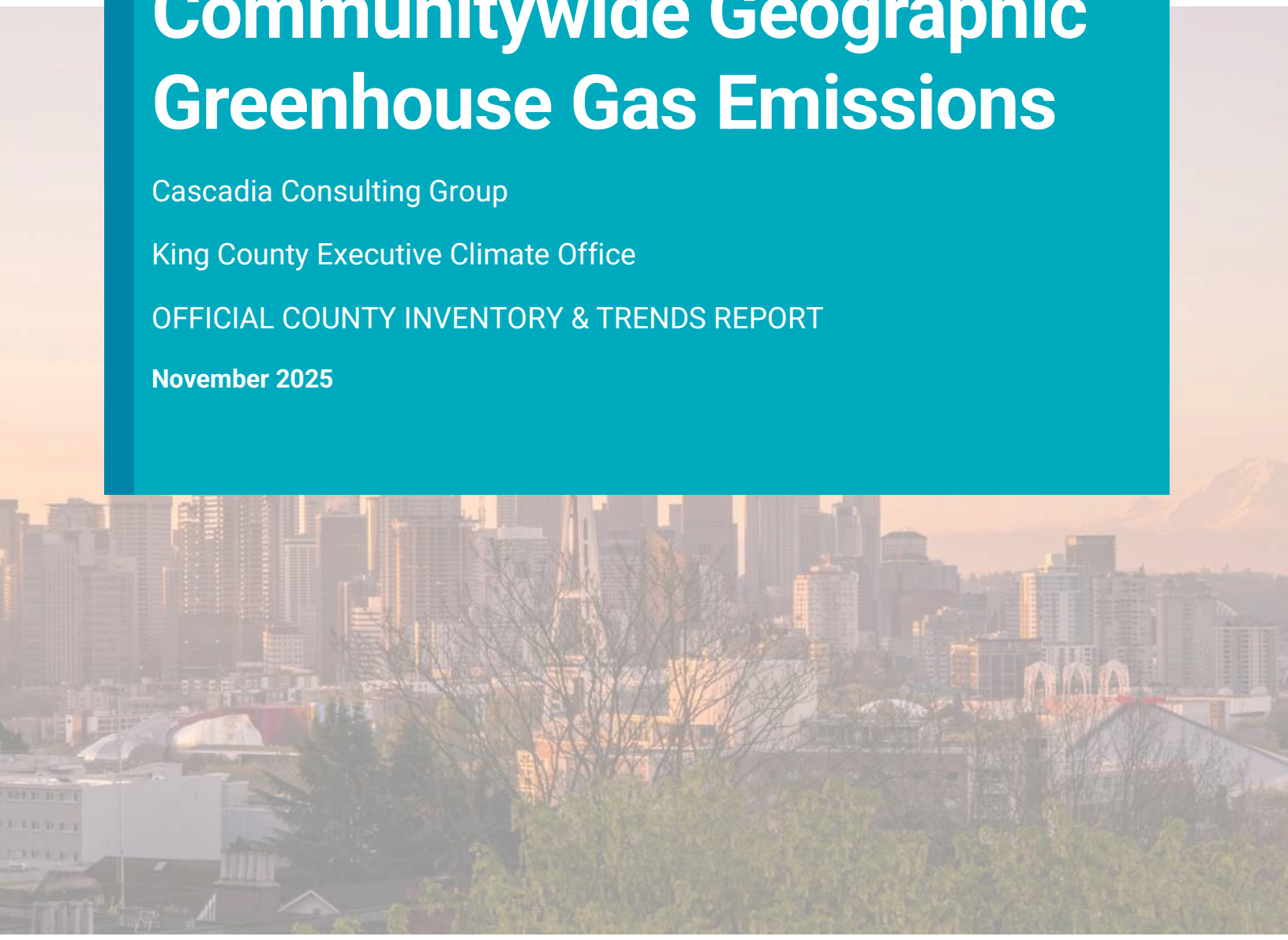
King County Communitywide Geographic Greenhouse Gas Emissions

Cascadia Consulting Group

King County Executive Climate Office

OFFICIAL COUNTY INVENTORY & TRENDS REPORT

November 2025



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Executive Summary

King County has a long history of taking action to reduce greenhouse gas (GHG) emissions, which is the primary driver of climate change. GHGs—including carbon dioxide, methane, and nitrous oxide—trap heat in the atmosphere, creating a "greenhouse effect" that warms the planet. While these gases occur naturally, human activities, such as the burning of fossil fuels for heating and transportation, deforestation, industrial processes, and waste decomposition, have drastically increased their concentration in the atmosphere. This excess heat leads to more extreme weather, rising sea levels, and disruptions to ecosystems and communities. Reducing GHG emissions is critical to slowing climate change, minimizing its most severe impacts, and protecting residents, the economy, and the natural environment. The severity of climate change depends on the level of GHG emissions, the higher the emissions, the more severe the risks (IPCC, 2021). Rapid and deep reductions across all sectors are necessary to limit warming and avoid the worst climate impacts (IPCC, 2022).

The King County 2025 Strategic Climate Action Plan (SCAP) is both a long-term plan and five-year roadmap for County climate action, integrating climate change into all areas of County services, operations, and work with cities, partners, communities, and residents (King County, 2025). It outlines the County's climate action priorities and commitments for decision-makers, employees, partners, and the public, and for County operations and communities. To track progress and create accountability, the 2025 SCAP includes actions and performance measures to reduce GHG emissions across eight focus areas: Countywide GHG Policy and Leadership; Transit and Transportation; Building Energy and Green Building; Circular Economy; Forest and Agriculture; Enterprise Leadership and Accountability; Sustainable County Infrastructure; and Zero-Emission County Fleets. The 2025 SCAP aligns with the shared GHG emission reduction targets established by King County and 39 cities in the county to reduce emissions by 50% below 2007 levels by 2030; 75% below 2007 levels by 2040; and 95% below 2007 levels and net carbon neutral by 2050 (King County, 2025).

To understand the full picture of countywide emissions, King County measures both geographic and consumption-based emissions (Figure 1). The 2025 SCAP features summaries of both inventories and a wedge analysis of pathways to achieve GHG emission reduction targets. This report provides a comprehensive **2023 update of the county's communitywide geographic GHG emissions**[1]**.** Geographic emissions occur within King County's borders and include emissions from cars driving on local roads, natural gas consumption in local buildings, and electricity consumed locally, regardless of where the electricity is generated. This update includes the following additional analyses:

- A **progress update** of historical trends and progress toward the County's GHG emission reduction goals.
- A **wedge analysis** of pathways to achieve King County GHG emission reduction targets based on future emissions if no action is taken, compared with projected emission reductions from existing federal, state, and local policies proposed in the adopted 2025 SCAP.

Note on Inventory Differences with King County's 2025 SCAP

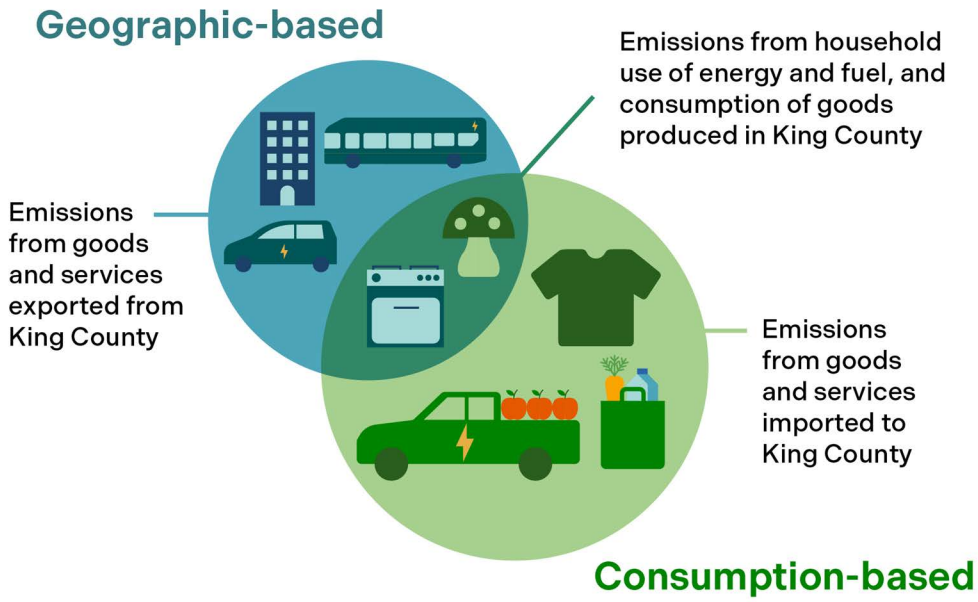
The Executive Proposed 2025 SCAP used previously available data for estimating emissions from aviation and on-road transportation. Since the release of that document, updated data for these sectors have become available and are incorporated into this report. As a result, some of the aviation and on-road transportation values in this report differ from those published in the Executive Proposed 2025 SCAP.

[1] King County has separately released a comprehensive 2023 update of the County's communitywide consumption-based GHG emissions inventory in the *King County 2023 Consumption-Based Emissions Inventory Report* (King County, 2025).

Figure 1. Geographic vs. consumption-based GHG emissions.

What is a communitywide geographic GHG emissions inventory?

A communitywide geographic GHG emissions inventory quantifies the annual emissions produced within community boundaries due to community activities such as on-road transportation and building energy consumption. A geographic emissions inventory does not account for upstream emissions from goods and services consumed within the community such as food or furniture.



Geographic Inventory Findings

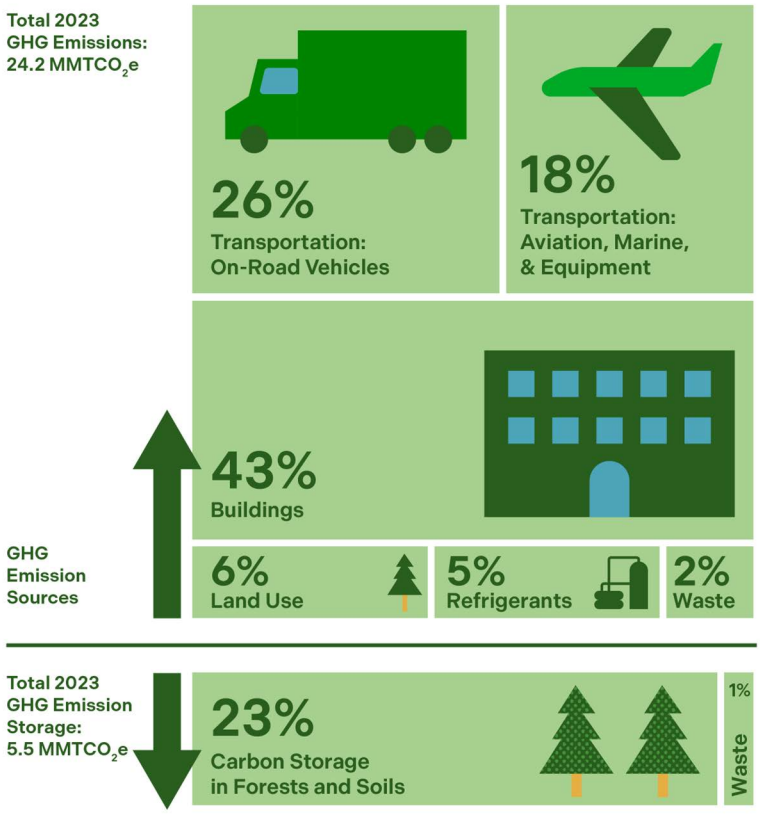
This report provides updated GHG inventory estimates for both 2022 and 2023, focusing on 2023. Key findings from these inventories are summarized below:

- In 2023, King County's residents, businesses, employees, and visitors produced **24.2 million** metric tons of CO_2 equivalent ($MTCO_2e$) (Figure 2). This 2023 total equates to roughly **10.3** $MTCO_2e$ per capita (Figure 3).
- Total GHG emissions in 2023 decreased **8%** compared to 2019 and increased **4%** compared to the 2007 baseline inventory year (Figure 4).[2]
- Per capita GHG emissions have declined over time (**-17%** compared to the 2007 baseline year and **-13%** compared to 2019; Figure 4).[3]
- GHG emissions have grown more slowly than population growth, which increased **5%** since 2019 and **25%** since 2007.
- Most of King County's GHG emissions came from transportation (**44%**) and buildings (**43%**), with smaller amounts from land use (**6%**), refrigerants (**5%**), and waste (**2%**) (Figure 2).
- The largest sources of emissions were on-road transportation, including vehicles such as cars, trucks, and transit buses (**26%**), natural gas use in buildings (**20%**), and electricity use in buildings (**18%**).
- Since 2007, the largest contributions to increases in overall King County emissions are natural gas (**+4%**), aviation (**+3%**), forest and trees (**+3%**), and refrigerants (**+2%**). At the same time, the largest decreases in overall King County emissions are from electricity (**-6%**), on-road transportation (**-1%**), and solid waste disposal (**-1%**).

[2] Emissions for 2007 were extrapolated by service population from 2008 inventory values.

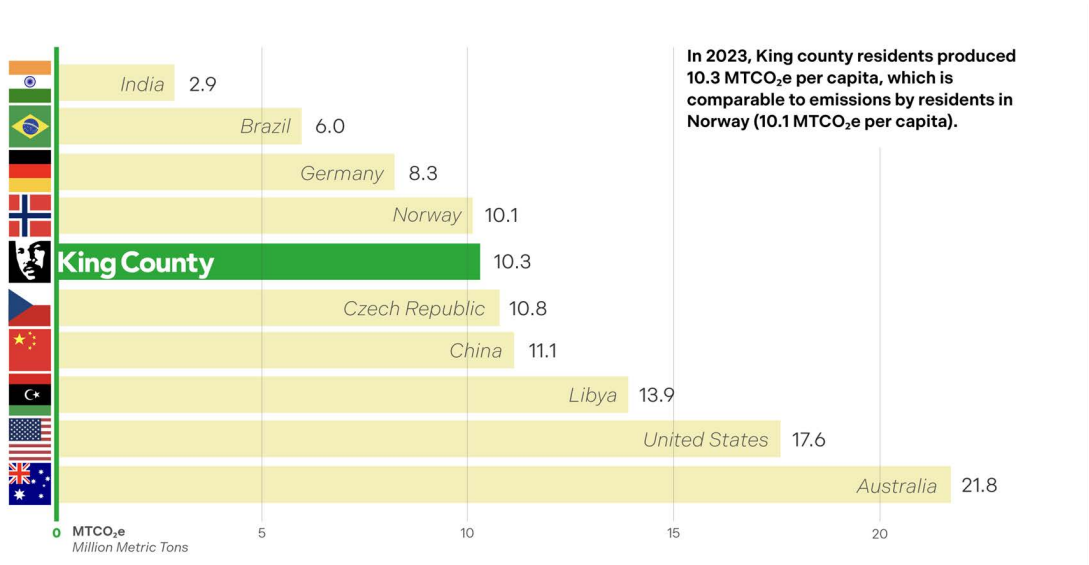
[3] Per capita emissions for 2007 are assumed to be equivalent to 2008 inventory values.

Figure 2. Sources of geographic-based GHG emissions in 2023, by source.



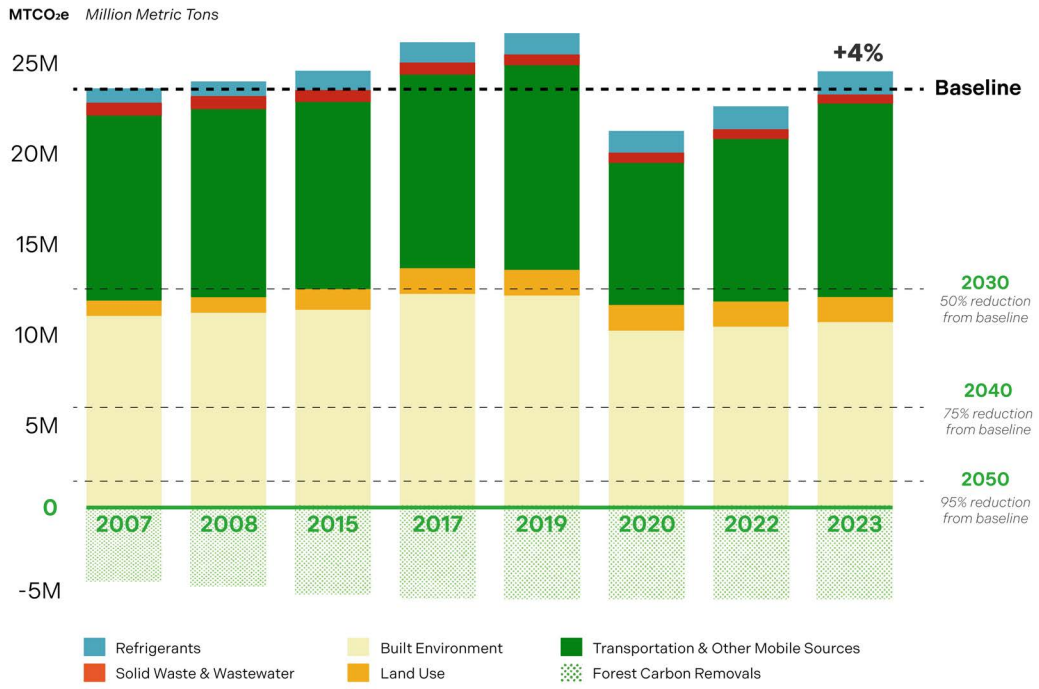
Source: Executive Climate Office, King County (2025)

Figure 3. Average resident GHG emissions.



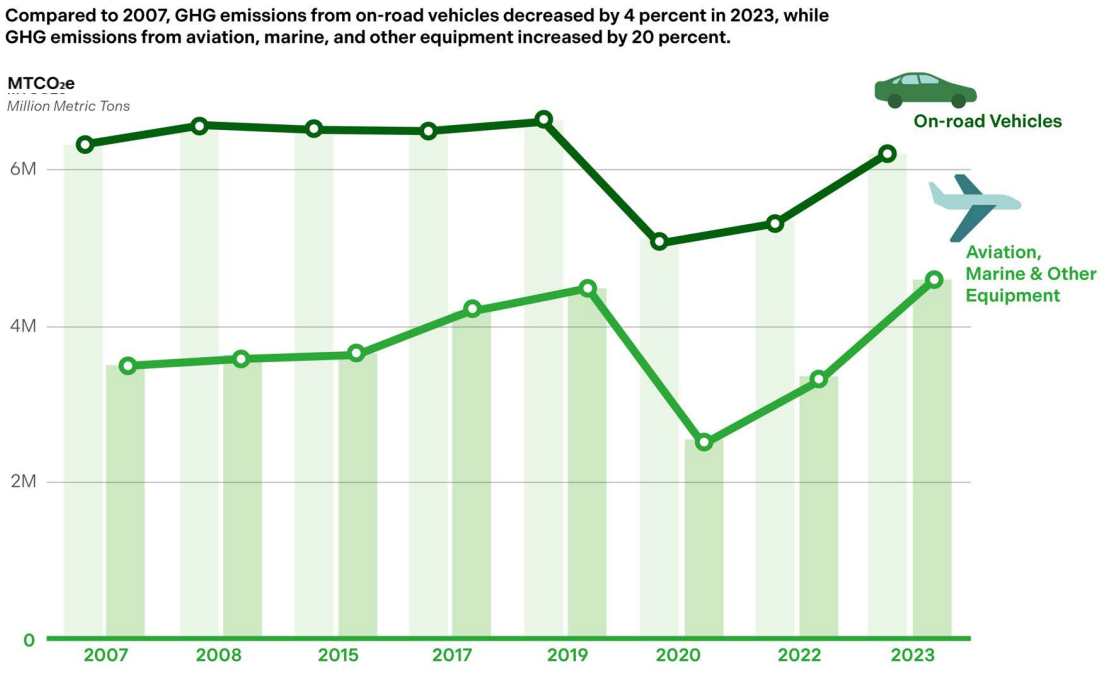
Source: Executive Climate Office, King County (2025)

Figure 4. Total GHG emissions trends over time, by sector.



Source: Executive Climate Office, King County (2025)

Figure 5. Community scale transportation emissions.



Source: Executive Climate Office, King County (2025)

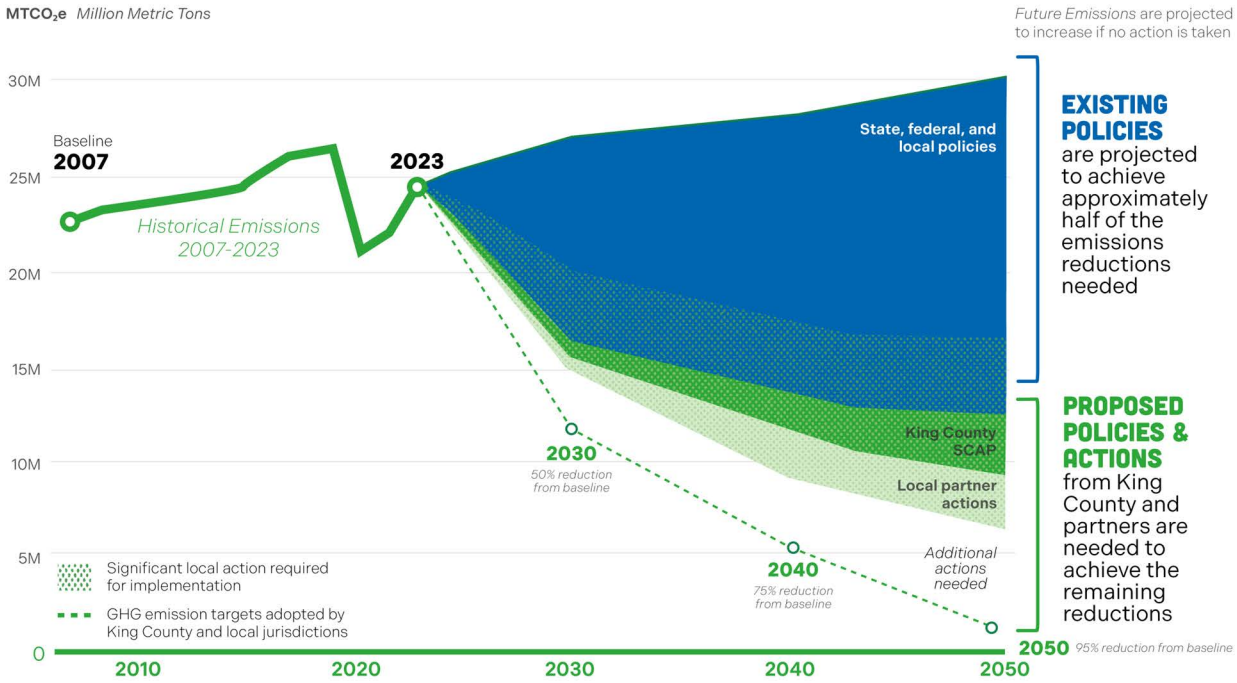
Wedge Analysis Findings

The wedge analysis forecasts King County's emissions from 2023 through 2050 including a projection if no action is taken, compared with emissions reductions from existing federal, state, and local policies and measures proposed in the adopted 2025 SCAP. Together, the implementation of existing policies and 2025 SCAP proposed actions show how much progress King County could make toward achieving its overarching emissions reduction goals set in the SCAP. As depicted in Figure 5, additional action by industries, governments, businesses, and individuals will be needed to meet the King County-Cities Climate Collaboration (K4C) targets of 50%, 75%, and 95% reductions by 2030, 2040, and 2050, respectively (relative to 2007 levels).

The wedge analysis revealed the following projections compared to 2007 baseline GHG emissions levels:

- Under a **no-action future**, King County GHG emissions are projected to increase **17%** by 2030 and **30%** by 2050.
- If fully implemented, **existing federal, state, and regional policies** (as of June 2025) could reduce King County's GHG emissions by **29%** by 2030 and **46%** by 2050.
- **King County and local governments have a signficant role** in implementing **36%** of the potential reductions achievable by 2030 and **27%** by 2050 under existing policies.
- When combined with existing policies, **proposed 2025 SCAP actions** are projected to reduce emissions **33%** by 2030 and **70%** by 2050.
- Even with these combined efforts, total reductions **fall short of K4C targets**—particularly the 50% reduction goal by 2030 and 95% goal by 2050. Achieving these targets will require deeper cuts in fossil fuel use across the buildings, transportation, and the aviation sectors.

Figure 6. Forecasted GHG emissions under existing and proposed policies and actions.



