2022	2031	End of Life	20.5	\$314,000
Langston Hughes Performing Arts Center	30,890	91.4	0.72	2036	2036	End of Life	119.7	\$6,100,000
Laurelhurst Community Center	11,003	54.4	0.12	2043	2040	Accelerated for 2042	19.4	\$746,000
Lincoln Park Headquarters	424	687.2	0.01	2022	2034	End of Life	0.9	\$180,000



Building	Area (SF)	Baseline EUI (2019)	Baseline GHGI kgCO ₂ e/SF/Year (2019)	Expected Mechanical System End-of-Life	Scheduled Replacement Date	Schedule Justification	Carbon Emissions Reductions (MTCO ₂ e/Year)	Estimated Cost (2022 Dollars)
Loyal Heights Community Center	29,732	56.4	0.34	2042	2041	End of Life	54.8	\$5,931,848
Madison Park Bathhouse	3,374	80.0	0.04	2022	2032	End of Life	6.9	\$216,000
Madrona Park Bathhouse	3,705	80.0	0.05	2031	2032	End of Life	7.6	\$270,000
Magnolia Community Center	14,940	156.8	0.63	2022	2030	End of Life	103.6	\$1,486,758
Magnuson, Building 11	60,823	62.4	0.57	2036	2036	End of Life	89.9	\$630,000
Magnuson, Building 138	5,749	247.4	0.37	2023	2028	End of Life	61.3	\$857,160
Magnuson, Building 2, Conservation Corps	178,196	8.4	0.29	2040	2039	End of Life	45.3	\$302,500
Magnuson, Building 27, Arena Sports	86,473	65.6	0.90	2022	2035	End of Life	137.2	\$450,000
Magnuson, Building 30	80,755	29.5	0.49	2044	2041	Accelerated for 2042	79.1	\$5,148,000
Magnuson, Magnuson Community Center	50,060	56.7	0.71	2027	2029	End of Life	116.8	\$2,942,600
Meadowbrook Community Center and Pool	34,639	188.3	1.52	2042	2040	End of Life	247.2	\$8,433,800
Medgar Evers Pool	20,740	650.2	3.95	2036	2036	End of Life	656.8	\$3,362,500
Miller Community Center	19,273	62.7	0.36	2048	2040	Accelerated for 2042	60.9	\$3,054,200
Montlake Community Center	16,242	71.1	0.25	2039	2038	End of Life	39.8	\$3,008,100
Mounger Pool	3,300	1,396.4	1.33	2025	2029	End of Life	220.8	\$4,342,000
Northgate Community Center	20,616	70.5	0.22	2026	2028	End of Life	34.5	\$2,386,500
Pinehurst Playground	1,488	176.0	0.07	2022	2033	End of Life	11.9	\$180,000
Pratt Fine Arts Center	8,964	80.0	0.12	2022	2034	End of Life	18.4	\$495,000
Pritchard Beach Bathhouse	3,211	132.6	0.12	2022	2033	End of Life	19.4	\$216,000
Queen Anne Community Center	25,809	103.6	0.58	2030	2029	End of Life	94.5	\$6,067,800
Queen Anne Pool	13,157	693.7	2.45	2037	2037	End of Life	403.8	\$3,460,000



Building	Area (SF)	Baseline EUI (2019)	Baseline GHGI kgCO2e/SF/Year (2019)	Expected Mechanical System End-of-Life	Scheduled Replacement Date	Schedule Justification	Carbon Emissions Reductions (MTCO2e/Year)	Estimated Cost (2022 Dollars)
Rainier Beach Community Center and Pool	48,000	269.1	2.91	2043	2031	Equity Priority	470.0	\$6,777,000
Rainier Community Center	28,384	76.0	0.39	2047	2029	Equity Priority	63.0	\$3,962,962
Ravenna-Eckstein Community Center	15,814	44.5	0.16	2046	2041	Accelerated for 2042	26.2	\$752,000
Seattle Asian Art Museum	61,323	123.9	0.35	2022	2035	End of Life	28.8	\$11,538,140
Seward Park Bathhouse	2,500	80.0	0.03	2042	2042	End of Life	5.1	\$95,500
Seward Park Clay Studio	6,548	80.0	0.09	2022	2032	End of Life	13.5	\$360,000
Southwest Teen Life Center and Pool	39,333	190.9	1.58	2039	2030	Equity Priority	252.1	\$9,292,600
Southwest Youth and Family Service Center	10,890	80.0	0.15	2022	2026	End of Life	22.4	\$46,500
Van Asselt Community Center	18,258	72.2	0.29	2022	2025	End of Life	47.5	\$1,740,283
West Seattle Golf Course Clubhouse	3,328	80.0	0.04	2022	2025	End of Life	6.9	\$430,000
Westbridge	113,780	36.5	0.79	2040	2039	End of Life	128.3	\$6,237,000
Yesler Community Center	22,347	103.5	0.47	2021	2029	End of Life	75.4	\$1,886,000
West Seattle Golf Crew Quarters	3,111	80.0	0.04	2022	2035	End of Life	6.4	\$368,000
Seacrest Marina	4,000	676.7	0.79	2022	2034	End of Life	130.9	\$509,500
Genessee Park Storage Shed	4,000	197.0	0.20	2022	2027	End of Life	32.3	\$383,500
Interbay Golf Center	4,000	80.0	0.05	2022	2034	End of Life	8.2	\$46,500
Tilth Rainier Urban Farm	2,500	80.0	0.03	2035	2035	End of Life	5.1	\$0
Hiawatha Community Center	17,190	60.6	0.09	2025	2025	Equity Priority	11.1	\$149,000
Beacon Hill Office (Old Water Lab)	6,580	153.6	0.09	2033	2033	End of Life	11.9	\$55,000
North Operations Center - Admin + Warehouse	9,960	106.6	0.16	2030	2030	End of Life	25.0	\$2,184,000
Operations Control Center - Administration	30,930	91.7	0.46	2025	2026	End of Life	72.1	\$1,815,000
Operations Control Center - Fabrication Shop	10,218	105.7	0.20	2031	2031	End of Life	31.8	\$350,000