Source: Executive Climate Office, King County (2025)

Acronyms

ACS	American Community Survey
BAU	Business as usual
BOD	Biochemical oxygen demand (a metric of the effectiveness of wastewater treatment plants)
CFS	Clean Fuel Standards
CO_2e	Carbon dioxide equivalent
ECA	Emission Control Area
EIA	United States Energy Information Association
EPA	United States Environmental Protection Agency
EV	Electric vehicle
FLIGHT	Facility Level Information on Greenhouse Gases Tool
GHG	Greenhouse gas (limited to CO_2, CH_4, N_2O, and fugitive gases in this inventory)
HFCs	Hydrofluorocarbons
ICE	Internal combustion engine
ICLEI	Local Governments for Sustainability
KCIA	King County International Airport
kWh	Kilowatt-hour
LTO	Landing and takeoff
MOVES	Motor Vehicle Emission Simulator model (developed by U.S. EPA to quantify emissions from mobile sources)
MSW	Municipal solid waste
$MTCO_2e$	Metric tons of carbon dioxide equivalent
ODS	Ozone-depleting substances
PSE	Puget Sound Energy
PSEI	Puget Sound Maritime Air Emissions Inventory
PSRC	Puget Sound Regional Council
RUC	Road usage charge
SCL	Seattle City Light
SEA	Seattle-Tacoma International Airport
SPU	Seattle Public Utilities
USDA	United States Department of Agriculture
WA	State of Washington
WARM	Waste Reduction Model (model developed by U.S. EPA to quantify solid waste emissions)

VMT	Vehicle Miles Travelled
ZEV	Zero-Emission Vehicle

Glossary of Terms

Afforestation	The act or process of establishing trees or a forest, especially on land not previously forested.
Carbon sequestration	The process of capturing and storing atmospheric carbon dioxide, often through organic forms such as trees and soils.
Enteric fermentation	Part of the digestive process in ruminant animals such as cattle, sheep, goats, and buffalo that emits methane, a potent GHG.
Fugitive emissions	Emissions of GHGs that are not produced intentionally by a stack or vent and can include leaks from industrial plants and pipelines. Fugitive emissions may be caused by the production, processing, transmission, storage, and use of fuel (IPCC, 2006).
Greenhouse gas (GHG)	A gas that absorbs and emits radiant energy within the thermal infrared range, causing the greenhouse effect. Primary GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases such as HFCs.
Ozone-depleting substances	Compounds that contribute to stratospheric ozone depletion, such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs). Many of these compounds have recently been substituted with hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), which are not ozone depleting but are potent GHGs.
Switchgear insulation	The environment within switchgears that are used in electricity transmission systems. Sulfur hexafluoride (SF6), a potent GHG, is often used in switchgears due to its excellent insulation properties.
Upstream or “lifecycle” GHG emissions	GHG emissions associated with the production, processing, transmission, storage, and distribution of goods and services, beginning with the extraction of raw materials and ending with the delivery of the goods and services to the site of use.

Introduction

Greenhouse gas (GHG) emissions inventories allow communities to identify and account for sources and quantities of GHG emissions generated by local activities.

The **geographic inventory** estimates GHG emissions produced by activities of the King County community, including emissions resulting from community energy use, wastewater and solid waste processing, and land use practices. It includes both "in-boundary" emission *sources*—any physical process inside the jurisdictional boundary that releases GHG emissions—and activities resulting in GHG emissions. For example, it includes emissions associated with the in-county *production* of food and goods, regardless of where those goods are consumed, such as from a manufacturer located within King County that produces goods for export.

This inventory report includes new communitywide geographic inventories for 2022 and 2023, as well as updated 2008, 2015, 2017, 2019, and 2020 inventories to reflect methodology improvements.

Note on Inventory Differences with King County's 2025 SCAP

The Executive Proposed 2025 SCAP used previously available data for estimating emissions from aviation and on-road transportation. Since the release of that document, updated data for these sectors have become available and are incorporated into this report. As a result, some of the aviation and on-road transportation values in this report differ from those published in the Executive Proposed 2025 SCAP.

Roadmap of this Report

This report is organized into the following sections:

- **Where Do King County Emissions Come From?**
  Describes the methodology and results of the geographic inventory.
- **How Can We Meet Our Local Climate Goals?**
  Includes a "wedge analysis" illustrating estimated emissions reductions from existing policies and additional reductions needed to meet countywide climate goals.
- **Appendix A. Inventory Methodology**
  Provides a detailed summary of the geographic inventory methodology including key data sources and assumptions.
- **Appendix B. Detailed Inventory Values & Supplemental Visual**
  Details inventory results and per capita emissions for 2007, 2008, 2015, 2017, 2019, 2020, 2022, and 2023 by emissions source along with an additional graphic for reference.
- **Appendix C. K4C Inventories Comparison**
  Summarizes inventory values for K4C cities and compares city-level and county-level inventory trends.

Where Do King County Emissions Come From?

Geographic Inventory Approach

The 2022 and 2023 King County GHG emissions inventories were prepared in accordance with the *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions* and the *Global Protocol for Community Scale Greenhouse Gas Emission Inventories (GPC)*. These inventories account for emissions from the activities of King County residents, businesses, employees, and visitors that occur within, or originate from within, county limits. The analysis is based on data for the 2022 and 2023 calendar years.

This inventory focuses on geographically based emissions—that is, emissions produced within King County or from activities occurring in the county. It does not include upstream emissions associated with the production and transportation of goods and services consumed locally. Those sources are estimated in the *King County 2023 Consumption-Based Emissions Inventory Report* (King County, 2025), which provides a complementary perspective on community emissions.

Geographic Inventory Sectors & What's Included

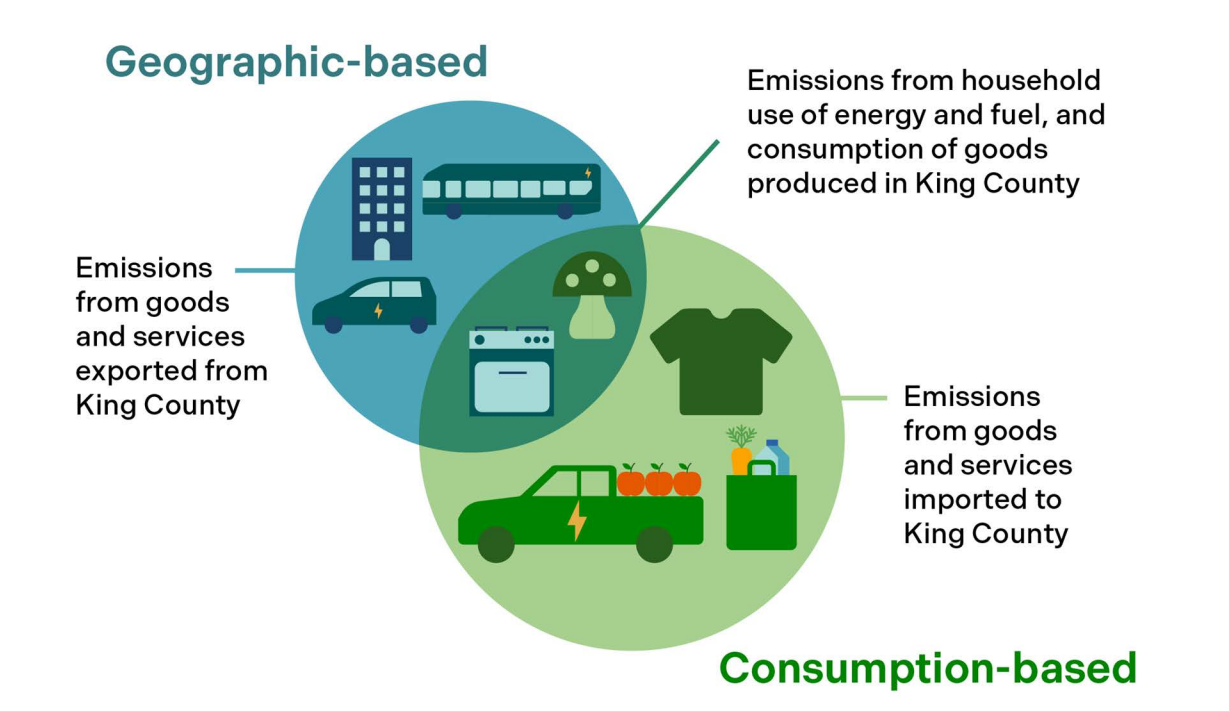
Transportation	Building Energy
Driving within county limits, flights from county travelers, maritime/rail travel within the county, non-road vehicle and equipment use	Residential, commercial, and industrial electricity and natural gas use plus associated loss and leakage, residential fuel oil and propane use, and industrial processes
Solid Waste & Wastewater	**Refrigerants**
Solid waste generation and disposal and wastewater processes	Substitution of ozone-depleting substances
Land Use	**Sequestration**
Agriculture and tree cover loss	Solid waste disposal sequestration and sequestration from trees and forests

What is a communitywide geographic GHG emissions inventory?

A communitywide geographic GHG emission inventory quantifies the annual emissions produced within community boundaries due to community activities, such as on-road transportation and energy consumption. A geographic emissions inventory does not account for upstream emissions from goods and services consumed within the community such as food or furniture.

This is different from King County's consumption-based inventory, which provides an inventory of the GHG emissions associated with consumption of goods and services within the community regardless of where the goods were produced. For example, the consumption-based inventory would not include GHG emissions associated with the production of goods from a local manufacturer that are consumed entirely outside the community, but it would include GHG emissions associated with the production of goods manufactured in another community but consumed within King County. Thus, the consumption-based inventory accounts for different, but related, sources of emissions associated with community activities.

The geographic and consumption-based inventories provide insights about different GHG emission footprints of a community. For example, a community may consume electricity generated from low-emission sources but also consume goods produced in another community which uses high-emission energy. The two inventories can account for these differences to paint a comprehensive picture of community emissions.



Inventory Summary

This report provides updated GHG inventory estimates for both 2022 and 2023, focusing on 2023. Key findings from these inventories are summarized below:

- In 2023, King County's residents, businesses, employees, and visitors produced **24.2** million metric tons of CO_2 equivalent ($MTCO_2e$) (Figure 7).
- This 2023 total equates to roughly **10.3** $MTCO_2e$ per capita (Table 2).
- Total GHG emissions in 2023 decreased **8%** compared to 2019 and increased **4%** compared to the 2007 baseline inventory year (Figure 8; Table 1).
- Emissions have grown more slowly than the population, which increased **5%** since 2019 and **25%** since 2007.
- Per capita GHG emissions have declined over time (**-17%** compared to the 2007 baseline year and -**13%** compared to 2019 (Figure 9; Table 2).[4]
- Most of King County's GHG emissions came from transportation (**44%**) and buildings (**43%**), with smaller amounts from land use (**6%**), refrigerants (**5%**), and waste (**2%**) (Figure 10).
- The largest sources of emissions were on-road transportation, including vehicles such as cars, trucks, and transit buses (**26%**), natural gas use in buildings (**20%**), and electricity use in buildings (**18%**) (Figure 7).
- Since 2007, the largest contributions to increases in overall King County emissions are natural gas (**+4%**), aviation (**+3%**), forest and trees (**+3%**), and refrigerants (**+2%**). At the same time, the largest decreases in overall King County emissions are from electricity (**-6%**), on-road transportation (**-1%**), and solid waste disposal (-**1%**)[5]

Comparing to a 2007 vs. 2008 Baseline

While King County established 2007 as the baseline inventory year for setting GHG emission reduction targets, the closest comprehensive GHG inventory for the county was conducted in 2008.

To account for this difference, 2008 inventory estimates were back casted to 2007 based on changes in population and employment between the two years.

For this analysis, we primarily compare to 2007 when assessing progress toward overall countywide GHG emission reduction targets. Comparisons to 2008 are made when assessing trends in individual sectors (such as transportation or buildings) and when depicting progress graphically (see Figure 9).

[4] Per capita emissions for 2007 are assumed to be equivalent to 2008 inventory values.

[5] Summary table with data for years 2008 to 2023 can be found in *Appendix B. Detailed Inventory Values and Supplemental Visual*.

Figure 7. Sources of GHG emissions in 2023.

Total = 24.2 million $MTCO_2e$

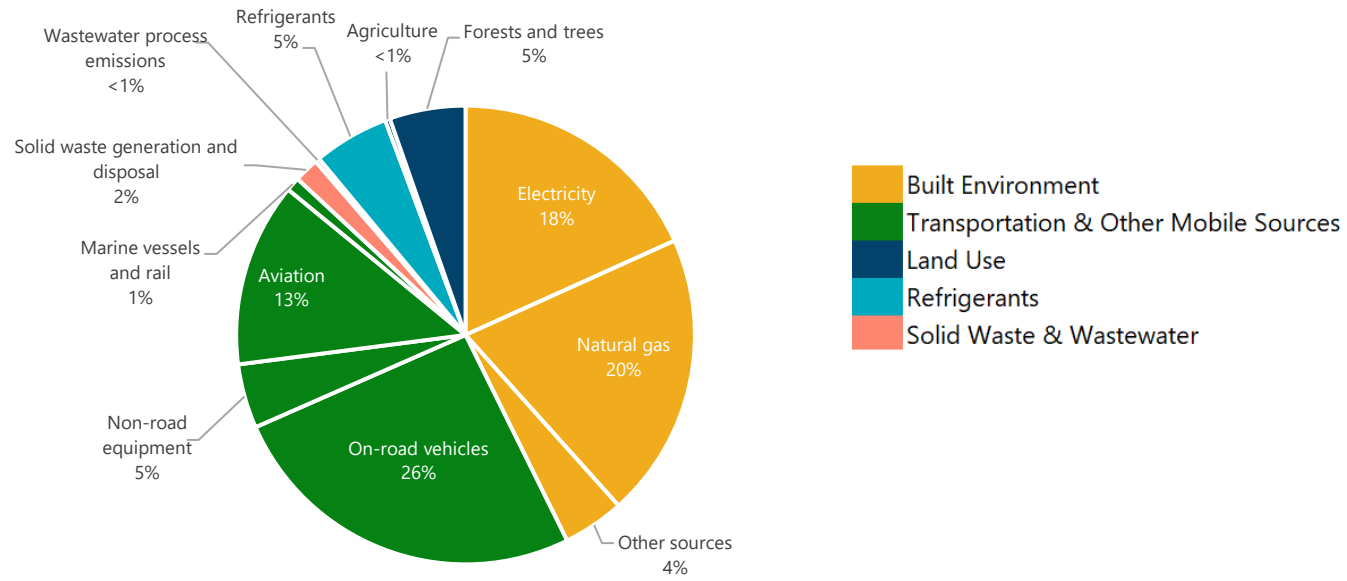


Figure 8. GHG emissions trends over time, by sector.

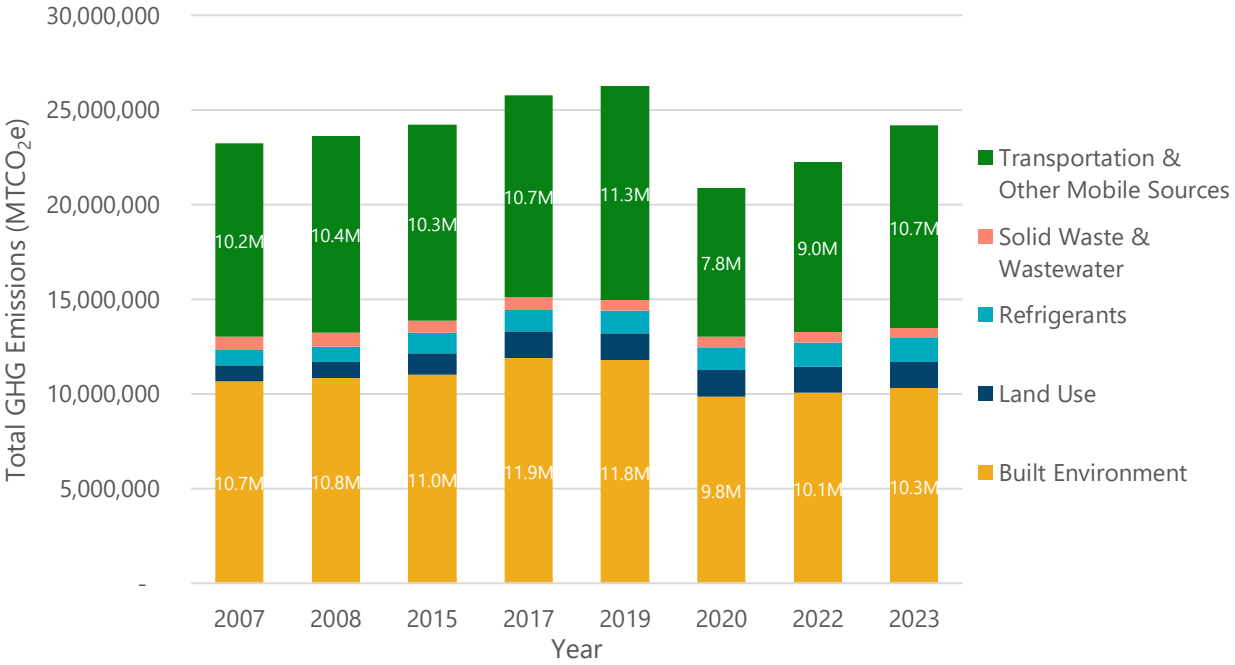


Figure 9. Per capita GHG emissions trends over time, by sector.

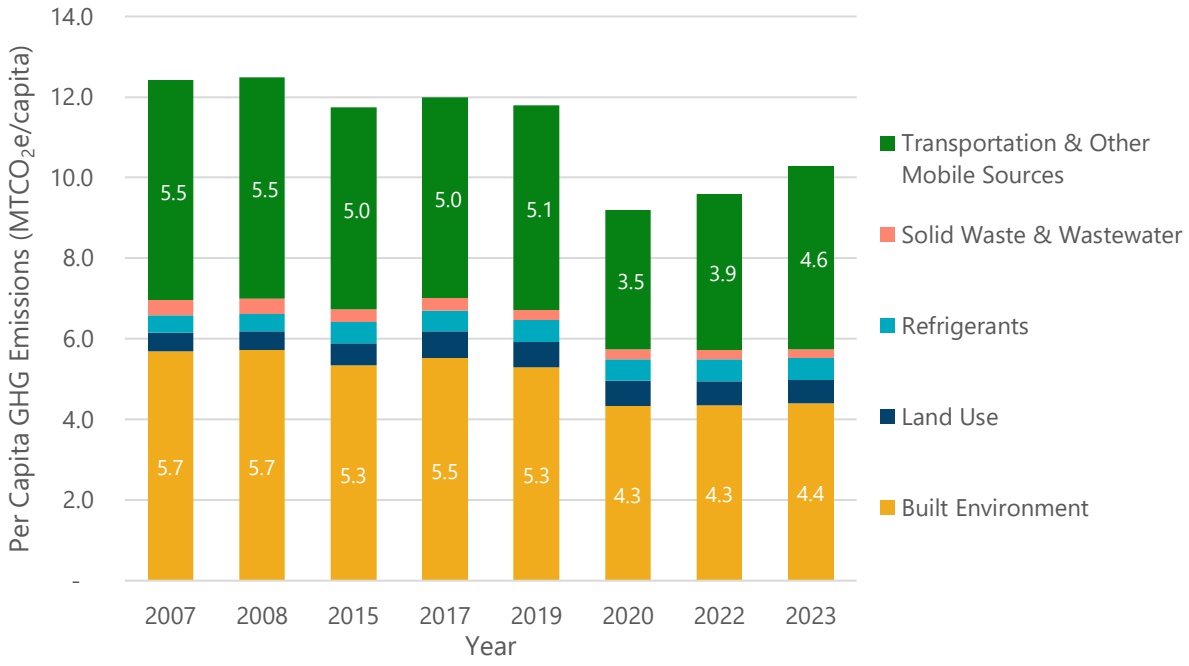


Figure 10. Relative contributions of GHG emissions over time, by sector.

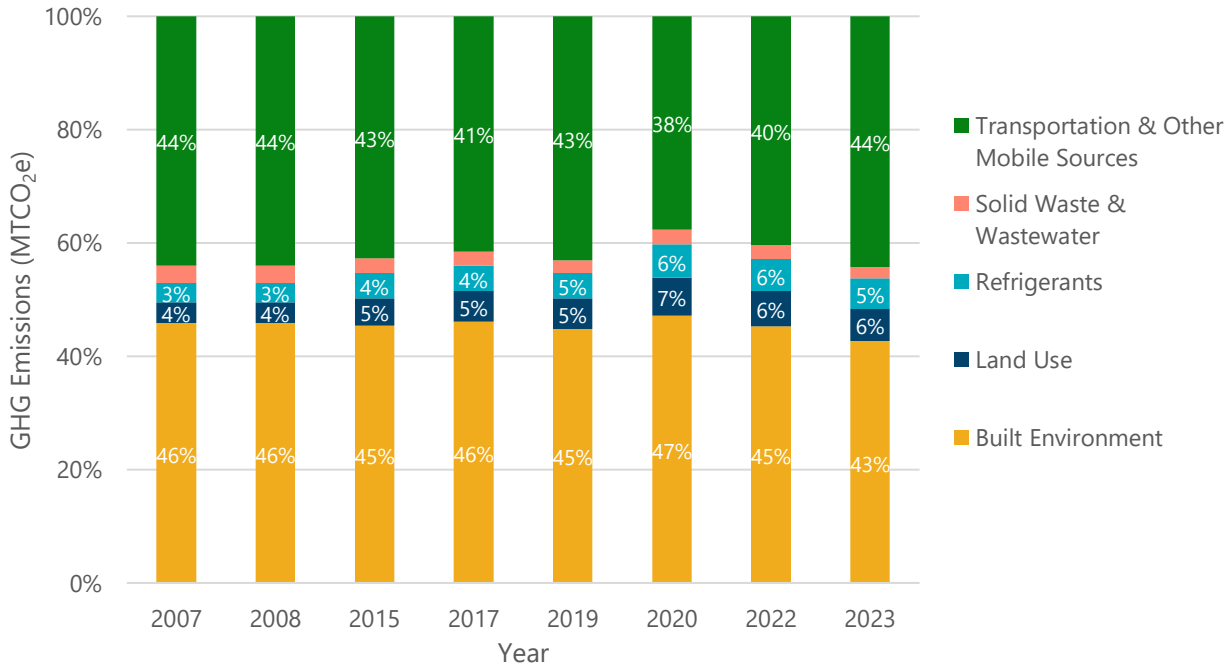


Table 1. Communitywide geographic GHG emissions, by sector and select years.

GHG Emissions by Sector ($MTCO_2e$)	Baseline Year 2007	2019	2022	2023	Contribution to 2023 inventory (%)	Percent change (2007-2023)	Percent change (2019-2023)
Built Environment	**10,661,480**	**11,786,839**	**10,071,795**	**10,319,763**	**43%**	**-3%**	**-12%**
Electricity	**5,722,060**	**6,663,674**	**4,789,980**	**4,411,473**	**18%**	**-23%**	**-34%**
Residential	2,430,817	2,750,898	2,238,932	1,988,010	**8%**	**-18%**	**-28%**
Commercial	2,694,977	3,325,891	2,170,184	2,050,590	**8%**	**-24%**	**-38%**
Industrial	596,266	586,884	380,864	372,873	**2%**	**-37%**	**-36%**
Natural gas	**3,903,449**	**4,073,278**	**4,284,475**	**4,861,291**	**20%**	**25%**	**19%**
Residential	1,998,338	1,949,304	2,206,637	2,157,291	**9%**	**8%**	**11%**
Commercial	1,285,898	1,428,435	1,499,172	1,551,899	**6%**	**21%**	**9%**
Industrial	619,214	695,539	578,666	1,152,100	**5%**	**86%**	**66%**
Other sources	**1,035,971**	**1,049,888**	**997,339**	**1,046,998**	**4%**	**1%**	**<1%**
Fuel oil	470,648	289,613	396,287	404,121	**2%**	**-14%**	**40%**
Propane	154,431	242,742	230,964	221,908	**1%**	**44%**	**-9%**
Industrial processes	410,892	517,533	370,088	420,970	**2%**	**2%**	**-19%**
Transportation & Other Mobile Sources	**10,214,065**	**11,306,925**	**8,982,595**	**10,686,437**	**44%**	**5%**	**-5%**
On-road vehicles	**6,480,478**	**6,892,843**	**5,374,927**	**6,214,910**	**26%**	**-4%**	**-10%**
Passenger vehicles	5,332,913	5,461,129	4,243,686	4,862,806	**20%**	**-9%**	**-11%**
Freight and service vehicles	1,035,656	1,281,916	1,003,009	1,224,492	**5%**	**18%**	**-4%**
Transit vehicles	111,908	149,798	128,232	127,613	**1%**	**14%**	**-15%**
Aviation	**2,362,236**	**3,200,723**	**2,295,689**	**3,137,712**	**13%**	**33%**	**-2%**
Non-road equipment	**1,150,189**	**1,016,031**	**1,074,216**	**1,096,052**	**5%**	**-5%**	**8%**
Marine vessels and rail	**221,162**	**197,328**	**237,763**	**237,763**	**1%**	**8%**	**20%**
Solid Waste & Wastewater	**708,593**	**587,051**	**534,300**	**497,119**	**2%**	**-30%**	**-15%**
Solid waste generation and disposal	**639,559**	**513,096**	**463,496**	**421,306**	**2%**	**-34%**	**-18%**
Landfill	605,874	465,699	416,749	380,449	**2%**	**-37%**	**-18%**
Compost	33,684	47,397	46,747	40,857	**<1%**	**21%**	**-14%**
Wastewater process emissions	**69,035**	**73,955**	**70,804**	**75,812**	**<1%**	**10%**	**3%**
Refrigerants	**802,111**	**1,184,233**	**1,271,263**	**1,287,773**	**5%**	**61%**	**9%**
Refrigerants	**802,111**	**1,184,233**	**1,271,263**	**1,287,773**	**5%**	**61%**	**9%**
Land Use	**845,452**	**1,411,702**	**1,377,902**	**1,377,902**	**6%**	**63%**	**-2%**
Agriculture	**142,461**	**117,740**	**83,940**	**83,940**	**<1%**	**-41%**	**-29%**
Forest and trees	**702,991**	**1,293,962**	**1,293,962**	**1,293,962**	**5%**	**84%**	**<1%**
Total Emissions	**23,231,702**	**26,276,750**	**22,237,855**	**24,168,994**	**100%**	**4%**	**-8%**
Sequestration	**(4,797,398)**	**(5,644,950)**	**(5,548,802)**	**(5,537,452)**		**15%**	**-2%**
Solid waste disposal sequestration	(466,073)	(427,414)	(331,266)	(319,916)		**-31%**	**-25%**
Forest and tree sequestration	(4,331,326)	(5,217,536)	(5,217,536)	(5,217,536)		**20%**	**0%**

Table 2. Per capita geographic GHG emissions, by select year.

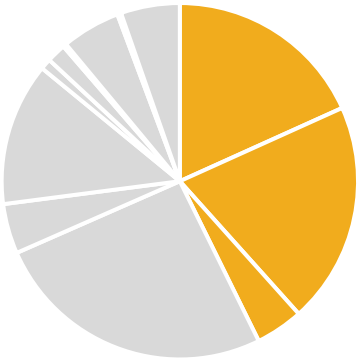
GHG Emissions by Sector ($MTCO_2e$) Per Capita	Baseline Year 2007	2019	2023	Percent change (2007-2023)	Percent change (2019-2023)
Built Environment	**5.70**	**5.29**	**4.40**	**-23%**	**-17%**
Electricity	**3.06**	**2.99**	**1.88**	**-39%**	**-37%**
Residential	1.30	1.24	0.85	-35%	-31%
Commercial	1.44	1.49	0.87	-39%	-42%
Industrial	0.32	0.26	0.16	-50%	-40%
Natural gas	**2.09**	**1.83**	**2.07**	**-1%**	**13%**
Residential	1.07	0.88	0.92	-14%	5%
Commercial	0.69	0.64	0.66	-4%	3%
Industrial	0.33	0.31	0.49	48%	57%
Other sources	**0.55**	**0.47**	**0.45**	**-19%**	**-5%**
Fuel oil	0.25	0.13	0.17	-32%	32%
Propane	0.08	0.11	0.09	15%	-13%
Industrial processes	0.22	0.23	0.18	-18%	-23%
Transportation and Other Mobile Sources	**5.46**	**5.08**	**4.55**	**-17%**	**-10%**
On-road vehicles	**3.46**	**3.10**	**2.65**	**-24%**	**-15%**
Passenger vehicles	2.85	2.45	2.07	-27%	-16%
Freight and service vehicles	0.55	0.58	0.52	-6%	-9%
Transit vehicles	0.06	0.07	0.05	-9%	-19%
Aviation	**1.26**	**1.44**	**1.34**	**6%**	**-7%**
Non-road equipment	**0.61**	**0.46**	**0.47**	**-24%**	**2%**
Marine vessels and rail	**0.12**	**0.09**	**0.10**	**-14%**	**14%**
Solid Waste & Wastewater	**0.38**	**0.26**	**0.21**	**-44%**	**-20%**
Solid waste generation and disposal	**0.34**	**0.23**	**0.18**	**-48%**	**-22%**
Landfill	0.32	0.21	0.16	-50%	-23%
Compost	0.02	0.02	0.02	-3%	-18%
Wastewater process emissions	**0.04**	**0.03**	**0.03**	**-12%**	**-3%**
Refrigerants	**0.43**	**0.53**	**0.55**	**28%**	**3%**
Refrigerants	**0.43**	**0.53**	**0.55**	**28%**	**3%**
Land Use	**0.45**	**0.63**	**0.59**	**30%**	**-7%**
Agriculture	**0.08**	**0.05**	**0.04**	**-53%**	**-32%**
Forest and trees	**0.38**	**0.58**	**0.55**	**47%**	**-5%**
Total Emissions	**12.42**	**11.80**	**10.29**	**-17%**	**-13%**
Sequestration	**(2.56)**	**(2.54)**	**(2.36)**	**-8%**	**-7%**
Solid waste disposal sequestration	(0.25)	(0.19)	(0.14)	**-45%**	**-29%**
Forest and tree sequestration	(2.31)	(2.34)	(2.22)	**-4%**	**-5%**

Inventory Findings, By Sector

Built Environment

The built environment sector includes GHG emissions from energy use and industrial activities that occur within buildings and facilities across King County. This sector captures emissions from heating, cooling, lighting, and powering residential, commercial, and industrial buildings, as well as certain industrial processes.

Summary



- In 2023, the built environment accounted for 43% of communitywide emissions.
- Emissions from electricity and natural gas accounted for most built environment emissions and 18% and 20% of *all* emissions in 2023, respectively.
- Built environment emissions in 2023 decreased 3% since 2007 and by 12% since 2019. The primary driver of this reduction is the decline in electricity emissions due to a lower carbon intensity (emissions per unit of energy produced) of utility fuel mixes in WA.
- Industrial process emissions accounted for 2% of total communitywide emissions in 2023, increasing by 2% since 2007 and decreasing by 19% since 2019.

Methodology

Source	Methodology for 2022/2023 Inventory Update
Electricity	Calculated using kWh consumption provided by utilities, and utility-specific emission factors calculated by Washington Department of Ecology (Ecology) using WA fuel mix disclosure reports.
Natural gas	Calculated using utility-provided consumption data, U.S. Environmental Protection Agency (EPA) standard emission factors, and utility-specific natural gas leakage rates.
Fuel oil	Estimated using statewide U.S. Energy Information Administration (EIA) consumption data. Residential data was downscaled using American Community Survey (ACS) home heating fuel estimates. Commercial data was downscaled by county commercial employment estimates.
Propane	Estimated using statewide U.S. EIA consumption data. Residential data was downscaled using ACS home heating fuel estimates. Commercial data was downscaled by commercial employment estimates.
Industrial processes	Facility emissions collected by the EPA FLIGHT tool.

For additional detailed methodology information see *Appendix A. Inventory Methodology*.

Electricity

Several energy providers deliver electricity throughout King County, including Seattle City Light (SCL), Puget Sound Energy (PSE), Tanner Electric Cooperative, and the City of Milton's Electric Division. Electricity accounted for 18% of King County's total communitywide GHG emissions in 2023. **Electricity emissions in 2023 decreased** 23% since 2007 and decreased 34% since 2019. This reduction in electricity emissions can be attributed to decreases in industrial electricity consumption (Figure 12) and the carbon intensity of utility electricity fuel sources (Figure 13). The most significant change in emissions since 2019 stems from the closure of Puget Sound Energy's coal-fired power plants, Colstrip Units 1 and 2. These units were retired at the end of 2019, resulting in a sharp reduction in coal-fired generation. This reflects directly in Figure 11, which shows a steep decline in carbon intensity beginning in 2019. A second major transition is planned for 2025, when ownership of the remaining Colstrip Units 3 and 4 will be transferred.

Figure 11. Electricity emissions trends, by sector.

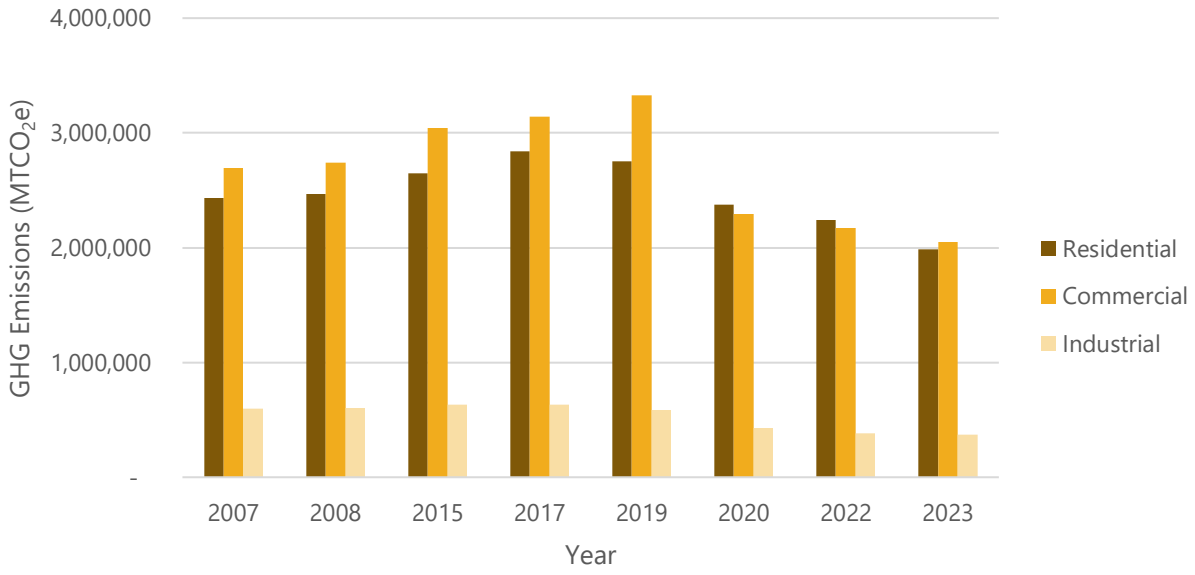


Figure 12. Electricity consumption trends, by sector[6].

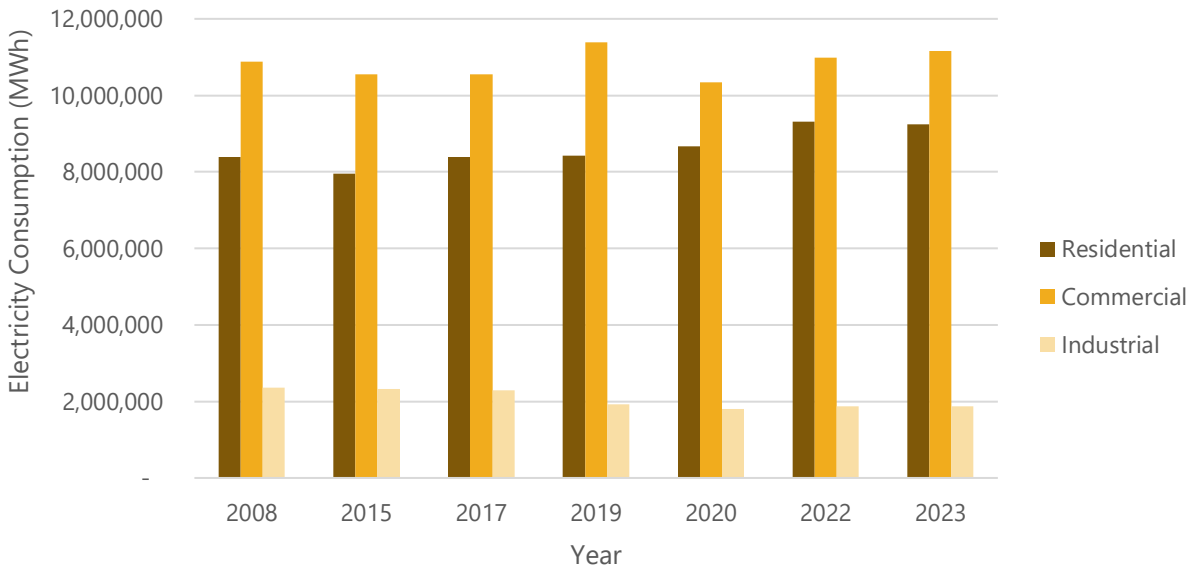
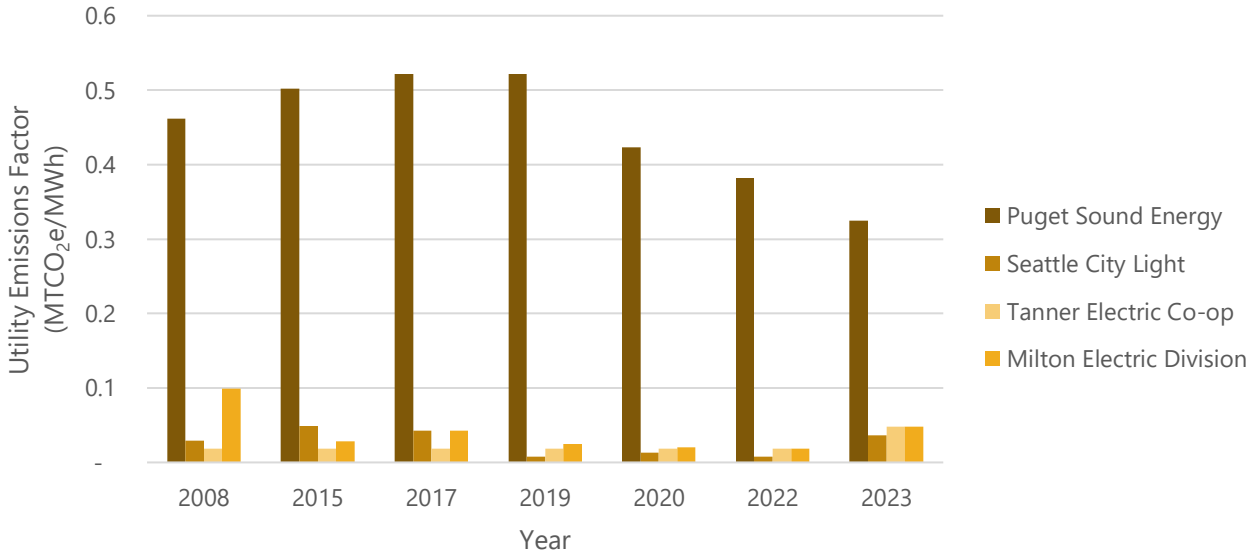


Figure 13. Electricity carbon intensities for King County electricity utilities.[7]



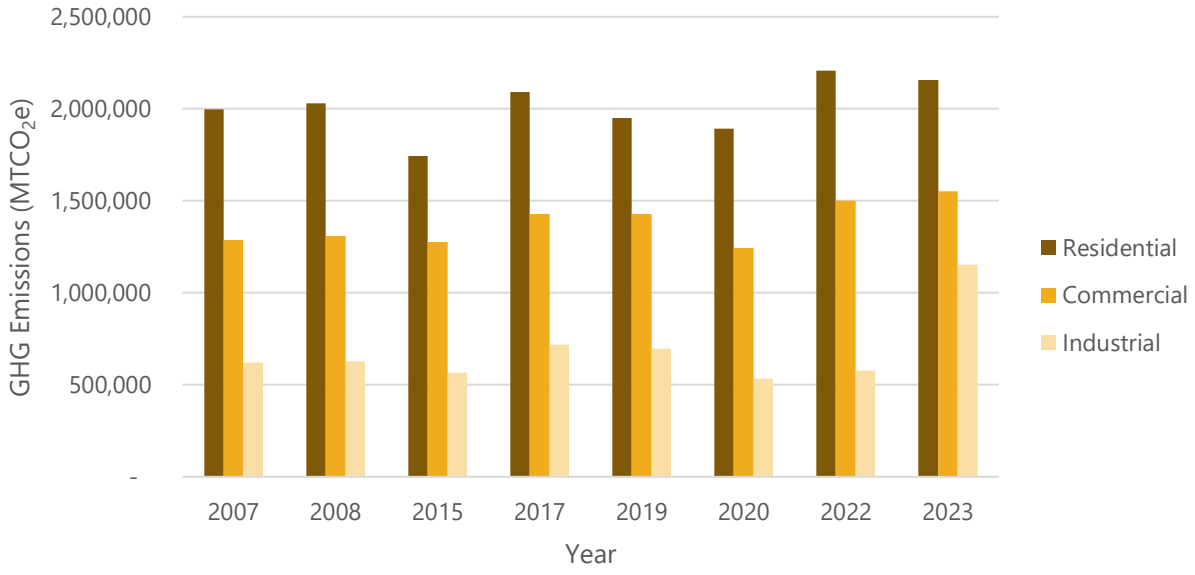
[6] When assessing progress toward overall countywide GHG emissions reduction targets, comparisons are made to 2007 based on estimated 2007 GHG emissions by sector for that year. However, activity data (for example, electricity consumption) and emissions factors are not available for the year 2007.

[7] When assessing progress toward overall countywide GHG emissions reduction targets, comparisons are made to 2007 based on estimated 2007 GHG emissions by sector for that year. However, activity data (for example, electricity consumption) and emissions factors are not available for the year 2007.

Natural Gas

Puget Sound Energy (PSE) delivers King County's natural gas. **Natural gas accounted for 19% of King County's total communitywide GHG emissions** in 2023. Natural gas emissions in 2023 increased 25% since 2007 and increased 19% since 2019 (Figure 14). Within the residential sector, natural gas consumption has fluctuated slightly but overall increased by 8% from 2007 to 2023 and increased 11% from 2019 to 2023. Commercial natural gas consumption has varied more significantly, increasing 21% from 2007 to 2023 and 9% from 2019 to 2023. Industrial natural gas consumption has varied the most significantly, increasing 86% from 2007 to 2023 and 66% from 2019 to 2023.

Figure 14. Natural gas emissions trends, by sector.



Other Sources

Other sources of emissions from buildings and energy include emissions from **residential and commercial fuel oil and propane and industrial processes.** These other sources account for 4% of the 2023 inventory.

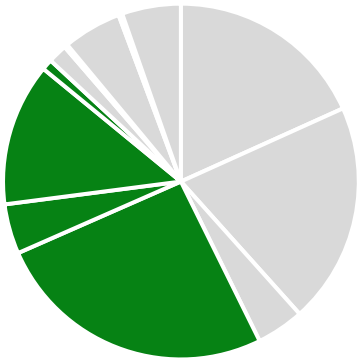
Fuel oil emissions decreased 14% from 2007 to 2023, driven by a decrease in the overall consumption of fuel oil in Washington. However, fuel oil emissions increased 40% from 2019 to 2023, indicating a more recent increase in consumption. Propane emissions show the reverse trend. Propane emissions increased 44% from 2007 to 2023 and decreased 9% from 2019 to 2023. Emissions from residential and commercial fuel oil and propane are small, accounting for less than 3% of all King County emissions.

Industrial process emissions in 2023 remained largely consistent with 2007 (increasing by only 2%). However, industrial process emissions over time have fluctuated significantly, including increasing 26% from 2007 to 2019 and decreasing 19% from 2019 to 2023. An industrial cement facility in King County consistently accounts for the majority of process-related emissions and drives the overall fluctuation patterns observed in King County's industrial process emissions.

Transportation

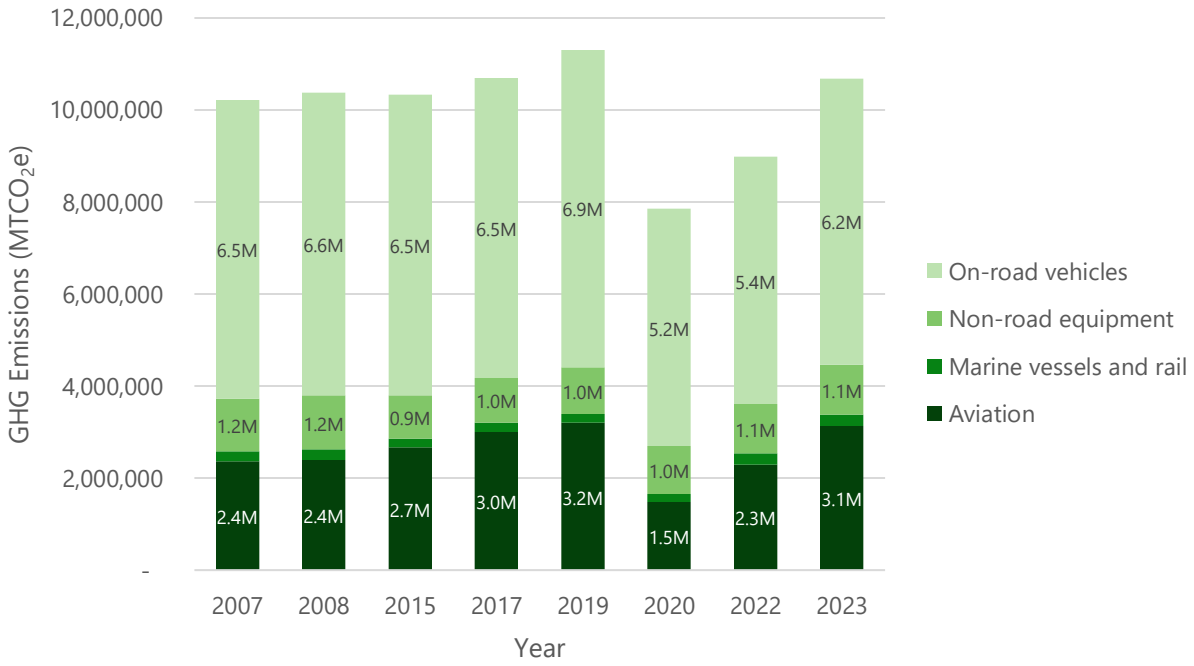
The transportation sector includes GHG emissions from the movement of people and goods, covering on-road vehicles, aviation, rail, marine travel, and non-road equipment used within or associated with King County.

Summary



- In 2023, transportation accounted for 44% of communitywide emissions.
- Emissions from on-road passenger, freight, and transit vehicles accounted for most of those emissions and 26% of *all* emissions in 2023 (Figure 15).
- Total and per capita on-road vehicle transportation emissions decreased 4% and 24% from 2007 to 2023, respectively.
- Transportation emissions increased 5% from 2007 to 2023 but decreased 5% between 2019 and 2023. Population and economic growth have influenced the long-term increase since 2007, while the more recent decline reflects improvements in vehicle fuel efficiency and reductions in per capita VMT.
- Aviation (air travel) accounted for 13% of total communitywide emissions in 2023. Emissions have increased 33% since 2007, but were 2% lower than in 2019, reflecting that air travel had not yet fully returned to pre-COVID-19 levels.

Figure 15. Transportation emissions trends, by sector.