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Operations Control Center - MEB	11,449	144.1	0.35	2034	2034	End of Life	56.9	\$275,000
Operations Control Center - Meter Shop	9,247	127.4	0.24	2024	2025	End of Life	39.0	\$400,000
Tolt/Duvall	3,600	75.5	0.05	2024	2025	End of Life	7.5	\$500,000
Equipment - Tolt Operations	3,750	80.0	0.05	2028	2028	End of Life	7.7	\$200,000
Old Treatment - Tolt	2,320	80.0	0.03	2028	2028	End of Life	4.8	\$375,000
Lake Youngs - Office/Shop	3,280	190.7	0.05	2024	2026	End of Life	6.9	\$600,000

Appendix D: Cost by Department by Year

Table 5. Cost by Department by Year (2022 Dollars)

Dept	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	Total Area (SF)
AQU	-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$5,428,000	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	69,400
CEN	-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	
FAS	-	\$1,900,000	\$3,181,450	\$9,350,000	\$12,980,000	\$23,160,800	\$35,930,000	\$26,369,371	\$27,850,000	\$29,050,000	\$57,334,405	\$43,659,489	\$6,500,000	\$-	\$-	\$-	\$-	\$-	\$-	1,793,403
SCL	-	\$-	\$-	\$4,714,400	\$202,750	\$-	\$1,760,500	\$349,000	\$-	\$-	\$-	\$1,366,000	\$-	\$-	\$-	\$-	\$-	\$-	\$-	313,368
SDOT	-	\$-	\$-	\$579,000	\$943,800	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	14,428
SPL	-	\$1,106,700	\$2,597,050	\$3,582,500	\$4,611,450	\$1,893,150	\$1,270,450	\$1,156,000	\$1,606,500	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	540,102
SPR	\$288,000	\$3,150,426	\$3,023,400	\$2,201,317	\$7,583,960	\$21,216,962	\$17,727,841	\$9,614,000	\$1,436,000	\$9,841,800	\$2,023,500	\$12,356,140	\$10,092,500	\$6,920,000	\$6,723,700	\$6,809,500	\$12,820,500	\$14,785,348	\$12,403,797	1,557,984
SPU	-	\$1,582,500	\$2,415,000	\$-	\$575,000	\$-	\$2,184,000	\$350,000	\$-	\$55,000	\$1,025,000	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	315,886
WPZ	-	-	\$1,114,500	\$-	\$-	\$1,533,334	\$1,500,834	\$1,057,166	\$1,594,200	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	52,944



Appendix E: Buildings Included in Onsite Assessments

Building
City Hall
Justice Center
West Precinct
East Precinct
Emergency Operation Center/Fire Station 10
Fire Headquarters
Animal Shelter
Central Library
Magnuson Building 30
SDOT Traffic Shop
100 Dexter (Denny Park)
SPU North Operations Center
Charles Street Complex (Campus)
Airport Way Center (Campus)
Haller Lake Campus
Volunteer Park Conservatory Campus
Branch Libraries: All (SPL Sponsored)
Community Centers: Van Asselt, Rainier, Delridge, and Loyal Heights
Pools: Southwest Teen Life Center and Pool, Rainier Beach Community Center and Pool, Helene Madison Pool, Queen Anne Pool
Fire Stations: FS 16, FS 21, FS 25



Appendix F: Preliminary Washington Clean Buildings Performance Standard Energy Use Intensity Targets

Building	Area (SF)	Recent Weather Normalized EUI	CBPS Target EUI	Meets Standard
Seattle Municipal Tower	1,228,480	36	66	Yes
Central Library	412,000	40	55	Yes
Justice Center	303,998	64	68	Yes
Westbridge	113,780	35	55	Yes
Magnuson, Building 27, Arena Sports	86,473	39	34	Yes
Magnuson, Building 30	80,755	27	55	Yes
Magnuson, Building 11	60,823	60	86	Yes
Magnuson Community Center	50,060	43	77	Yes
Fire Station 02	38,939	69	72	Yes
City Hall	184,042	76	66	No
Benaroya Hall	183,010	70	61	No
SCL South Service Center Building A	180,725	50	18	No
Airport Way Center - Building C	144,289	73	54	No
Airport Way Center - Building A	99,950	156	121	No
North Service Center	94,288	85	53	No
SPU Operations Control Center	90,072	69	33	No
Charles Street Complex Vehicle Maintenance (E)	67,720	73	72	No
SCL South Service Center B	58,640	55	14	No
Fire Station 10/FAC/EOC	57,960	142	69	No
Seattle Aquarium	68,400	220	121	No
Seattle Police Dept. West Precinct	50,755	196	72	No
Fire Headquarters	48,381	98	67	No



Addenda: Tools to Support Successful Decarbonization

Design Guides

- General Guide for Municipal Building Decarbonization
- Guide for Building New Fully Electric Fire Stations
- Guide for Decarbonization of Existing Fire Stations
- Guide for Decarbonization of Existing Community Centers
- Guide for Decarbonization of Domestic Hot Water Systems
- Branch Libraries Plan

Operations Guides

- General Efficient Operating Standards