Methodology

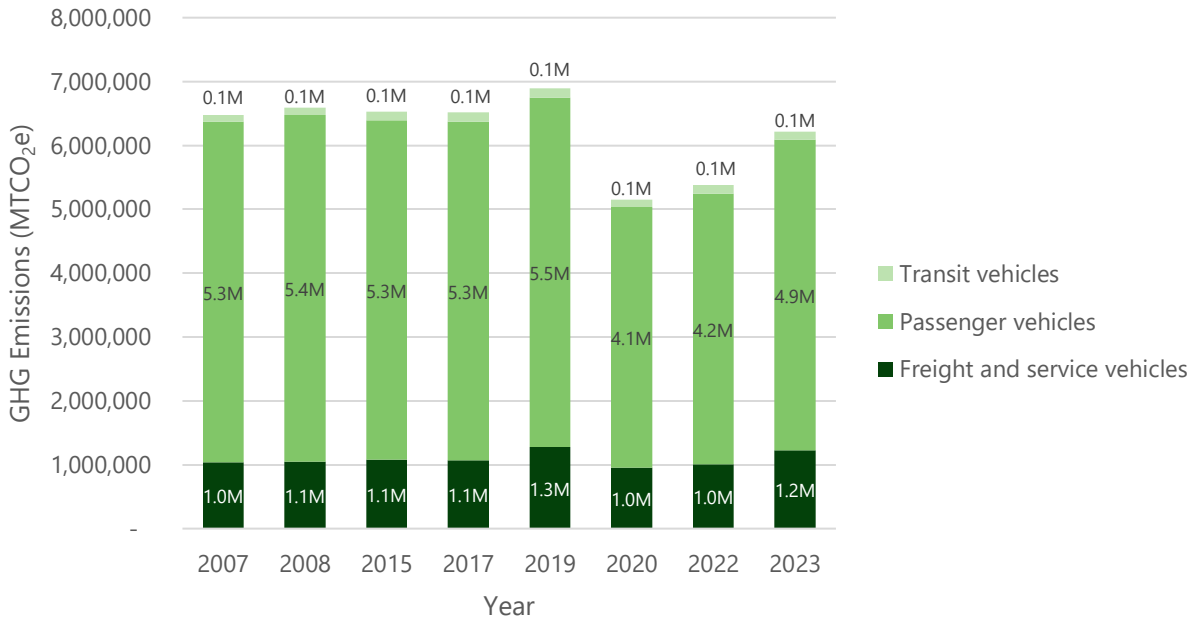
Source	Methodology for 2022/2023 Inventory Update
On-road vehicles	Emissions and VMT provided by Puget Sound Regional Council (PSRC) based on their activity-based travel model applied to the U.S. EPA MOVES model.
Non-road vehicles and equipment	Non-road emissions estimated using U.S. EPA MOVES4 model.
Aviation	Seattle-Tacoma International Airport (SEA) jet fuel usage downscaled to jurisdiction through passenger survey data (connecting versus non-connecting passengers, passengers traveling to/from King County versus other destinations) and median household income to estimate emissions. King County International Airport (KCIA) and other small airport emissions were estimated using jet fuel and aviation gas usage.
Freight and passenger rail	Emissions from relevant rail activities were estimated using the Puget Sound Maritime Air Emissions Inventory, scaled to King County by tonnage.
Marine vessels	Emissions from relevant marine activities were estimated using the Puget Sound Maritime Air Emissions Inventory, scaled to King County by tonnage and vessel calls. Emissions from ferries were estimated using fuel consumed by route.

For additional detailed methodology information see *Appendix A. Inventory Methodology*.

On-Road Transportation

On-road transportation emissions include those from passenger vehicles, freight trucks, and transit vehicles driven within the county boundary. **On-road transportation activities accounted for 26% of King County's total communitywide GHG emissions** in 2023. On-road emissions have declined over time—in 2023, emissions were 4% and 10% lower than in 2007 and 2019, respectively. This trend contrasts with substantial population and job growth over the same period, during which emissions would typically be expected to rise. The overall decrease in on-road emissions reflects a decline in per-person vehicle miles traveled due to the continued impact of COVID-19 travel patterns, as well as vehicle fuel economy improvements and electrification (Figure 16).

Figure 16. On-road transportation emissions trends, by sector.



Aviation

Aviation emissions come from burning fuel to power aircrafts. Attributing aviation emissions to a particular geography is challenging because aviation fuel is often burned outside the geographic boundary of the county. These inventories relied on a **passenger-based approach**, looking at all aviation fuel sold in the Puget Sound region and attributable to King County residents or visitors to quantify the full magnitude of GHG emissions associated with air travel to and from King County. In alignment with recommendations of the King County Joint Aviation Emissions Taskforce, *Appendix A. Inventory Methodology* includes a comparison and discussion of aviation emissions estimates using alternative quanitification approaches including landing and takeoff only, all fuels, and consumption-based. The discussion also considers the range of emissions impacts from radiative forcing effects. Airports included in this analysis include SEA and KCIA, as well as smaller regional airports including Auburn Municipal Airport, Bandera Creek Airport, Skykomish State Airport, and Will Rogers Wiley Post Memorial SPB/Renton Municipal Airport.

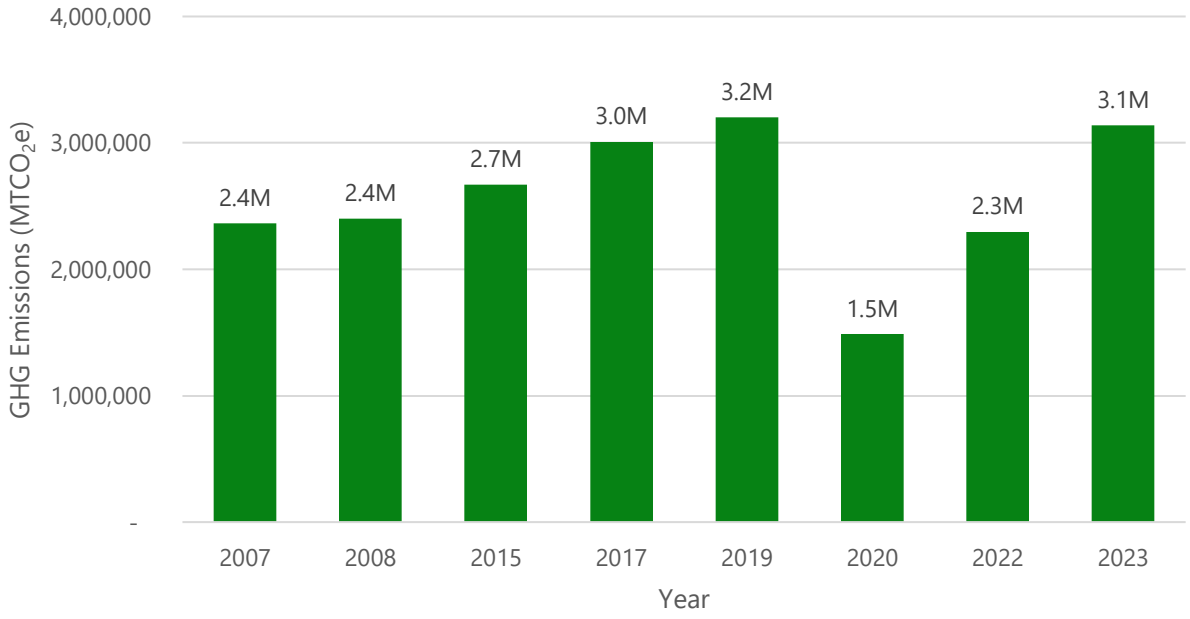
For the passenger-based analysis, SEA fuel data was weighted by the percentage of travelers reported to be going to or returning from destinations in King County, based upon SEA airport passenger survey data. The survey data, which the Port of Seattle has collected annually since 2000, indicated that about 70% of 2023 SEA passengers were “origin passengers” meaning SEA was their final departure or arrival airport. Of these passengers, in 2019 (the year which the Port indicated is representative of pre-pandemic travel patterns), 64% were King County residents or visitors. All remaining SEA fuel related GHG emissions from origin passengers were distributed to the other Puget Sound counties that SEA serves based on the percentages of passengers that are residents of or visitors to those counties. All KCIA fuel consumption was attributed to King County. Table 3 details how SEA fuel was distributed using this passenger-based approach.

Table 3. SEA fuel distribution using the passenger-based approach.

Entity	Percent of total SEA fuel	Total fuel (gallons)
King County residents	~45%	297,020,345
Kitsap, Pierce, and Snohomish residents	~15%	100,246,652
Other counties	~10%	66,236,653
Connecting passengers	~30%	201,494,413
Total	**100%**	**664,998,063**

Using the passenger-based approach, aviation accounted for 13% of King County's total communitywide GHG emissions in 2023. Summary graphics for this inventory present findings using this method because they more comprehensively reflect the full GHG emissions associated with air travel due to county resident and business activities. In 2023, aviation emissions increased 33% from 2007, driven by a combination of population and economic growth. In 2020, aviation emissions decreased 54% from 2019 due to travel impacts from the COVID-19 pandemic, and 2023 emissions have yet to return to pre-COVID-19 levels (Figure 17).

Figure 17. Aviation emissions trends using the passenger-based estimation method.



Other Sources

The remaining 12% of transportation emissions are from **marine vessels, freight and passenger rail,** and **non-road vehicles and equipment**.

The non-road vehicles and equipment categories included in this inventory are recreational, construction, industrial, lawn/garden, agriculture, commercial, logging, airport support, oil field, pleasure craft, and railroad. Emissions from non-road vehicles and equipment decreased 5% from 2007 to 2023 and increased 8% from 2019 to 2023.

Overall, emissions from marine vessels and rail have increased since 2007 (+8%) and 2019 (+20%). This category includes emissions from ferries, freight and passenger rail, and maritime ocean-going vessel shipping. Key trends observed across marine and rail sources include:

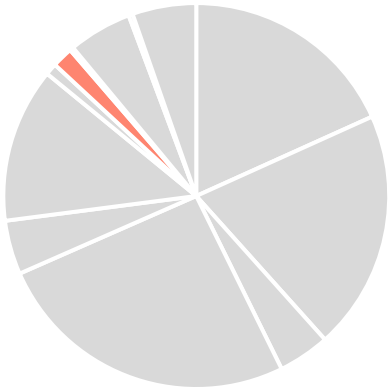
- Emissions from ferries have increased since 2007 (+10%) but decreased since 2019 (-23%).
- Freight and passenger rail emissions have decreased since 2007 (-17%) and 2019 (-2%).
- Emissions from maritime ocean-going vessels increased since 2007 (+27%) and 2019 (+73%) but have significantly fluctuated over time.

Drivers of these trends include the North American Emission Control Area (ECA), which came into effect in 2015 and requires vessels to use sustainable fuels near the coast, and an increase in the use of shore power.

Solid Waste and Wastewater

The solid waste and wastewater sector includes GHG emissions from the generation, disposal, and treatment of community waste and wastewater, including emissions from landfills, composting, recycling processes, and wastewater treatment facilities.

Summary



- In 2023, solid waste and wastewater accounted for 2% of communitywide emissions, primarily from landfilled waste.
- Solid waste emissions have decreased compared to 2007 (-34%) and 2019 (-18%) (Figure 18). Contributors to this change include an increase in waste diversion and reduction in overall organic waste generation (Figure 19).
- Wastewater emissions have increased 10% and 3% since 2007 and 2019, respectively. Since 2007, the increases have primarily been driven by population growth. Per capita wastewater process emissions are down 12% since 2007.

Methodology

Solid Waste & Wastewater	Methodology for 2022/2023 Inventory Update
Solid waste generation and disposal	Applied standard emission factors from U.S. EPA WARM v15 to tonnage estimates by material class.
Wastewater process emissions	King County Wastewater Treatment Division provided emissions estimates for the county's wastewater treatment process.

For additional detailed methodology information see *Appendix A. Inventory Methodology*.

Solid Waste

Solid waste emissions include those from landfilling and commercial composting of solid waste. Waste transportation contributes emissions, and methane is released when organic waste breaks down under anaerobic conditions (a lack of oxygen) often found in landfills. Many landfills capture the majority of released methane, but some methane still leaks into the atmosphere. Commercial composting also releases GHGs as organic material decomposes, primarily as carbon dioxide, which is less potent than methane. For this inventory, solid waste emissions were estimated by multiplying the tons generated by material-specific emission factors derived from the U.S. EPA's WARM model (U.S. EPA, 2020). The WARM model provides emission factors tailored to the climate, based on national average characteristics for landfills. King County-specific landfill emission factors were not used.

Solid waste activities accounted for 2% of King County's total communitywide GHG emissions in 2023. Overall, solid waste emissions have decreased 34% since 2007 and 18% since 2019, driven by reductions in landfilled waste tonnages and increased diversion of organic waste (Figure 18). These estimates do not include the carbon sequestration benefits of solid waste disposal—only GHG emissions.

Figure 18. Solid waste emissions trends, by sector.

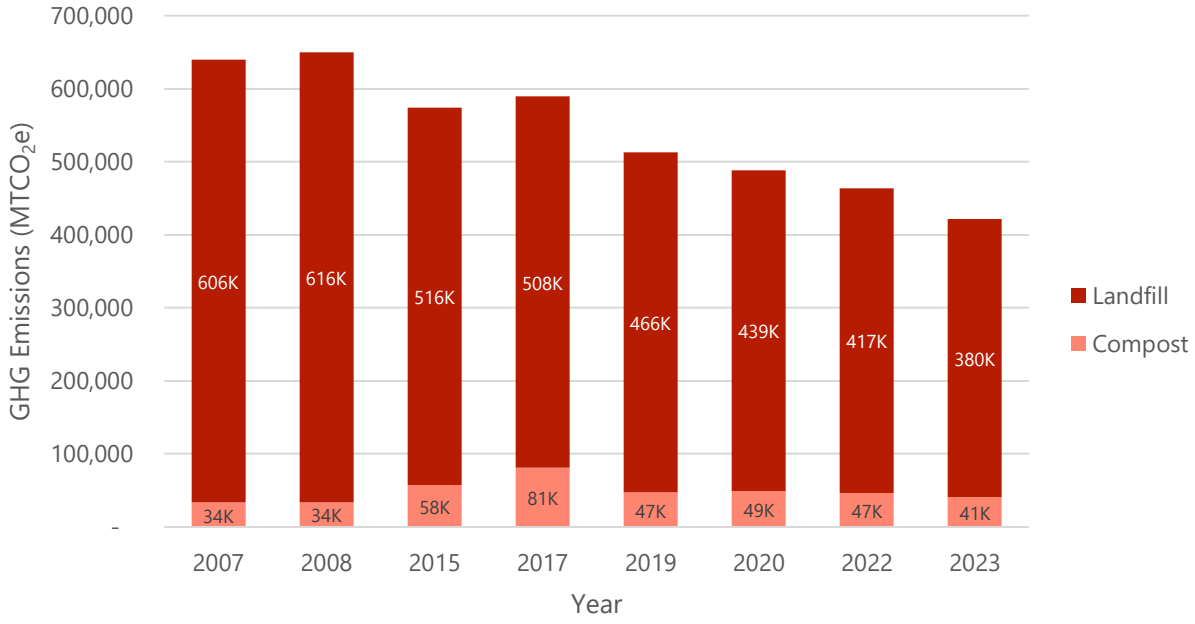
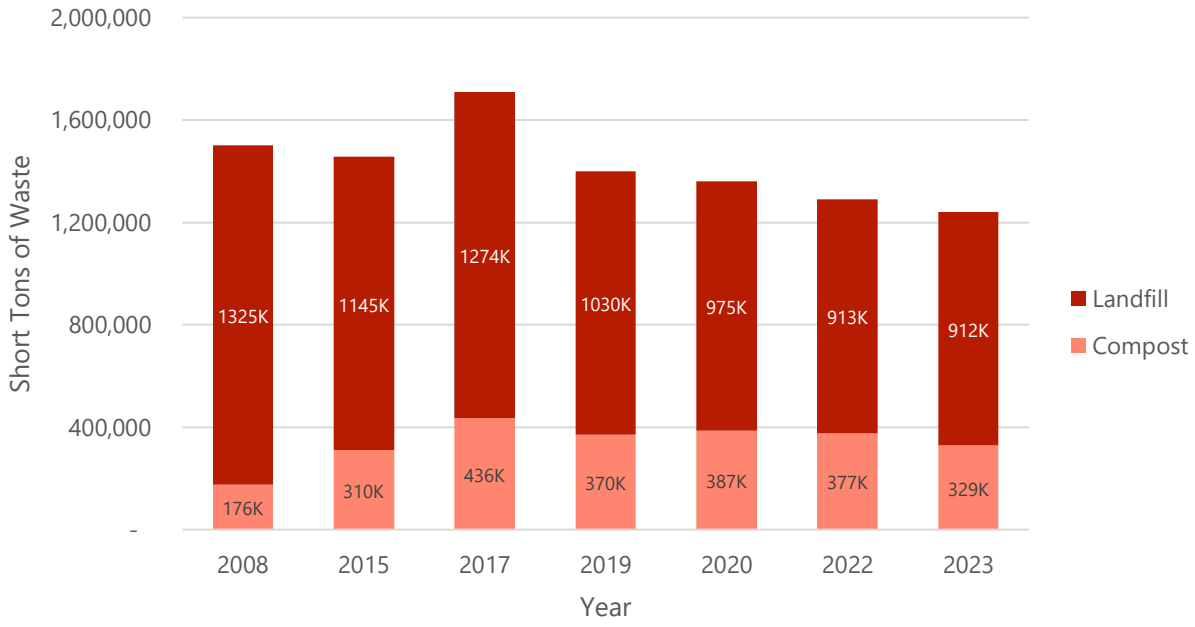


Figure 19. Solid waste tonnage trends, by sector.[8]



[8] When assessing progress toward overall countywide GHG emissions reduction targets, comparisons to 2007 are used based on an estimate of 2007 GHG emissions per sector, however, there is not activity data (for example, solid waste tonnage) or emissions factors available for the year of 2007.

Wastewater

GHG emissions from the wastewater sector stem from the biological processing of organic wastewater products in wastewater treatment plants and septic systems. Wastewater treatment plants also indirectly produce GHG emissions through energy use to power the wastewater treatment processes—these emissions are accounted for in the energy sector, primarily within the commercial electricity sector.

King County's GHG emissions from wastewater have **increased over time** (+10% since 2007 and +3% since 2019), primarily resulting from a growing population. Per capita wastewater emissions have declined 12% since 2007. King County supplies biosolids as soil amendment for several WA operations, which reduces the need for artificial fertilizer and can increase soil carbon sequestration and vegetation growth. The GHG benefits associated with biosolids application fall outside the scope of this inventory.

Refrigerants

Refrigerant emissions stem primarily from the release of hydrofluorocarbons (HFCs), which are a substitution for ozone depleting substances (ODSs). HFCs, which are GHGs, are mainly used for air conditioning and refrigeration equipment (U.S. EPA, 2014).

Summary

- In 2023, refrigerants accounted for 5% of communitywide emissions.
- Refrigerant emissions have increased over time (+61% compared to 2007 and +9% compared to 2019) (Figure 20).
- Refrigerant emissions were estimated by downscaling national-level refrigerant emissions data to the local level based on population. Therefore, trends in this source are a product of both national-level refrigerant trends and local population growth.

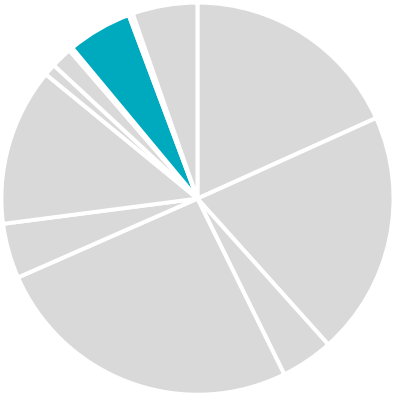
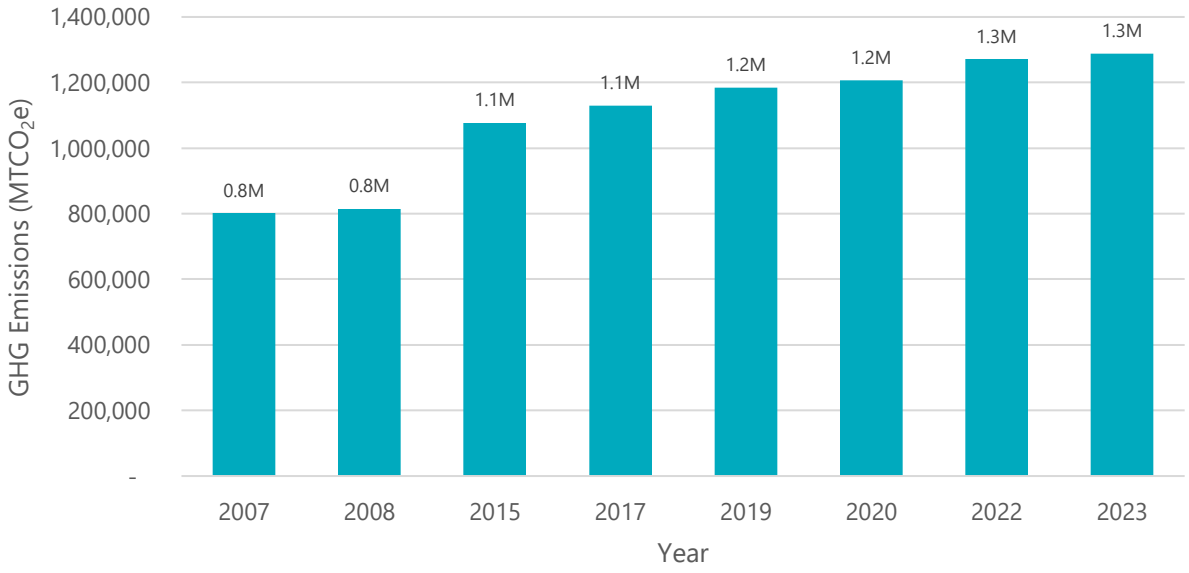


Figure 20. Refrigerant emissions trends.



Methodology

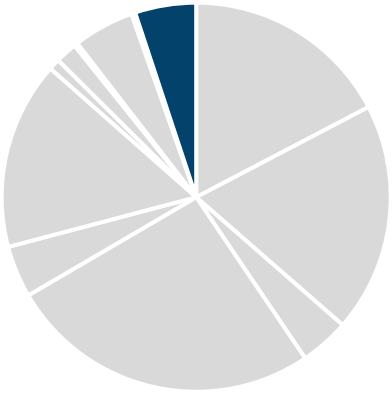
Refrigerants	Methodology for 2022/2023 Inventory Update
Substitution of ozone-depleting substances (ODS)	Estimated using the national U.S. EPA value, scaled to King County by population.

For additional detailed methodology information see *Appendix A. Inventory Methodology*.

Land Use

The land use sector includes GHG emissions associated with agriculture and tree cover loss.

Summary



- In 2023, land use accounted for 6% of communitywide emissions.
- Land use emissions have fluctuated over time (+63% compared to 2007 and -2% compared to 2019). For this inventory, forest and tree emissions were available only until 2019 and averaged over a three-year period from 2016, so annual values do not vary between 2017 and 2023.
- One contributor to this change is a decrease in the number of cattle in King County since 2008.

Methodology

Land Use	Methodology for 2022/2023 Inventory Update
Agriculture	Estimated emissions from enteric fermentation and manure management using the U.S. Community Protocol methodology and the WA Census of Agriculture.
Forest	ICLEI Land Emissions and Removals Calculator (LEARN)– The LEARN tool uses 30 meter resolution remote sensing data collected from satellites from the National Land Cover Database (NLCD), produced by the United States Geological Survey (USGS) as the land cover database for this analysis.

For additional detailed methodology information see *Appendix A. Inventory Methodology*.

Agriculture

Agriculture accounts for less than 0.5% of GHG emissions in King County, and this relative contribution has remained steady over time. Emissions are primarily derived from the release of methane and nitrous oxide associated with livestock digestion (enteric fermentation) and manure management. **Emissions from livestock and manure management have decreased** 45% since 2008 due to a significant decrease in the number of beef and dairy cattle, which release more methane than other farm animals. Nitrous oxide emissions from soil in 2023 increased 5% from 2008 due to a larger number of cropland acres in King County and a higher rate of emissions per acre nationwide. This estimated higher rate of emissions per acre is a nationwide average and may not be most accurate locally. King County staff report that there has not been noticeably more intensive soil management or fertilizer use locally. Since the Census of Agriculture is only released once every five years, the 2017, 2019, and 2020 agricultural emissions values were assumed to be constant.

Forest and Trees

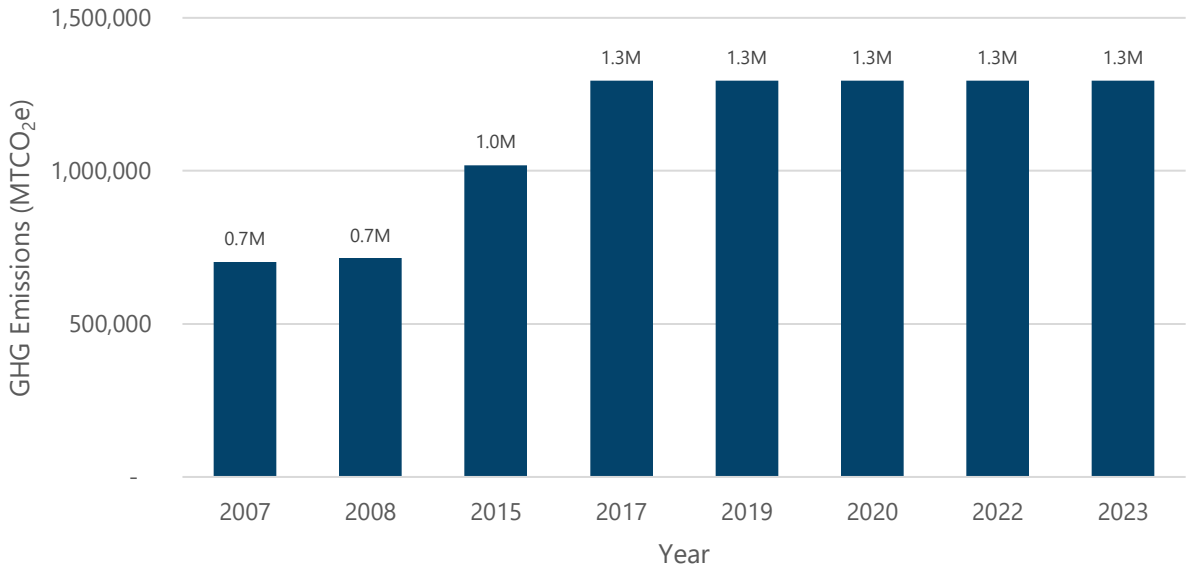
Emissions from forests and trees accounted for 5% of King County's total communitywide GHG emissions in 2023 (Figure 21). Overall, GHG emissions from **forests and trees increased since 2007** (+84% compared to 2007). Three quarters of the forest and tree emissions from 2016-2019 are from forest cover change and forest disturbance combined. Satellite landcover estimates show that insects disturbed 4% of forested lands, with fire contributing very little disturbance. There is uncertainty in the LEARN model's ability to accurately distinguish between conversion of forest to grassland and forest disturbance from harvest (World Resources Institute, 2025).

The modeling results show some conversion of forest to settlement; however, per King County's compliance with the Growth Management Act, there has not been a decrease in Forest Production District lands that would imply conversion from forest to rural or urban lands. There may be lands classified for rural or urban development that have been harvested and developed during this time period. Further local verification would be needed of the specific locations classified in the modeling database. This estimate considers all lands in King County, regardless of ownership, including state, federal, County, and private lands. Forests store carbon in tree trunks, roots, leaves, branches, and soil, thus forest cover change from conversion to other land uses or disturbances from harvest, wildfire, insect, or disease results in carbon released into the atmosphere.

The largest sources of carbon sequestration include growth on maintained forest lands and new forest growth on disturbed forest lands. The Carbon Sequestration section below provides estimates representing these sources which do not include harvested wood products. The estimates make a simplifying assumption that all forest harvest results in immediate emissions to the atmosphere, rather than a delayed release in the case of long-term storage of wood products as building materials for homes and furniture, for example.

The tool used for this analysis, Land Emissions and Removals Navigator, relies on 30-meter geopsatial satellite imagery and requires a minimum of a 3-year analysis timeframe ((ICLEI , 2025). At the time of this analysis, the tool provided data only through 2019; therefore, a 2016-2019 timeframe was analyzed to estimate annual tree cover emissions averages over a 3-year period. Therefore, tree cover emissions estimates are the same across years for 2017, 2019, 2020, 2022, and 2023. The estimates rely on national datasets and have the most uncertainty in the estimates of land use change. With high levels of uncertainty, experts recommend using estimates to assess the relative magnitude and directionality of emissions from forests and tree cover in King County. Subsequent analyses in the form of field observations and sampling of forests in the county can provide more precise assessments of land use change and emissions.

Figure 21. Forest and tree emissions trends[9].



[9] Emissions represent carbon releases from forest lands and trees on non-forested lands as a result of forest disturbance and land use change. Results are based on LEARN model outputs for 2016–2019, the latest interval with complete 30-meter geospatial datasets.

Carbon Sequestration

Carbon sequestration (removal of CO_2 from the atmosphere) results from carbon absorption processes by trees and other vegetation and throughout the solid waste disposal system.

Summary

- Trees remove CO_2 from the atmosphere as they grow and sequester carbon in standing timber and large woody debris. Carbon sequestration from tree growth was the dominant form of carbon sequestration documented in this inventory.
- Carbon sequestration from forests and trees in King County is equivalent to 23% of King County emissions; trees store as much carbon each year as that from on-road emissions.
- In King County, forests and trees store more than four times the carbon they emit. In 2023, forest and trees were a net GHG benefit for King County of 3.9 million $MTCO_2e$.
- For this inventory, forest and trees carbon sequestration data was only available through 2019 and averaged over a 3-year period from 2016, so annual values do not vary between 2017 and 2023. Since 2007, carbon sequestration from trees and forests has increased by 20%.
- Solid waste disposal sequestration in 2023 decreased 31% compared to 2007 and 25% compared to 2019, primarily due to increased composting and reduced organic waste sent to landfills.
- This inventory includes estimates for forest and tree growth-related carbon sequestration and landfill solid waste-related carbon sequestration. These estimates are shown seperately from emissions sources and are not subtracted from overall emissions inventory totals.

Methodology

Carbon Sequestration	Methodology for 2022/2023 Inventory Update
Solid waste disposal sequestration	Apply estimated tons of waste to WARM v15 emission factors.
Forest sequestration	ICLEI Land Emissions and Removals Calculator (LEARN) – The LEARN tool uses tool uses the 30-meter resolution remote sensing data collected from satellites from the National Land Cover Database (NLCD), produced by the USGS as the land cover database for this analysis.

For additional detailed methodology information see *Appendix A. Inventory Methodology*.

Solid Waste Sequestration

Solid waste disposal processes encompass sequestration of carbon-containing waste products in both landfills and composting systems (for example, through soil amendments). When organic materials are sent to the landfill, a portion of the carbon that would naturally decompose does not do so, thus preventing aerobic decomposition and the associated emissions.

Solid waste disposal sequestered approximately 320,000 $MTCO_2e$ in 2023 (Figure 23). Solid waste sequestration has declined over time due to reductions in overall waste generation and increased diversion rates. This geographic-focused analysis does not account for the upstream lifecycle GHG savings associated with waste diversion. Increasing landfill solid waste carbon sequestration by

disposing of organic materials in landfills is not considered by King County as a preferred waste disposal method or climate action strategy and is not considered in the GHG wedge analysis.

Forest and Tree Sequestration

Trees and forests in King County **sequester around 5.2 million MTCO$_2$e per year (**Figure 22**)**. Sequestration estimates are based on a comparison of satellite imagery of 30-meter land use classifications of all lands in King County in 2016 versus 2019. The largest sources of carbon sequestration include growth on maintained forest lands and new forest growth on disturbed forest lands. The estimates make a simplifying assumption that all forest harvest results in immediate emissions to the atmosphere, rather than a delayed release in the case of long-term storage of wood products as building materials for homes and furniture, for example. The database also estimates carbon storage from trees on lands not specifically classified as forest lands.

At the time of analysis, data from the Land Emissions and Removals Navigator (LEARN) tool were available only through 2019, and the tool requires a minimum three-year analysis period (ICLEI , 2025). Therefore, a 2016–2019 timeframe was used to estimate average annual sequestration values. As a result, tree sequestration emissions remain constant across inventory years 2017, 2019, 2020, 2022, and 2023. Carbon stored in harvested wood products is not included in estimates of carbon sequestration.

Figure 22 compares estimates of forest and tree emissions from forest disturbance and potential land use change shown as positive values, as compared to carbon sequestration from forests and trees in King County shown as negative values.

Figure 22. Forest and tree emissions and sequestration.[10]

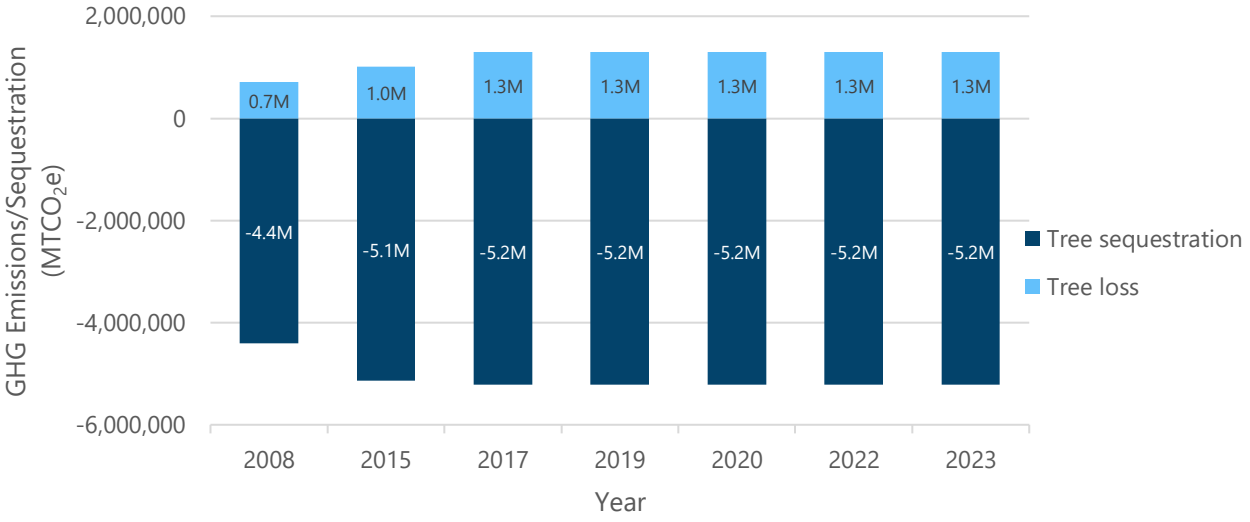
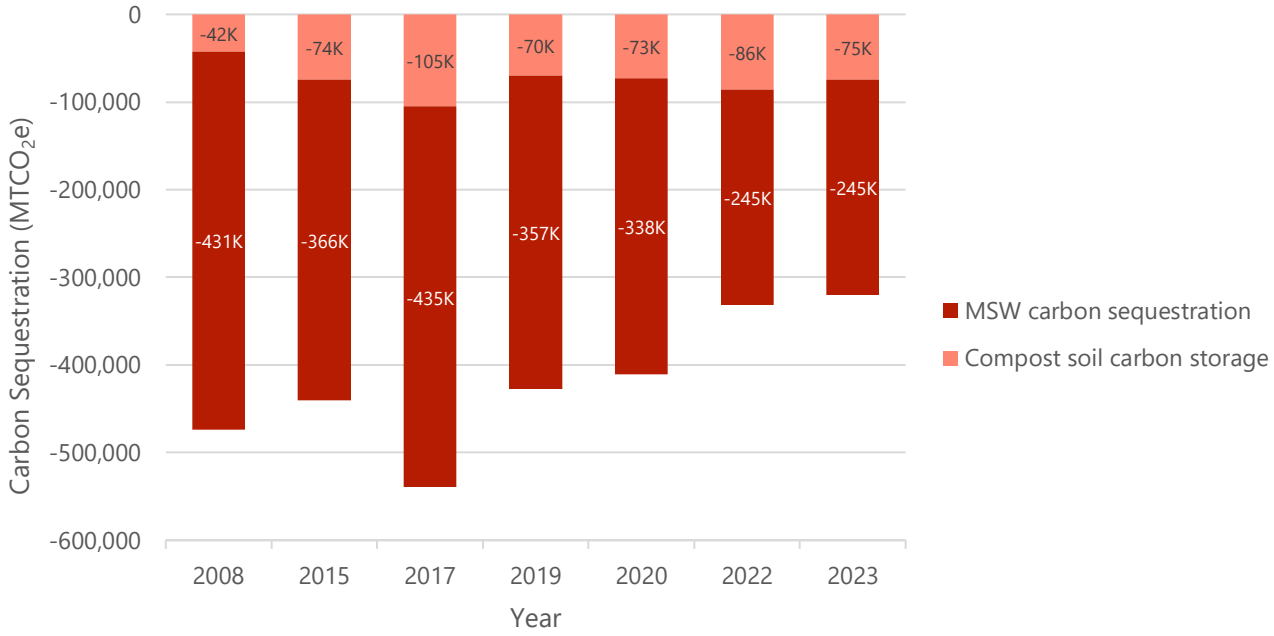


Figure 23. Landfilling and composting sequestration trends.[11]



[10] When assessing progress toward overall countywide GHG emissions reduction targets, comparisons to 2007 are used based on an estimate of 2007 GHG emissions per sector, however, there is not detailed inventory information (such as net forest sequestration or landfilling and composting sequestration) available for the year of 2007.

[11] When assessing progress toward overall countywide GHG emissions reduction targets, comparisons to 2007 are used based on an estimate of 2007 GHG emissions per sector, however, there is not detailed inventory information (such as net forest sequestration or landfilling and composting sequestration) available for the year of 2007.

How Can We Meet Our Climate Goals?

Wedge Analysis Introduction

The wedge analysis, which includes all geographic-based King County community emissions sources, forecasts emissions from 2023 through 2050, including a projection if no action is taken compared with emissions reductions from existing federal, state, and local policies and measures proposed in the adopted 2025 SCAP. Comprehensively, the wedge analysis demonstrates how implementation of existing policies and proposed 2025 SCAP actions can make progress toward achieving King County's GHG emissions reduction targets of 50%, 75%, and 95% reductions below 2007 levels by 2030, 2040, and 2050.

Results

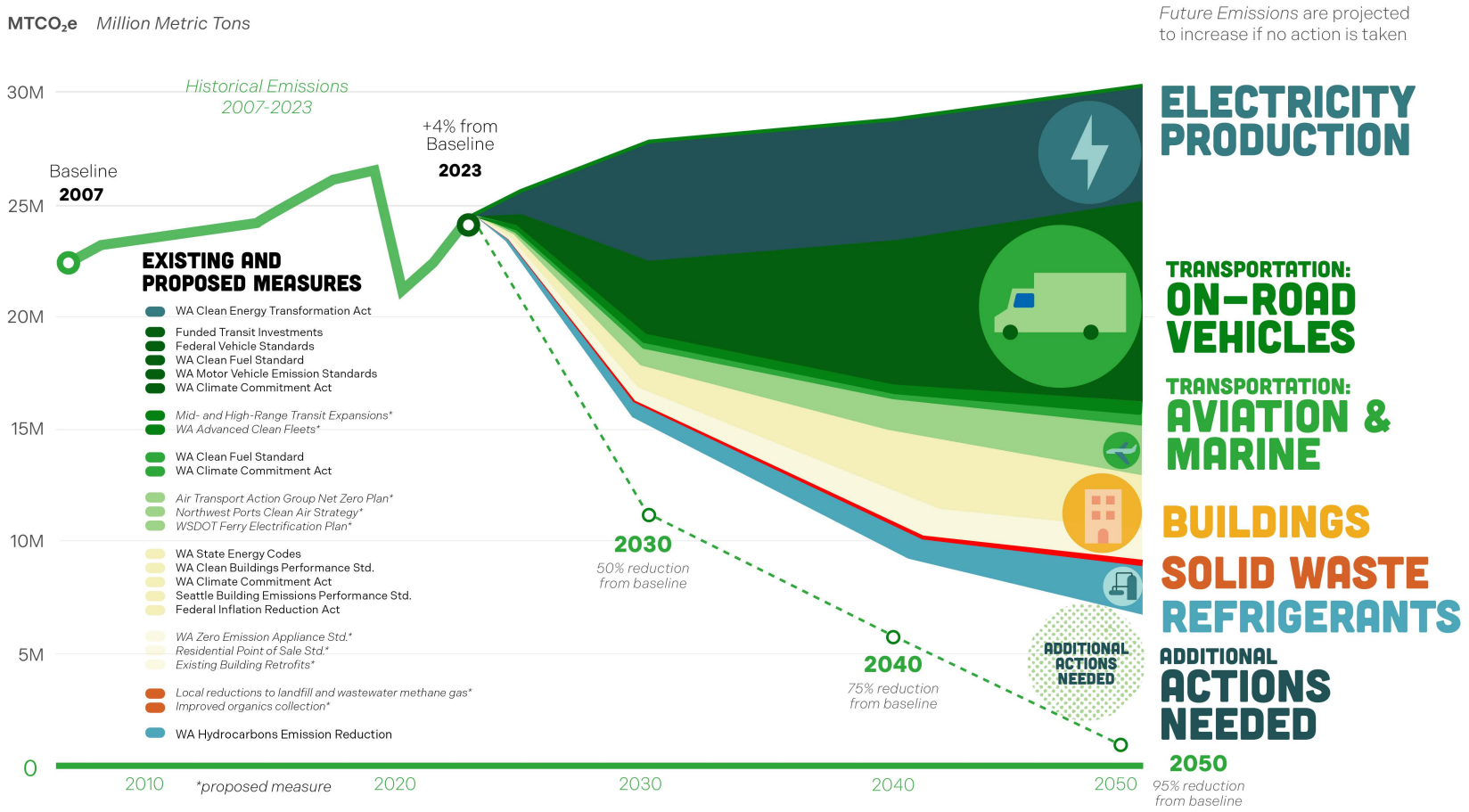
As depicted in Figure 24, additional action by industries, governments, businesses, and individuals will all be needed for King County to meet the King County-Cities Climate Collaboration (K4C) targets of 50%, 75%, and 95% reductions below 2007 levels by 2030, 2040, and 2050, respectively (relative to 2007 levels).

The wedge analysis revealed the following projections compared to 2007 baseline GHG emissions levels:

- Under a **no-action future**, King County GHG emissions are projected to increase **17%** by 2030 and **30%** by 2050.
- If fully implemented, **existing federal, state, and regional policies** (as of June 2025) could reduce King County's GHG emissions by **29%** by 2030 and **46%** by 2050.
- **King County and local governments have a signficant role** in implementing **36%** of the potential reductions achievable by 2030 and **27%** by 2050 under existing policies.
- When combined with existing policies, **proposed 2025 SCAP actions** are projected to reduce emissions **33%** by 2030 and **70%** by 2050. The assumptions used for this analysis are listed in *Proposed 2025 SCAP Measures*.

Even with these combined efforts, total reductions **fall short of K4C targets**, particularly the 50% reduction goal by 2030 and 95% goal by 2050. Additional actions to further cut fossil fuel use in buildings, vehicle emissions, and the aviation sectors are needed to achieve the targets.

Figure 24. Forecasted GHG emissions and reduction by existing and proposed measures.



No-Action Future Emissions

The wedge analysis forecasts King County GHG emissions if no action is taken to reduce GHG emissions assuming no federal, state, or regional emissions reduction policies are in place. If no climate actions are taken, King County's GHG emissions are projected to rise **17%** and **30%** above 2007 by 2030 and 2050, respectively. Depending on the emissions sector, changes in emissions are assumed to scale directly with projected growth in population, jobs, and service population (a combined measure of population and jobs), as summarized in Table 4.

Table 4. Variables used to estimate GHG emissions under a no-action future scenario.[12]

	Projected Change Compared to 2023 (%)		
	2030	2040	2050
Population	+8%	+19%	+29%
Jobs	+20%	+34%	+49%
Service Population	+12%	+25%	+37%

Existing Federal, State, & Local Policies

The wedge analysis estimates GHG emissions reductions that existing climate, energy, and transportation policies in effect as of June 2025 could achieve. The model sequentially analyzes the emissions reductions of each policy to avoid "double counting." This sequencing means that while the order of policies in the model influences their individual reductions, overall emissions reduction estimates are consistent regardless of sequencing. If existing policies are all fully implemented, King County's GHG emissions are projected to fall **29%** below 2007 levels by 2030 and **46%** below by 2050.

The analysis includes the following federal, state, and regional policies, organized by sector. The overviews below summarize each policy's interpretation and modeling assumptions as they relate to the wedge analysis.

WA Clean Energy Transformation Act (CETA) (Chapter 173-444 WAC)

Interpretation: Applies to all electric utilities serving retail customers in WA and sets the following specific milestones:

- By 2025, utilities must eliminate coal-fired electricity from their state portfolios.
- By 2030, utilities must be GHG neutral, with flexibility to use limited amounts of electricity from natural gas if it is offset by other actions.
- By 2045, utilities must supply WA customers with electricity that is 100% renewable or non-emitting, with no provision for offsets.

Modeling Assumptions: Assumes that electricity will be GHG neutral (electricity emission factor equals zero) in 2030 and beyond with a straight-line emission factor reduction from 2023 to 2030. For utilities that rely on coal for electricity generation, the model adds a straight-line reduction to 0% coal by

[12] Population and job growth projections are based on Puget Sound Regional Council (PSRC) regional forecasts (LUV-it County Summaries 2023, 2025)

December 31, 2025. Assumes that coal is replaced by renewables. This policy impacts electricity emission factors (reduces emissions per unit of energy consumed).

Risks: Electricity demand is increasing as a result of the transition to EVs and building systems, following a period of reduced demand from energy efficiency measures (Washington Utilities and Transportation Commission, 2025). Increased overall demand compounded by supply reduction from fossil fueled sources increases challenges for utilities to meet the GHG neutral and renewable energy commitments of CETA. At the same time, loss of federal tax credit incentives and federal approval restrictions for some renewable energy projects and interconnections will make it even more challenging and expensive for utilities to achieve CETA requirements (The White House, 2025).

WA State Energy Codes (Chapter 19.27A RCW)

Interpretation: Requires residential and nonresidential construction permitted under the state energy code to achieve a 70% reduction in annual net energy consumption (compared to a 2006 baseline). State energy codes will be adopted from 2013-2031 to incrementally move towards achieving the 70% reduction by 2031.

Modeling Assumptions: Assumes that new construction in 2031 and beyond will consume 70% less energy than the 2006 baseline. Relies on King County's 2008 energy consumption rate as a proxy for 2006 baseline. Assumes this baseline applies to all jurisdictions. Uses 2023 energy consumption rates and adds a straight-line reduction in energy consumption rate from 2023 to 2031 to achieve the 70% reduction from baseline in new buildings only. Assumes that any additional energy consumption under BAU compared to 2023 is from new buildings.

Reflecting updates to the 2021 WA State Energy Code, all new commercial buildings must use electric heat pumps for space heating, and heat pump water heating must provide at least 50% of the building's primary service hot water heating capacity:

- Assumes commercial water heating accounts for 9% of building energy use and assumes space heating accounts for 23% of building energy use for a total of 32% (Source: U.S. EIA 2015).
- Assumes 75% of current commercial buildings use fossil fuel space/water heating.

Risks: Full implementation of the 2021 State Energy Code will depend on ruling by the WA Supreme Court on constitutionality of Initiative 2066. I-2066 was passed by voters in November 2024 and ruled unconstitutional by King County Superior Court (Climate Case Chart, 2025). If the WA Supreme Court overturns ruling by the King County Court, the emissions reduction benefits from WA State Energy Code significantly reduce.

WA Clean Buildings Performance Standard (Chapter 19.27A RCW)

Interpretation: Requires all new and existing commercial buildings over 50,000 square feet to reduce their energy use intensity by 15%, compared to the 2009–2018 average:

- Buildings greater than 220,000 square feet must comply by June 1, 2026.
- Buildings greater than 90,000 square feet must comply by June 1, 2027.
- Buildings greater than 50,000 square feet must comply by June 1, 2028.
- Buildings greater than 20,000 square feet must comply by July 1, 2027.

Modeling Assumptions: Uses 2023 county level commercial energy consumption data to calculate energy consumed per sq ft of commercial building space and average energy use intensity (EUI, refers to energy consumed per sq ft). Model uses this as proxy for 2009-2018 baseline. Assumes a straight-line reduction in energy use intensity (up to 15%) for Bins 1–4 below for 2023 through respective compliance dates. Assumes 15% reduction through 2050.

- Bin 1: >220K sq ft
- Bin 2: > 90K sq ft
- Bin 3: > 50K sq ft
- Bin 4: < 50K sq ft, > 20K sq ft
- Bin 5: > 20K sq ft (rules does not apply)

Risks: No regulatory risks identified.

Seattle Building Emissions Performance Standard (BEPS)

Interpretation: Requires all existing commercial and multifamily buildings greater than 20,000 square feet to reduce their energy use intensity.

Modeling Assumptions: Results in a 324,946 MTCO2e decrease in GHG emissions in commercial and multifamily buildings between 20,000-50,000 feet by 2050, based on modeling from the City of Seattle. Emission decrease is applied to Bin 4 identified in the WA Clean Buildings Act and further decarbonizes existing commercial/multifamily buildings that are between 20-50,000 sq ft. in size. Assumes that this reduction occurs from a transition from natural gas to electricity.

Risks: As stated, I-2066 was ruled unconstitutional by King County Superior Court (Climate Case Chart, 2025). If WA Supreme Court overturns ruling by the King County Court, the emissions reduction benefits from Seattle BEPS will significantly reduce.

WA Climate Commitment Act (CCA) (Chapter 70A.65 RCW)

Interpretation: Also known as Cap and Invest, the CCA places an economy-wide cap on carbon to meet state GHG reduction targets and remain consistent with best available science while minimizing the use of offsets to meet those targets. Every polluting facility covered under the program needs to hold one allowance for every ton of GHG that it emits. Based on an environmental justice review, 35–40% of investments must be made in overburdened communities to reduce health disparities and create environmental benefits, with an additional 10% allocated for tribal programs and projects.

Modeling Assumptions: State estimates that CCA will account for 26.2 million $MTCO_2e$ in statewide reductions by 2030. 2018 total emissions equal 99.57 million $MTCO_2e$. Thus, assumes CCA will reduce total WA emissions 26% compared to 2018 levels.

Key regulated CCA sectors relevant to the geographic inventory include:

- Natural gas (however, this sector will receive directly allocated no-cost allowances).
- Industrial processes (however, Emissions-Intensive Trade-Exposed facilities will receive directly allocated no-cost allowances).
- Transportation fuels (however, already covered to some extent by Clean Fuel Standard).

Therefore, model further assumes the following for CCA:

- Assumes CETA addresses emissions reductions in electricity sector.
- Applies -10% emission factor adjustment to natural gas (assuming increase in hydrogen or RNG in fuel mix) to 2030.
- Applies -15% emissions reduction estimate to industrial process emissions to 2030.
- Applies -23.5% fuel emission factor reduction estimate to transportation emissions to 2030 and -30% to 2040 (includes reductions from Clean Fuel Standard).

Risks: Federal Executive Order (The White House, 2025) presents potential challenge to state climate policies, such as the WA Climate Commitment Act. There is a legal challenge underway. WA Ecology maintains authority to implement the CCA.

Federal Vehicle Standards (CAFE)

Interpretation: Corporate Average Fuel Economy (CAFE) standards, which are regulated by the U.S. Department of Transportation and supported by the U.S. EPA, calculate average fuel economy levels for manufacturers and sets related GHG standards. Passenger cars and light trucks require an industry-wide fleet average of approximately 49 mpg for passenger cars and light trucks in model year 2026, increasing fuel efficiency 8% annually for model years 2024–2025 and 10% annually for model year 2026. This will increase the estimated fleetwide average by nearly 10 miles per gallon for model year 2026, relative to model year 2021.

Modeling Assumptions: Based on PSRC Vision 2050 modeling, assumes the following changes in vehicle emissions intensity (g CO_2e/mile):

- 33% reduction from 2018 to 2050 for light duty vehicles.
- 26% reduction from 2018 to 2050 for heavy duty vehicles.

Risks: The 2025 federal budget reconciliation bill eliminated civil penalties for noncompliance with federal fuel economy standards, effectively eliminating the fuel economy requirements (U.S. Congress, 2025).

WA Clean Fuel Standard (Chapter 70A.535 RCW)

Interpretation: Requires a 20% reduction in the carbon intensity of transportation fuels by 2038 compared to a 2017 baseline level. Reductions in carbon intensity may be achieved through cleaner fuels or by purchasing clean fuel credits from cleaner producers such as those providing electricity as fuel. Boats, trains, aircraft, and military vehicles and equipment are excluded.

Modeling Assumptions: Assumes the 2019 transportation fuel emission factors are applicable for 2017–2023 using 2017 as the policy baseline year. Considers concerns with WA's short-term ability to scale up low carbon fuels by assuming the 2030 split of clean fuel/EV is closer to 35%/65% compared to 50%/50% by 2038.

Compared to baseline, assumes the following for fuel carbon intensities:

- 3.5% reduction in per-gallon gasoline and diesel vehicle (passenger, heavy duty, transit) emissions from cleaner fuels (not EVs) by 2030.
- 10% reduction in per-gallon gasoline and diesel vehicle (passenger, heavy duty, transit) emissions from cleaner fuels (not EVs) by 2040.
- Maintains 10% reduction levels to 2050.

Given WA's Motor Vehicle Emission Standards, which will facilitate an increase in electric passenger vehicles, compared to the baseline, model assumes the following for EV use:

- 6.5% transition of gasoline/diesel passenger vehicles to EV by 2030.
- 10% transition of gasoline/diesel passenger vehicles to EV by 2040.
- Maintain 10% reduction levels to 2050.

Risks: In 2025, the WA State Legislature passed HB 1409 to update the CFS' targets (Washington State Legislature, 2025). The CFS will reduce GHG emissions from transportation fuels by 45% in 2038 with the option to reduce as much as 55% by 2038 if certain conditions are met. This analysis does not account for the new expanded targets adopted in 2025.

WA Motor Vehicle Emission Standards (Chapter 70A.30 RCW)

Interpretation: Establishes a target that "all publicly owned and privately owned passenger and light duty vehicles of model year 2030 or later that are sold, purchased, or registered in Washington state be EVs." For new light duty (passenger) vehicles, the Advanced Clean Cars I regulations require a progressively stringent zero-emission vehicle (ZEV) sales share, culminate in a 100% sales requirement by 2035.

Modeling Assumptions: Assumes that manufacturers must sell enough clean vehicles to meet the credit requirement for each model year, as follows.

Passenger vehicles:

- 2025: 9%
- 2026: 35%
- 2027: 43%
- 2028: 51%
- 2029: 59%
- 2030: 68%
- 2031: 76%
- 2032: 82%
- 2033: 88%
- 2034: 94%
- 2035 and beyond: 100%

Freight and service vehicles:

- 2025: 8%
- 2026: 11%
- 2027: 17%
- 2028: 23%
- 2029: 30%
- 2030: 37%
- 2031: 42%
- 2032: 47%
- 2033: 50%
- 2034: 53%
- 2035 and beyond: 57%

Risks: Federal government revoked the waiver authorizing states like Washington to adopt California's motor vehicle emissions standards (U.S. Congress, 2025). Washington and 10 other states have filed a legal challenge. WA Ecology is currently pausing enforcement of this policy pending the legal challenge.

WA Hydrocarbons Emission Reduction (Chapter 70A.60 RCW)

Interpretation: WA's Hydrofluorocarbon (HFC) Reduction Law was established through HB 1112 (2019) and expanded by HB 1050 (2021). HB 1112 requires that new equipment be manufactured without HFCs or using refrigerants with a lower global warming potential (GWP) in a phased approach through 2024. Equipment covered by the law is being phased in each year, starting with 2020, and penalties apply for non-compliance. In 2021, HB 1050 applied Clean Air Act provisions for ozone depleting substances to HFCs and extended restrictions on higher GWP HFCs to new equipment such as ice rinks and stationary air conditioning.

Modeling Assumptions: Aligns model assumptions with state modeling.

Risks: No regulatory risks identified.

Proposed 2025 SCAP Measures

This section overviews 2025 SCAP actions to build upon the federal, state, and regional policies described above. These modeled actions include additional state and local measures that could further reduce King County's GHG emissions. If implemented, King County's GHG emissions could decrease 33% lower than 2007 levels by 2030 and 70% lower by 2050.

WA Zero Emission Appliance Standard

Interpretation: King County will advocate for a state or regional zero-emission appliance standard that would phase in mandatory requirements for the sale of zero-emission space and water heating and cooking equipment. This standard would require manufacturers and retail sellers to phase out sale of fossil fuel powered appliances. King County will also advocate for measures that reduce the disproportionate burden of additional costs associated with zero-emission appliances on low-income households, affordable housing providers, and homeownership. This may include replacing water heating appliances or ensuring electrical panel upgrade funding for low-income homes.

Modeling Assumptions: Assumes 2026 adoption with program implementation beginning in 2028.

- 100% of residential water heater sales are electric by 2030.
- 100% of furnaces/space heating sales are electric by 2032.
- 100% of commercial water heater sales are electric by 2034.

Risks: Adoption and implementation timeline assumes rapid adoption by WA state legislature in order for the program to take effect in 2028.

Residential Point of Sale Standard

Interpretation: King County will evaluate options for implementing a residential energy disclosure and performance standard program. A residential energy disclosure would require that, at the point of sale, new home buyers are provided with information on energy consumption and the lowest-cost options to improve a home's efficiency. An energy performance standard would require homes to improve energy efficiency or reduce fossil fuel use at the time of sale. Program design would prioritize reducing GHG emissions and potential disproportionate impacts for low-income households, including funding audits or retrofits for low-income households.

Modeling Assumptions: Assumes 2026 adoption with program implementation beginning in 2028.

- Assumes target for compliance is a Home Energy Score 7 rating; 50% of sold single-family homes which are below a Home Energy Score of 5 would expect a 22% energy efficiency improvement.
- Assumes an average of 17,266 single-family homes are sold annually.
- Assumes 8,633 single-family homes are sold annually and their EUIs increase 22%.
- Applies only to housing units that existed prior to 2031 (the WA Energy Code will govern efficiencies for homes built 2031 and beyond).

Risks: Currently assumes a requirement for home energy efficiency improvements. However, further program designs under consideration remove required energy efficiency improvements, which would reduce the overall impact of this action. If required energy efficiency improvements are retained, the policy could be modified over time such that it would achieve greater reductions in fossil fuel consumption, increasing the impact of this action.

Existing Building Retrofits

Interpretation: King County will directly facilitate retrofit programs in frontline communities by securing federal and state grant funds to reduce emissions and provide access to cooling. The County will administer a building retrofit program that prioritizes clean energy conversions for low-income residents, senior residents, oil-heated homes, in-home daycares, and adult family homes. Additionally, the County will pursue retrofits of affordable housing, as well as single-family and low- and moderate-income rental households. The County will conduct a building retrofit prioritization analysis to assess building types and establish retrofit priorities for existing building and occupancy types. The program will also evaluate how to align with other building repair and safety needs at the same time, such as addressing the seismic hazards of unreinforced masonry buildings that often house low- and moderate-income residents and/or residents that are black, indigenous, and people of color (BIPOC).

This program includes the following measures:

- Existing multifamily electrification and efficiency
  - Whole building electrification and energy efficiency
  - Benchmarking and technical support
  - Heat pump water heater incentives
- Small community building electrification and efficiency
  - Family care program
  - Community grant programs
- Scaling financing for building retrofits

Modeling Assumptions: Assumes the following program impacts based on King County modeling:

- Existing multifamily electrification and efficiency
  - Whole building electrification and energy efficiency: 500 units (50 buildings, 10 units each)
  - Benchmarking and technical support: 50 buildings, assumes one third pursue decarbonization separately
  - Heat pump water heater incentives: 500 heat pump water heaters (50 buildings, 10 units each)
- Small community building electrification and efficiency
  - Family care program: 150 buildings
  - Community grant programs: 6 libraries, 6 community centers, 3 senior centers, 40 small commercial buildings
- Scaling financing for building retrofits: 30 commercial buildings, 300 multifamily units

Risks: Implementation is dependent on ongoing access to U.S. EPA grant award funds.

Fully Funded Transit Investments

Interpretation: Assumes Metro Transit service levels are funded by Metro Connects and that Sound Transit 3 (ST3), Vision 2050, and $0.13 per mile road user charge (RUC) are fully implemented.

- **Metro Connects:** Passed by King County Council in 2021, Metro Connects provides a vision for future service networks with fast, frequent, and reliable service throughout the County. The County will seek additional funding to implement Metro Connects to help sustain and grow service and implement the supportive capital programs.
- **Sound Transit 3 (ST3):** Voters passed a ballot measure in 2016 to expand light-rail, commuter-rail, and bus rapid transit service to connect population and growth centers.
- **PSRC Vision 2050:** This is a regional growth policy that limits development outside the Urban Growth Area (UGA) and directs 98% of new growth within the UGA. Combined with the Regional Transportation Plan, it is a critical component for achieving King County's GHG reduction targets.

Through strategic alignment with ST3 and Vision 2050, the County aims to increase annual passenger boardings on transit services in King County, including King County Metro Transit and Sound Transit to:

- 187 million annual passenger boardings by 2030.
- 308 to 326 million annual passenger boardings by 2040.
- 364 to 413 million annual passenger boardings by 2050.

Modeling Assumptions: Assumes the following per capita VMT reductions compared to 2017 levels:

- 10% by 2030
- 14% by 2040
- 21% by 2050

Risks: Funding is not secured to provide Metro Connects service levels.

Note: In Figure 24, this action is labeled as "Funded Transit Investments".

Road Usage Charge – Expanded Transit Service and Land Use Density

Interpretation: Combines additional Metro Transit service levels beyond Metro Connects, a more transit-focused land use growth in King County than assumed in Vision 2050, and a higher per-mile RUC.

- More transit-focused land use growth in King County than assumed in PSRC Vision 2050 (Vision 2050 assumes that ~35% of household and job growth (2018 – 2050) is concentrated in Seattle, versus 85% of household growth and 50% of job growth in Seattle assumed for this analysis. This scenario shifts planned growth outside of suburban and rural areas of the county, as well as attempts to balance the jobs/housing ratio within Seattle and the transit-oriented suburban areas (around planned high frequency transit, but outside Seattle) in King County.
- 1.3 – 1.4x Metro Connects service levels. Assumes moderate growth of Metro service levels.
- $0.40 - $0.60/mile RUC recommended pricing strategy level to meet VMT reduction goals, per the travel model. Assumes road usage charge authorized by state legislation.

Modeling Assumptions: Assumes the following per capita VMT reductions compared to 2017 levels:

- 10% by 2030
- 20% by 2040
- 47% by 2050

Risks: Funding is not secured to provide Metro Connects service levels.

Note: In Figure 24, this action is combined with "Improve Transit Speed and Frequency" and labeled as "Mid- and High-Range Transit Expansions."

Improve Transit Speed and Frequency

Interpretation: Focuses on capital investments and strategic partnerships to improve transit speeds and reliability, especially on high-frequency routes. This approach also emphasizes reallocating roadway space on multilane arterials to prioritize transit and active modes of transportation.

- PSRC Vision 2050 land use
- 0.8 – 0.9x Metro Connects service levels
- $0.13/mile RUC
- Transit speed and reliability improvements
- Road diets on multilane arterials to increase transit, walking, and biking capacity

Modeling Assumptions: Assumes the following per capita VMT reductions compared to 2017 levels:

- 10% by 2030

- 17% by 2040
- 33% by 2050

Risks: Funding is not secured to provide Metro Connects service levels.

Note: In Figure 24, this action is combined with "Road Usage Charge – Expanded Transit Service and Land Use Density" and labeled as "Mid- and High-Range Transit Expansions."

WA Advanced Clean Fleets

Interpretation: The Advanced Clean Fleets Regulation in California is the latest development in CARB's decades-long history of setting increasingly stringent emission standards for mobile sources that are needed to protect the public health and welfare of Californians. The Advanced Clean Fleets Regulation requires fleets that are well suited for electrification to reduce emissions through requirements to both phase-in the use of ZEVs for targeted fleets and requirements that manufacturers exclusively develop ZEV trucks starting in the 2036 model year. This policy has not been adopted in WA and thus is included as a SCAP action that could further reduce King County's GHG emissions if the County or State were to adopt the policy as written.

Modeling Assumptions: Assumes that starting in 2036, 100% of freight/service vehicle purchases are ZEVs. Assumes a ramp up from 2030 to 2036 (beyond Advanced Clean Trucks) in clean freight/service vehicle purchases to reach 100% new sales in 2036.

Risks: California withdrew the waiver request with the U.S. EPA for Advanced Clean Fleets in January 2025, which had originally been submitted in November 2023 (Barczewski, Kynett, & Peterson, 2025). WA cannot adopt Advanced Clean Fleets rule without the authority under a California waiver with the U.S. EPA.

Improved organics collection

Interpretation: The 2025 SCAP commits King County to specific actions to improve organics collection. King County will work to ensure all single-family King County residents subscribe to organics services or actively manage food waste on-site by 2030 and investigate a pathway for multifamily organics service adoption. Some residents will be required to divert organics by 2030 under the statewide Organics Management law, but 21 jurisdictions with populations below 25,000 residents or that dispose of less than 5,000 tons of solid waste annually within King County will be exempt. To increase access to organics services, the County will develop and adopt code recommendations and work with city partners to adopt code changes requiring diversion of food waste for single-family households and to create a strategy for ensuring multi-family households have more opportunities to divert organic material.

King County will implement organics diversion policies with businesses. King County will grow partnerships and programs, lead outreach, and establish a technical assistance program to support businesses and overall waste diversion practices. The County aims to develop and implement policies and enforcement support, including the statewide Organics Management Law, and grow partnerships to reduce the volume of business-generated organic waste currently going to landfill. To ensure equitable implementation, programs will focus on accessibility by ensuring businesses have access to necessary resources and information, with specific programming and technical support for BIPOC or minority owned businesses. Programs will help build capacity by providing training and resources to businesses, particularly those in underserved communities, to help them implement sustainable waste management practices. These programs must prioritize engagement with diverse partners, including businesses from various sectors and communities to ensure inclusive policy development and implementation. The

County will foster relationship building with businesses and community organizations to create a collaborative environment supporting long-term sustainability goals.

Modeling Assumptions: Assumes alignment with King County's commitments toward achieving the statewide targets set by the WA Organics Management Law. This law includes House Bill 1799 (2022) and House Bill 2301 (2024). The Organics Management Law establishes statewide goals of diverting 75% of organic material to landfills by 2030 and recovering 20% of disposed edible food by 2025 (both relative to 2015 levels).

Risks: While the WA Organics Management Law has been successfully passed and requires changes to organics collection, product packaging, and grant program implementation, there is uncertainty regarding the timing and magnitude of resulting statewide and County actions.

Local reductions to landfill and wastewater methane gas

Interpretation: The 2025 SCAP commits King County to limit fugitive methane from landfills and wastewater treatment by improving landfill gas collection at Cedar Hills Regional Landfill by at least 5% per year (25% total) through 2030, compared to 2023. The site will accomplish this commitment through expanded vertical well installations and operational improvements. King County will reduce landfill gas emissions from closed landfills by installing a new biofiltration cover pilot project in 2025 at the closed Duvall landfill. Further efforts to reduce LFG emissions will include future closed landfill environmental investigations to analyze potential productive uses of LFG collected at Hobart, Cedar Falls, and Vashon Island closed landfills.

King County will reduce wastewater fugitive methane at wastewater facilities by installing a flash tank and thermal oxidizer to reduce fugitive GHG (methane) emissions. The flash tank will reduce WTD's fugitive emissions by 14,500 MTCO2e/ year, or approximately 28% compared to 2023. King County will upgrade waste gas burners at South Plant to meet projected 2040 capacity requirements.

Modeling Assumptions: Estimates a 14,500 $MTCO_2e$ reduction in emissions from installation of a flash tank at South Plant wastewater treatment, beginning in 2025. Landfill fugitive methane emissions actions were unable to be modeled due to data limitations in estimation approaches.

Risks: Timeline of flash tank capital project completion.

Emissions Reduction Potential of 2025 SCAP Measures

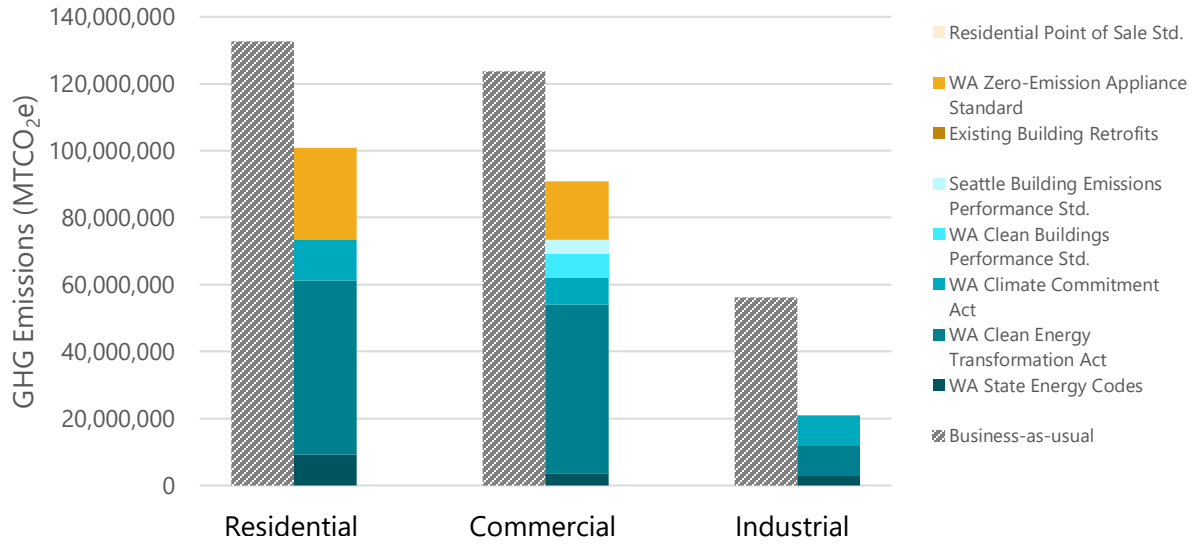
The wedge analysis illustrates how different emissions reduction strategies work together to achieve long-term climate goals. Because many policies and measures overlap, system-wide reductions are best evaluated collectively rather than by summarizing the effects of each measure. However, when assessed independently, a single policy or measure can often appear to achieve greater reductions than it would if implemented in combination with others.

This analysis compares these strategies against a **business-as-usual (BAU)** or **no action future** scenario, which represents projected emissions through 2050 if no additional local, state, or federal actions are implemented beyond existing trends and population growth. The built environment and on-road transportation sections below detail the cumulative emissions reduction potential of key policies and actions and present the maximum estimated reduction potential of each.

Built Environment

The cumulative emissions reductions in the built environment by 2050—resulting from federal, state, and regional policies, as well as proposed SCAP measures—are shown in **Figure** 25. This analysis highlights that the WA Clean Energy Transformation Act provides the largest cumulative emission reduction potential across the residential, commercial, and industrial sectors. The WA Zero-Emission Appliance Standard offers the second-largest reduction potential for the residential and commercial sectors, while the Climate Commitment Act provides the second-largest emissions reductions in the industrial sector.

Figure 25. Cumulative GHG reductions in the built environment sector by 2050, by sector, relative to business-as-usual (BAU) emissions.



The figures below illustrate how existing policies and proposed SCAP measures collectively reduce emissions across residential, commercial, and industrial sectors.

In each figure, the leftmost bar represents cumulative BAU emissions for that sector. Moving from left to right, each subsequent bar represents the estimated emissions reduction potential of applicable existing and proposed policies and programs.

The size of each policy bar corresponds to the maximum cumulative reduction achievable if the policy were implemented independently without overlap from other policies. The figure positions bars to reflect the degree of overlap in emissions reductions if measures were implemented together. The far-right bar ("Remaining emissions") shows the emissions that remain after accounting for all policies combined.

Figure 26. Residential built environment: cumulative business-as-usual (BAU) emissions and emissions reduction potential of existing and proposed 2025 SCAP policy measures by 2030.

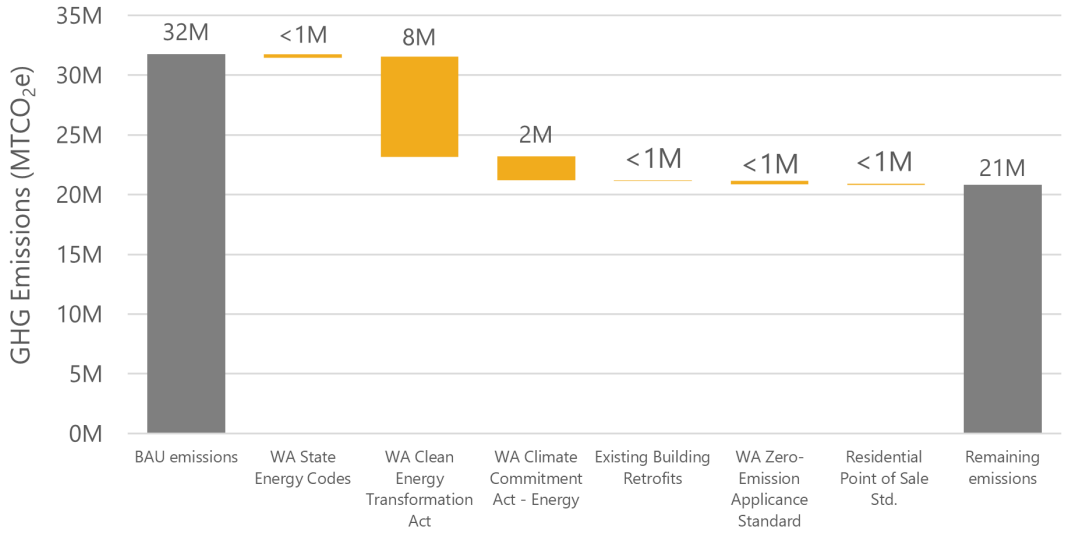


Figure 27. Residential built environment: cumulative business-as-usual (BAU) emissions and emissions reduction potential of existing and proposed 2025 SCAP policy measures by 2050.

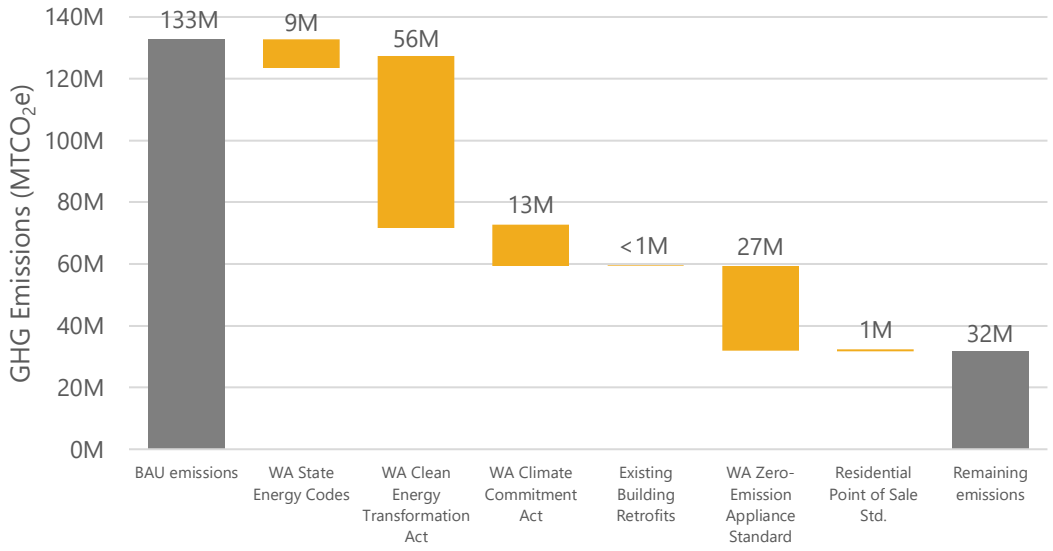


Figure 28. Commercial built environment: cumulative business-as-usual (BAU) emissions and emissions reduction potential of existing and proposed 2025 SCAP policy measures by 2030.

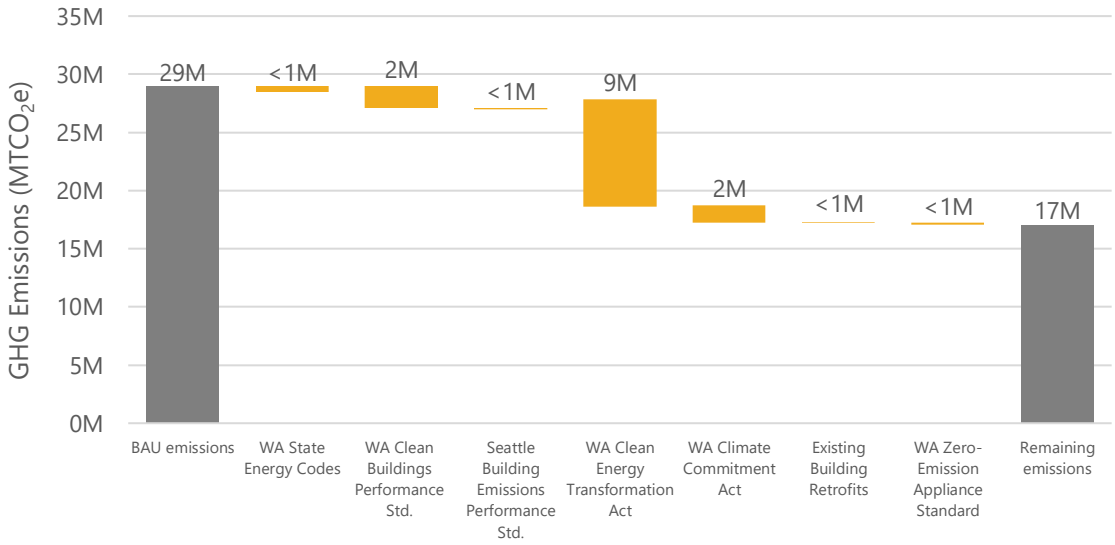


Figure 29. Commercial built environment: cumulative business-as-usual (BAU) emissions and emissions reduction potential of existing and proposed 2025 SCAP policy measures by 2050.

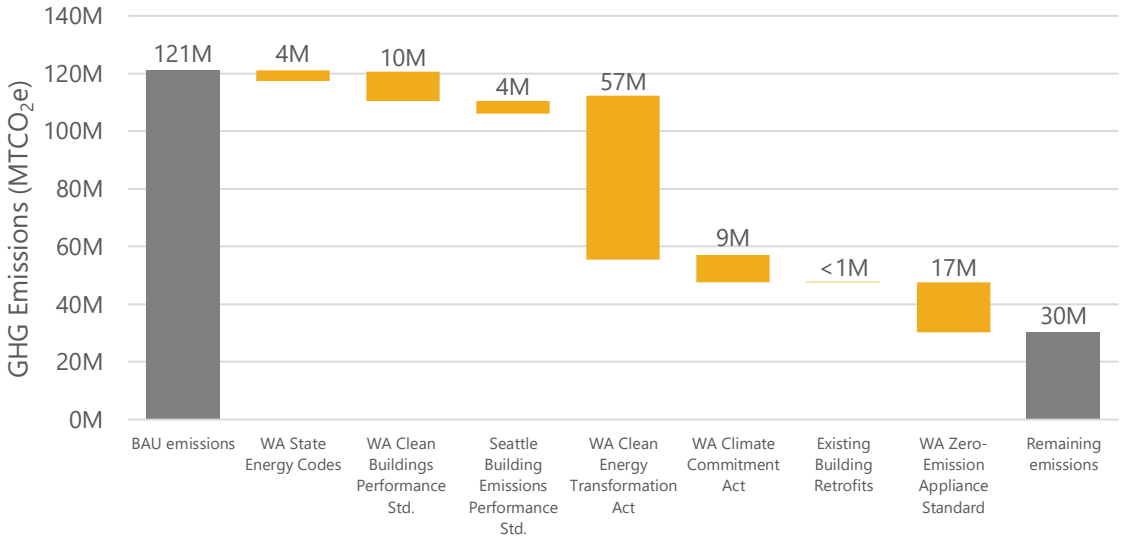


Figure 30. Industrial built environment: cumulative business-as-usual (BAU) emissions and emissions reduction potential of existing and proposed 2025 SCAP policy measures by 2030.

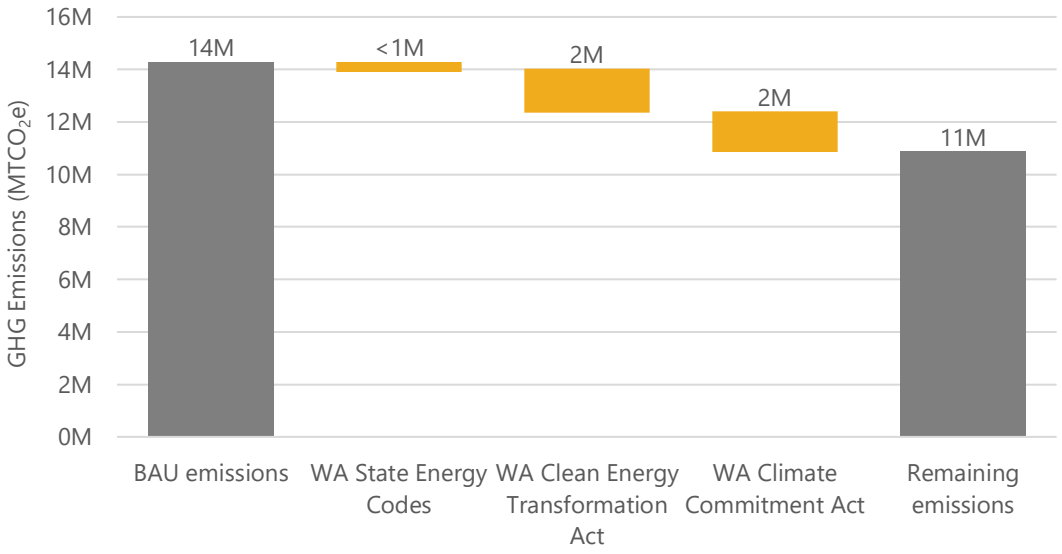
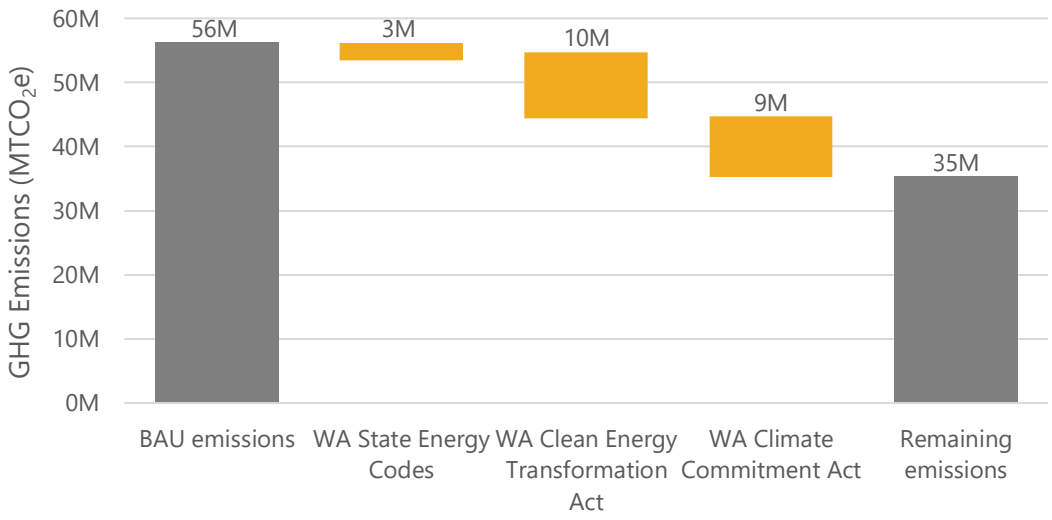


Figure 31. Industrial built environment: cumulative business-as-usual (BAU) emissions and emissions reduction potential of existing and proposed 2025 SCAP policy measures by 2050.



On-Road Transportation

Like the built environment, the transportation sector represents a major opportunity for achieving deep, sustained GHG reductions. Existing federal, state, and regional initiatives—together with King County's proposed SCAP measures—aim to accelerate the transition to low- and zero-emission mobility.

Figure 32 and Figure 33 show the cumulative emissions reduction potential within the on-road transportation sector by 2030 and 2050, respectively. The figures follow the same format as the Built Environment charts above, comparing BAU emissions with reductions from applicable federal, state, and local measures.

By 2030, the Climate Commitment Act provides the largest reductions within the on-road transportation sector. By 2050, additional clean fuel and vehicle standards, including the Federal Vehicle Standards, WA Motor Vehicle Emission Standards, and WA Clean Fuel Standards, are projected to achieve some of the most substantial long-term reductions. Among the proposed SCAP measures, the Road Usage Charge – Expanded Transit Service and Land Use Density action demonstrates the greatest cumulative reduction potential by 2050.

Figure 32. On-road transportation: cumulative business-as-usual (BAU) emissions and emissions reduction potential of existing and proposed 2025 SCAP policy measures by 2030.

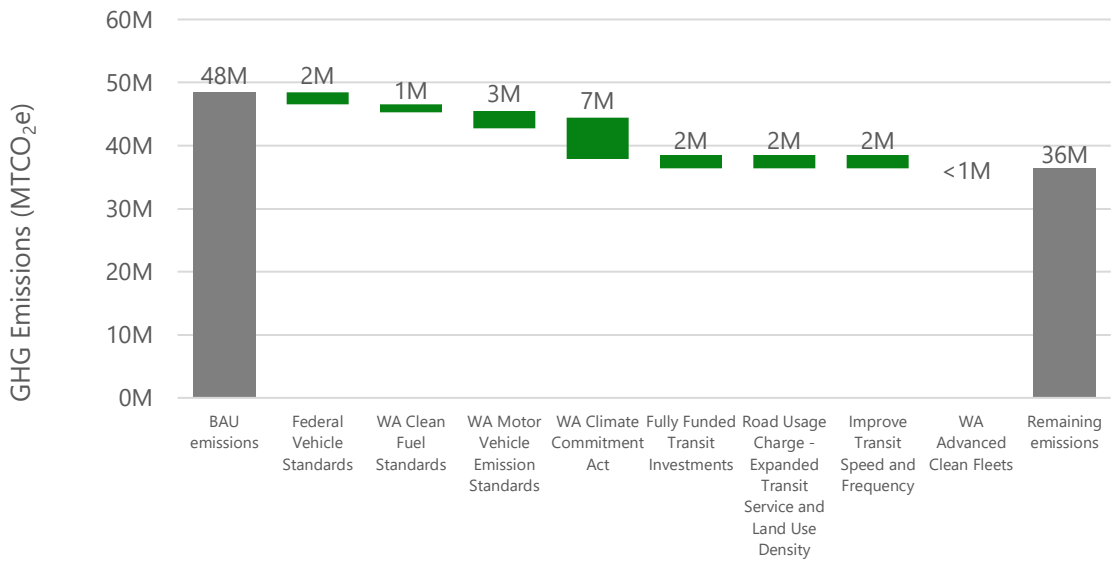
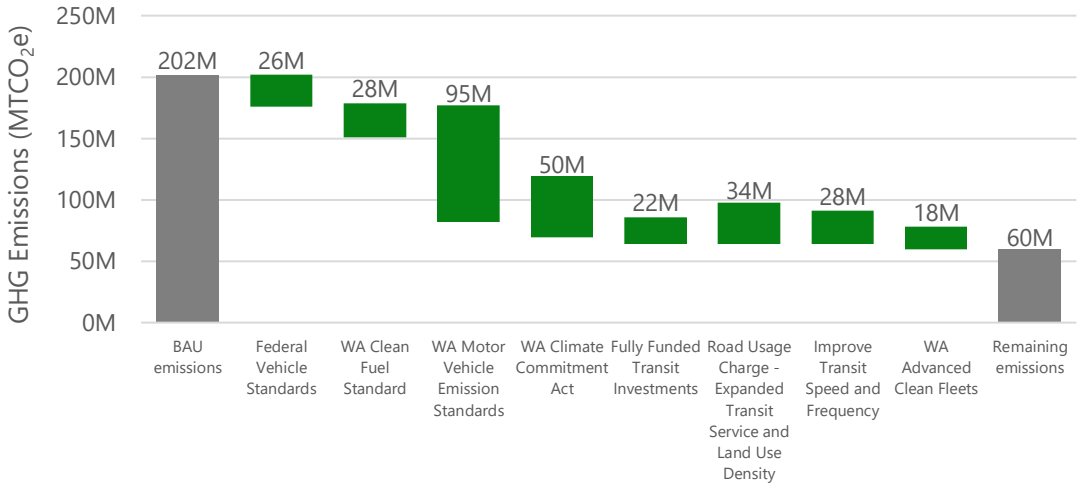


Figure 33. On-road transportation: cumulative business-as-usual (BAU) emissions and emissions reduction potential of existing and proposed 2025 SCAP policy measures by 2050.



Remaining Emissions

By 2030, the largest sources of emissions after applying reductions from existing and proposed SCAP policies and measures will be on-road vehicles (25%), natural gas (24%), and aviation (19%). By 2050, the primary sources shift to aviation (28%), natural gas (20%), tree cover change (18%), and non-road equipment (13%).

Electricity-related emissions are expected to decline substantially due to the Clean Energy Transformation Act, which requires utilities to deliver zero-emission electricity by 2030. As a result, on-road vehicle emissions decline substantially after 2030, driven by widespread vehicle electrification and the corresponding decarbonization of the electricity grid. This explains why on-road sources no longer appear among the largest contributors by 2050.

When combined, federal, state, regional, and proposed SCAP policies are estimated to reduce King County's emissions 33% by 2030, 60% by 2040, and 70% by 2050, relative to 2007 levels.

Figure 34. Projected emissions in 2023, 2030, 2040, and 2050, compared to future reduction targets.

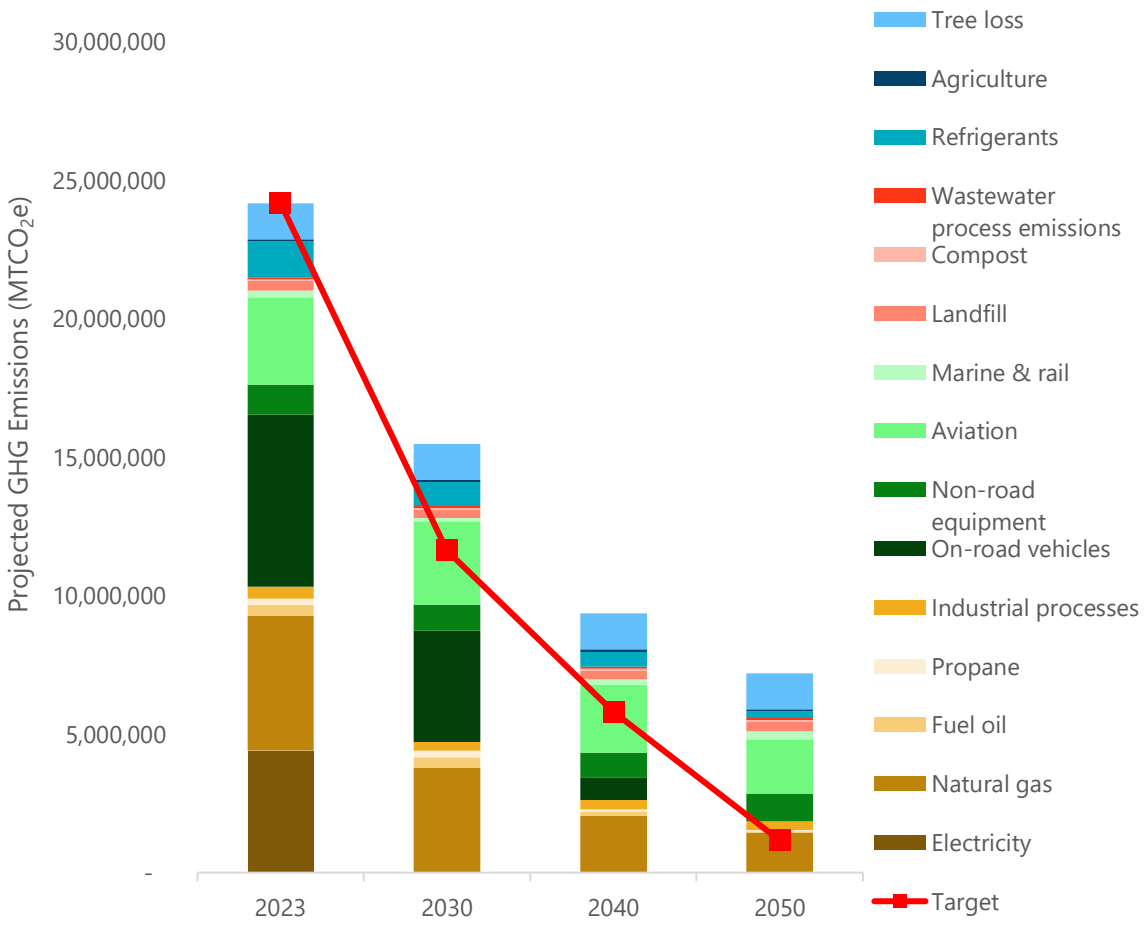
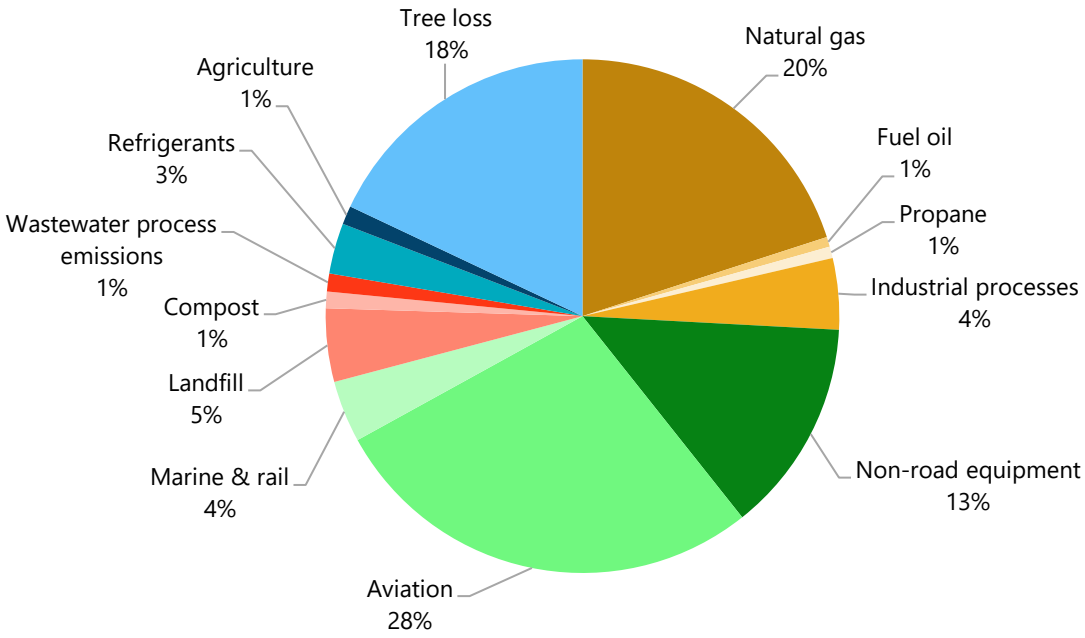


Figure 35. Remaining 2050 emissions under existing and proposed 2025 SCAP policies.

Total = 7.19 million $MTCO_2e$



If governing bodies implement these policies to achieve all feasible emissions reductions, carbon removals could be considered to achieve long-term net carbon neutrality goals. County lands currently sequester an estimated 5.22 million $MTCO_2e$ per year. However, as shown in Figure 35, this level of sequestration does not fully offset the 7.19 million $MTCO_2e$ in projected remaining emissions.

Achieving net carbon neutrality goals will require further reductions and the addition of high-quality supplemental carbon removals beyond those occurring on lands within the county boundary.

Appendix A. Inventory Methodology

Approach and Data Sources

Conducting the inventory involved identifying and applying activity data and emission factors, summarized in Table 5 and detailed in the following sections:

- **Activity data** quantifies levels of activity that generate GHG emissions, such as miles traveled and kWh of electricity consumed.
- **Emission factors** translate activity levels into emissions (for example, $MTCO_2e$ per kWh).

Table 5. Key data sources for 2022 and 2023 geographic inventories.

Sector	Percent of total 2023 emissions	Data Sensitivity	Activity	Emission factors
Transportation	**44%**			
On-road vehicles	26%	Values are based on local data, with some exceptions	Modeled vehicle miles traveled by passenger and service/freight vehicles (PSRC, 2023)	Modeled emissions from VMT, vehicle makeup, and speed assumptions in the MOVES model (PSRC, 2023)
Aviation	13%	Values are based on scaled regional/state data	SEA, KCIA, and small local airport fuel data	U.S. EPA emission factors for jet fuel and aviation gas (U.S. EPA, 2024)
Non-road vehicles and equipment	5%	Values are based on scaled regional/state data	Emissions from non-road vehicles (U.S. EPA, 2025)	
Freight and passenger rail	<1%	Values are based on local data, with some exceptions	Emissions from Puget Sound Maritime Air Emissions Inventory (PSEI), attributed by tons of cargo (Starcrest Consulting, 2024)	

Sector	Percent of total 2023 emissions	Data Sensitivity	Activity	Emission factors
Marine vessels	<1%	Values are based on local data, with some exceptions	Emissions from Puget Sound Maritime Air Emissions Inventory (PSEI), attributed by vessel calls (Starcrest Consulting, 2024) Ferry fuel consumption estimates by route	Ferry emission factors from Ports Emissions Inventory Guidance: Methodologies for Estimating Port-related and Goods Movement Mobile Source Emissions (USEPA, 2020) U.S. EPA emission factors for ferry fuels (U.S. EPA, 2024)
Building Energy	**43%**			
Electricity	18%	Values based on local data	Electricity consumption (PSE, SCL, Tanner Co-op, Milton Electric)	Utility-specific emission factors calculated using WA Ecology methodology (Washington State Department of Ecology, 2025)
Natural gas	20%	Values based on local data	Natural gas consumption (PSE)	U.S. EPA default emission factor (U.S. EPA, 2024)
Fuel oil	2%	Values are based on scaled regional/state data	Washington state fuel consumption (U.S. EIA, 2021)	U.S. EPA emission factors for distillate fuel oil no.1 (U.S. EPA, 2024)
Propane	<1%	Values are based on scaled regional/state data	Washington state fuel consumption (U.S. EIA, 2021)	U.S. EPA emission factors for propane (U.S. EPA, 2024)
Industrial processes	2%	Values are based on local data, with some exceptions	Facility emissions collected by the U.S. EPA FLIGHT tool (U.S. EPA FLIGHT, 2024)	
Solid Waste and Wastewater	**2%**			
Solid waste generation and disposal	2%	Values are based on local data, with some exceptions	Annual tons disposed and composted, as reported by King County staff and waste characterization studies	U.S. EPA WARM v15 model
Wastewater process emissions	<1%	Values are based on local data, with some exceptions	Wastewater treatment emissions provided by King County Wastewater Treatment Division	

Sector	Percent of total 2023 emissions	Data Sensitivity	Activity	Emission factors
Refrigerants	**5%**			
Substitution of ozone-depleting substances (ODS)	5%	Values are based on scaled national data	Nationally reported fugitive gas emissions, scaled by population (U.S. EPA, 2024)	
Land Use	**6%**			
Agriculture	<1%	Values are based on local data, with some exceptions	Acres of cropland and number of livestock (USDA, 2024)	Emissions per animal or per acre (USDA, 2024) (U.S. EPA, 2024) (ICLEI, 2013)
Forest and Trees	5%	Values based on local data	Acres of tree cover loss (ICLEI , 2025)	Emissions due to tree cover loss (ICLEI , 2025)
Sequestration	**N/A**			
Solid waste disposal	N/A	Values are based on local data, with some exceptions	Landfill carbon sequestration	U.S. EPA WARM v15 model
Forest and tree sequestration	N/A	Values based on local data	$MTCO_2e$ sequestered by forest (ICLEI , 2025)	

Built Environment

Electricity and Natural Gas

Emissions from electricity and natural gas were determined by the **kWh and therms consumed** within King County for the inventory years multiplied by the **utility- and year-specific emission factors**.

Electricity emissions for this inventory were estimated using WA Ecology's methodology for calculating carbon intensities (Washington State Department of Ecology, 2025). This methodology uses a utility's Fuel Mix Disclosure, which is reported annually to the WA Department of Commerce (Washington State Department of Commerce, 2025). Natural gas emissions were estimated using U.S. EPA default emission factors (U.S. EPA, 2025).

Emissions were calculated for each inventory year using WA Ecology's emission factors and Puget Sound Energy's natural gas emission factors, total electricity generated and purchased, and total natural gas purchased.

Energy consumption data was procured directly from PSE, SCL, and Tanner Electric Co-op for 2022 and 2023 for residential, commercial, and industrial sectors, including transport customers within those sectors. Energy consumption data was not provided by the City of Milton, so consumption was procured from the utility's fuel mix disclosure reports for inventory years and assumed to have a 50:50 split between the residential and commercial sectors (Washington State Department of Commerce, 2025).

Emissions from electricity and natural gas transmission and distribution were accounted for in these inventories via the WA Ecology emission factor methodology, which assumes a 6.5% transmission and distribution loss. Emissions from natural gas leakage were calculated using the equation provided by ClearPath, ICLEI's GHG inventory software platform (ICLEI, 2025).

Other Sources

Fuel Oil and Propane

Residential heating fuel and propane emissions were calculated using U.S. EIA residential propane and heating oil consumption data for WA. King County's portion of total fuel consumption was determined using ACS home heating fuel data.

Commercial fuel oil and propane emissions were calculated using U.S. EIA commercial fuel oil and propane consumption data for WA downscaled by the number of commercial employees in King County. Employment data was collected from the WA Employment Security Department, which provides the data on the number of employees across industries.

Propane and fuel oil emissions were both calculated using U.S. EPA emission factors (U.S. EPA, 2025).

Industrial Processes

Industrial process emissions were collected from the U.S. EPA Facility Level Information on Greenhouse gases Tool (FLIGHT), which collects GHG emissions reported by large facilities in King County (>25,000 $MTCO_2e$/year). To avoid double counting with other inventory sectors such as solid waste and buildings, U.S. EPA FLIGHT data from landfill facilities and facility energy consumption were removed.

Transportation

On-Road Transportation

On-road passenger vehicle and freight emissions were calculated by the PSRC. PSRC applied its activity-based travel model data to the U.S. EPA's Motor Vehicle Emission Simulator (MOVES) model to arrive at emissions estimations by vehicle type.

PSRC's activity-based travel model produces VMT, facility type, and speed estimates for time periods within a typical workday in King County. The model provides VMT outputs by vehicle type for passenger vehicles, medium trucks, and heavy trucks. At the time of the 2023 inventory, PSRC had developed and calibrated this model for the analysis year of 2023.

MOVES estimates from cars, trucks, and non-highway mobile sources under user-defined vehicle types, time periods, geographic areas, vehicle operating characteristics, and road types. The model simulates emissions for various vehicle operating processes, such as running, starts, or hoteling. PSRC's use of the model used California LEV II standards, which the State of Washington adopted beginning with 2009 model year vehicles. PSRC also used county-specific input files provided by WA Ecology that reflect the climate, vehicle mix, and inspection and maintenance requirements specific to King County.

When previous inventory years were completed, PSRC model's base year was 2018, so PSRC linearly interpolated results from modeled years to estimate emissions for past inventories. Both activity data (in VMT) and running, start, and hoteling emissions were scaled linearly in this way. Since completion of previous inventories, PSRC has provided updated VMT and emission values for 2020 and 2022 that were adjusted based on observed trends in on-road travel. These updated values are incorporated in this updated inventory report to more accurately account for observed VMT changes from COVID-19.

PSRC's 2018 base model does not include EVs in their vehicle mix breakdown. EVs were incorporated into King County's 2022 and 2023 inventory using vehicle registration data for King County, in combination with the vehicle mix breakdown that is used for other inventory years, assuming that a proportion of the gasoline light-duty vehicles that have historically been in King County have been transitioned to EVs. This adjustment was applied solely within the wedge analysis to estimate future emissions reductions and does not alter the base inventory totals.

Transit emissions were calculated by multiplying fuel use for King County Metro and Sound Transit by standard fuel-specific emission factors from the U.S. EPA.

Aviation

Aviation emissions were based on annual jet fuel and aviation gasoline usage at SEA and KCIA, as well as smaller regional airports including Auburn Municipal Airport, Bandera Creek Airport, Skykomish State Airport, and Will Rogers Wiley Post Memorial SPB/Renton Municipal Airport.

In 2023, SEA reported using 664,998,063 gallons of jet fuel, and KCIA reported using 22,882,988 gallons of jet fuel and 155,336 gallons of aviation gas. Overall, SEA made up 97% of total fuel sales and associated emissions between these two airports.

Fuel data was limited for these inventories; several smaller airports in the region did not provide estimates of fuel usage, despite multiple requests from the project team. For airports which did not

provide fuel estimates, an average estimate of fuel consumption per landing-takeoff cycle (LTO) was applied to estimate LTO cycles at each of these airports.

For the passenger-based analysis, SEA fuel data was weighted by the percentage of travelers reported to be going to or returning from destinations in King County, based upon SEA airport passenger survey data. The survey data, which the Port of Seattle has collected annually since 2000, indicated that about 70% of 2023 SEA passengers were "origin passengers," meaning SEA was their final departure or arrival airport. Of these passengers, in 2019 (which the Port indicated is representative of pre-pandemic travel patterns), 64% were King County residents or visitors. All remaining SEA fuel from origin passengers was distributed to the other Puget Sound counties that SEA serves, based on the percentage of passengers that are residents or visitors of those counties. All KCIA fuel consumption was attributed to King County. Table 6 below details how SEA fuel was distributed using this passenger-based approach.

Based on the passenger-based approach, 45% of all emissions associated with aviation fuel sold at SEA, KCIA's fuel use, and fuel use at small regional airports were attributed to King County residents or visitors, for a total of approximately 2.3 million $MTCO_2e$.

Total emissions from the passenger-based approach were included in the King County geographic inventory. This approach included emissions attributable to King County residents, employees, and visitors. Similarly, a portion of the fuel and emissions (25%) were also ascribed to the residents, employees, and visitors of surrounding counties in WA. This approach excluded the 30% of fuel use and associated emissions from connecting passengers, or those who take a connecting flight and do not leave the airport.

While most SEA passengers were going to or from destinations in King County, a sizable number had destinations elsewhere in the region. As such, a comprehensive accounting of aviation fuel including "all fuels" sold at these airports, not just attributable to King County residents or visitors, results in an estimate of 6.7 million $MTCO_2e$.

Table 6. SEA fuel distribution using the passenger-based approach.

Entity	Percent of total SEA fuel	Total fuel (gallons)
King County residents	~45%	297,020,345
Kitsap, Pierce, and Snohomish residents	~15%	100,246,652
Other counties	~10%	66,236,653
Connecting passengers	~30%	201,494,413
Total	**100%**	**664,998,063**

Methodology Discussion: Consumption-Based Aviation Emissions

While the geographic based approaches quantify emissions related to aviation sector fuel usage, the consumption-based data focuses on air travel by King County residents for personal trips. These air travel emissions could occur anywhere in the world, for flights from any airport. The estimate is based on dollars spent on flying by King County residents. The consumption inventory also includes air travel emissions associated with goods and services purchased by King County residents, both related to work/business travel and cargo/freight aviation, though these emissions are attributed to purchased goods and services. While the consumption-based inventory approach focuses on air travel by residents, aviation emissions from both business travel and cargo are also included in the inventory as part of the embodied emissions of purchased goods and services. Aviation emissions for cargo (transport of goods)

can be specifically broken out in the model. For nearly all categories of goods, air transport emissions account for less than 2% of the emissions associated with that category. For the average King County household, about 4.5% of total consumption-based emissions are from air transport of goods. Countywide, this is 1,500,000 $MTCO_2e$, out of the county's total inventory of 33.4 million $MTCO_2e$.

Methodology Discussion: Emissions Factors

The emission factors used for the geographic and consumption approaches differ. Under the geographic inventory approach, only direct, tailpipe emissions are included (emissions factor of 0.00978291 $MTCO_2e$/gallon of aviation fuel and 0.00833883 $MTCO_2e$/gallon of jet fuel). Using this tailpipe (also known as combustion-based) coefficient is consistent with all other fuel sources included in the geographic inventory.

In contrast to the geographic based inventory, the consumption-based inventory also includes upstream emissions and forcing effects from contrails and high-altitude pollution. In the CBEI, these lifecycle emission factors (including for air travel) are developed based on EPA data on economic and environmental flows, as characterized in the U.S. Environmentally-Extended Input-Output (USEEIO) model (U.S. EPA).

An additional approach to estimate air travel emissions combining elements of the geographic inventory approach and consumption approach would be to add lifecycle emissions associated with high-altitude radiative forcing effects and life-cycle well-to-wheel emissions to the geographic based estimates. This approach would multiply the estimates in the geographic inventory by the lifecycle emissions multiplier. A range of multipliers from 1.9 to 3.4 are displayed below. Total emissions estimated using this approach would range up to nearly 23 million $MTCO_2e$ for 2023 for the "all fuels" approach using the lifecycle emissions coefficient. See additional details in table below.

GHG protocols for local governments recommend use of tailpipe GHG emissions coefficients, which may offer incomplete inventory estimates for certain sources such as aviation emissions. Certain sources such as aviation sector and fossil fuel natural gas GHG emissions have higher lifecycle emissions than those estimated in the geographic based inventory. For example, there is strong evidence that fossil fuel natural gas GHG emissions are significantly higher than tailpipe coefficient-based estimates due to methane leakage during mining, transport, and combustion.

Future GHG inventories by King County should continue to build on the best available science and improving inventory accounting protocols to quantify all sources of emissions as completely and transparently as possible—especially for complex sources such as aviation sector emissions—through estimates such as those provided in this report. Presenting aviation sector emissions in multiple, complementary approaches is meant to provide a more comprehensive picture of the emissions associated with this sector and support action to reduce these emissions.

King County Aviation Sector Tailpipe and Lifecycle GHG Emissions Totals and Comparisons (2023 calendar year)

Approach	2023 Totals Using Tailpipe GHG Emission Coefficient ($MTCO_2e$)	2023 Totals Using Lifecycle GHG Emission Coefficient ($MTCO_2e$)
Landing and takeoff only	674,000	1,280,000 – 2,291,000
Passenger-based	3,138,000	5,962,000 – 10,668,000
All fuels	6,738,000	12,801,000 – 22,908,000
Consumption-based	Not applicable	2,850,000 – 5,100,000

Other Sources

Maritime and Rail

To estimate emissions from **ocean-going vessels and freight rail**, the 2021 Puget Sound Maritime Air Emissions Inventory emissions estimations were scaled by 2023 cargo tonnage and vessel calls (Starcrest Consulting, 2024). King County's portion of ocean-going vessel maneuvering and hoteling emissions were from vessels visiting the ports within the county. Ocean-going vessel transit emissions were from vessels transiting through to either visit the ports within King County or elsewhere. King County rail emissions were from on-terminal switching and line haul and near-port line haul operations within the county. Regional freight emissions transiting through King County were scaled using rail throughput tonnage published in the WA State Rail Plan (WSDOT, 2020).

Data from WA State Ferries route statements and annual reports on fuel cost by route and total fuel consumption were used to estimate **ferry** emissions.

Non-Road Vehicles and Equipment

Emissions from **non-road vehicles and equipment** were calculated using U.S. EPA MOVES4, a model that estimates emissions from mobile sources (U.S. EPA, 2025). The non-road sectors from the MOVES4 model included in this inventory are recreational, construction, industrial, lawn/garden, agriculture, commercial, logging, airport support, oil field, pleasure craft, and railroad. The model produces CH_4 and CO_2 emissions per sector for gasoline, LPG, CNG, and diesel.

Solid Waste and Wastewater

Solid Waste

Emissions from **generation and disposal of solid waste** were estimated by multiplying the tons generated by material type-specific emission factors derived from the U.S. EPA WARM v15 model (U.S. EPA, 2020). Waste and compost composition data was obtained from the 2020 WA Statewide Waste Characterization Study, or data obtained directly from the County, where available (Washington State Department of Ecology, 2020). Seattle waste emissions were calculated separately from King County to account for different landfill management scenarios. We translated these waste composition data into the U.S. EPA WARM categories and applied landfill gas capture estimations to estimate methane emissions. This analysis assumed the most aggressive landfill gas capture scenario available in the WARM model for King County landfills and average landfill gas capture for Seattle generated waste.

Wastewater

King County's emissions from **wastewater** come from treatment processes and combustion of waste gas, which produces both methane and nitrous oxide. King County's Wastewater Treatment Division provided emissions data which were calculated for the estimated 85,000 septic systems around the county (King County, 2025).

Refrigerants

To estimate emissions from the **substitution of ozone-depleting substances**, national emissions reported by the U.S. EPA were scaled by population for King County (U.S. EPA, 2024).

Land Use

Agriculture

Agricultural emissions were calculated following the methodology from the U.S. Community Protocol, developed by ICLEI. Agricultural emissions stem **from livestock enteric fermentation, manure management, and soils**.

For these calculations, the U.S. EPA Inventory Annexes provided values for the following; livestock enteric fermentation emission factors, distribution of waste management systems, typical animal mass, daily and annual volatile solid production rates, maximum CH_4 producing capacity per pound of manure, methane conversion factors based on manure management system, daily excreted nitrogen rates, nitrous oxide emission factors, nitrogen lost through volatilization, and nitrogen lost through runoff and leaching. The U.S. Community Protocol Appendix G provided values for volatilization and runoff/leaching emission factors. Data on the number of animals in King County was sourced from the USDA 2022 Census of Agriculture. The U.S. EPA Inventory and Inventory Annexes provided nationwide values for direct and indirect N_2O emissions from soils, and the 2022 Census of Agriculture provided total U.S. cropland acreage. This national data was used to create an emission factor for soil, which applied to the acres of cropland in King County.

The USDA publishes the Census of Agriculture every five years, so the animal number values did not directly align with inventory years. For this inventory, the 2007 census numbers were used for the 2008 inventory, the 2012 numbers were used for the 2015 inventory, the 2017 numbers were used for 2017, 2019, and 2020, and the 2022 numbers were used for the 2022 and 2023 inventories.

Forest and Trees

Emissions from tree cover change were estimated using ICLEI's Land Emissions and Removals Navigator (LEARN) tool (ICLEI , 2025). Tree cover loss does not necessarily indicate deforestation, as it can result from harvesting, fire, disease, or storm damage. The LEARN tool uses the National Land Cover Database (NLCD), produced by the USGS as the land cover database for this analysis. The NLCD database relies on 30-meter raster geospatial data from multispectral Landsat imagery and other available ground and ancillary information (World Resources Institute, 2025). The LEARN tool requires a minimum of a 3-year analysis timeframe, which was divided by three to determine an average annual value. At the time of this analysis, the tool was available through 2019; therefore, analysis only considered a 2016-2019 timeframe. The NLCD categorizes land into areas of forest remaining forest, forest transitioned to non-forest, non-forest transitioned to forest, and non-forest remaining non-forest (World Resources Institute, 2025). Forests are defined as all land falling under NLCD classes of evergreen forest, deciduous forest, woody wetlands, and mixed forest. Forest disturbances, such as harvest, insect/disease, or wildfire were analyzed within the forest remaining forest land use category. Forest disturbance from forest fire is mapped using data from the Monitoring Trends in Burn Severity (MTBS) project, a multiagency U.S. government program designed to map the burn severity and perimeters of fires greater than 1,000 acres in the West. Forest disturbed by insects and disease are mapped using data from the aerial detection

surveys conducted annually by the U.S. Forest Service and states. These surveys use a variety of light fixed- and rotor-wing aircraft combined with ground surveys to identify areas affected by insects and disease (World Resources Institute, 2025).

Pixels of the land cover transition map classified as forest remaining forest are classified as disturbed if they overlap with either the wildfire or insect/disease disturbance maps. Emission factors are assigned based on the unique combinations of disturbance type, region, and forest type. Pixels of land cover that switch from forest to non-forest are assigned an emission factor based on the average carbon stock assumed prior to conversion and the proportion of carbon assumed to be lost upon conversion based on specific land cover categories, region, and forest type. The NLCD database and therefore the LEARN tool often categorize forest disturbances from wildfire or forest harvest as forest to non-forest transitions. Research is underway to improve this aspect of the land use change calculations. Trees outside forests are analyzed within the non-forest remaining non-forest category. Default factors used to calculate emissions for the "Trees Outside Forests" category are based on data for Seattle, WA (the tool allows for customization to major metropolitan areas; the only available WA option is for Seattle). The LEARN tool applies removal and emission factors that were developed for 11 geographic regions of the conterminous United States that broadly represent distinct climatic zones and land management history (World Resources Institute, 2025)

The LEARN tool enables communities and land managers to estimate and analyze GHG fluxes from forests and trees and to assess how these fluxes change over time. These estimates help identify the contribution of forests and trees to a community's overall GHG inventory and support the development of policies to reduce net emissions. The tool uses limited data with a 30-meter or coarser resolution, as a result the tool may be less reliable for areas smaller than one hectare or for parcel-level analyses. Uncertainty also exists in estimating emissions from forest disturbances, particularly harvest events. In the absence of national data on harvests, there can be errors in classification of disturbance versus harvests. Communities are encouraged to verify based on local data disturbance to inform local policy decisions (World Resources Institute, 2025).

Carbon Sequestration

Solid Waste

U.S. EPA WARM v15 model defines carbon sequestration as removal of carbon (usually in the form of carbon dioxide) from the atmosphere, by plants (through forest carbon sequestration) or by technological means (landfill carbon sequestration).

Forest and Tree Sequestration

Carbon sequestration by tree cover was estimated by using ICLEI's Land Emissions and Removals Navigator (LEARN) tool. The online tool estimates metric tons of CO_2e sequestered at the county level. Sequestration estimates are based on **forest type, ecozone, forest age, and number of years of sequestration**. See above discussion of LEARN tool methodology under *Forest and Trees*.

Approach and Data Limitations

Notable limitations of our approach and data sources are summarized below:

- **Land use change emissions and sequestration:** The most recent year of data available within the LEARN tool at the time of this analysis was 2019, so the tree cover analysis was performed using 2016-2019 to satisfy the tool's three-year analysis time period requirement. The National Land Cover Database (NLCD) used for the LEARN tool's analysis is updated approximately every two to three years. Analysis includes all land use changes within county geographic boundary, regardless of ownership. In some cases, a large proportion of lands within county boundary could be federal- or state- owned or managed lands.
- **Agriculture:** The Census of Agriculture is published by the USDA every five years, so numbers of animals and acres of cropland are the same for the 2017, 2019, and 2020 inventories, and for the 2022 and 2023 inventories (USDA, 2024).
- **2023 estimates:** In some cases, 2023 data were not yet available. For example, the 2023 residential and commercial propane and fuel oil data were not available at the time of this inventory.
- **Aviation:** Aviation emissions are attributed based on passenger data from SEA. SEA fuel consumption associated with non-connecting passengers is distributed among several counties according to quantitative survey data provided by the Port of Seattle, indicating what percentage of non-connecting passengers are associated with each county in the Puget Sound region.
- **Refrigerants:** Emissions from refrigerants are based on national data, so they do not consider local factors (for example, milder summers that result in less air conditioning).

Furthermore, not all inventory values are based on locally derived data. Table 9 summarizes some of the limitations and sensitivities of data used in the inventory.

Methodology Updates

Several methodological differences between the current inventory and previous inventories led to changes in GHG emissions reported (see Table 6; differences are bolded). The values reflected in this inventory report for current and previous inventory years (2008, 2015, 2017, 2019, and 2020) have been calculated using the current methodology. This methodology is also compared to the methodology used to develop a countywide community GHG inventory for King County, which was completed through an effort with the WA Department of Commerce and intended to support the 11 counties that are required to develop an inventory in compliance with House Bill 1181.

Table 6. Brief methodological outline of previous inventories and the 2022/2023 inventories.

Sector	Methodology for Department of Commerce Inventory (2022)	Methodology for Previous Inventories (2008, 2015, 2017, 2019, and 2020)	Methodology for 2022/2023 Inventory Update
Built Environment			
Electricity	kWh consumed and utility-specific emission factors calculated using WA Ecology methodology with Fuel Mix Disclosure reports; Puget Sound Energy provided kWh consumed by **geographic region** for King County	kWh consumed and utility-specific emission factors calculated or pulled from utility emissions reports	kWh consumed and utility-specific emission factors calculated using WA Ecology methodology with Fuel Mix Disclosure reports; Puget Sound Energy provided kWh consumed by **tax jurisdiction** to account for cities that overlap two counties
Natural Gas	Therms consumed and U.S. EPA natural gas emission factor		
Steam	Steam emissions assumed to be already accounted for by commercial and industrial natural gas consumption and industrial processes		
Fuel oil	U.S. EIA consumption data downscaled using ACS house heating data and commercial employee counts in King County	U.S. EIA sales data downscaled using ACS house heating data	U.S. EIA consumption data downscaled using ACS house heating data and commercial employee counts in King County
Propane	U.S. EIA consumption data downscaled using ACS house heating data and commercial employee counts in King County	U.S. EIA sales data downscaled using ACS house heating data	U.S. EIA consumption data downscaled using ACS house heating data and commercial employee counts in King County
Industrial processes	All facility emissions collected by the U.S. EPA FLIGHT tool	All facility emissions collected by the U.S. EPA FLIGHT tool	All facility emissions collected by the U.S. EPA FLIGHT tool

Sector	Methodology for Department of Commerce Inventory (2022)	Methodology for Previous Inventories (2008, 2015, 2017, 2019, and 2020)	Methodology for 2022/2023 Inventory Update
Transportation			
On-road vehicles	PSRC activity-based travel model applied to MOVES model	PSRC activity-based travel model applied to MOVES model	PSRC activity-based travel model applied to MOVES model
Aviation	SEA jet fuel usage downscaled to jurisdiction through passenger survey data; KCIA jet fuel and aviation gas usage; addition of small regional airports	SEA jet fuel usage downscaled to jurisdiction through passenger survey data; KCIA jet fuel and aviation gas usage	SEA jet fuel usage downscaled to jurisdiction through passenger survey data; KCIA jet fuel and aviation gas usage; addition of small regional airports
Non-road vehicles and equipment	MOVES4 model	MOVES3 model	MOVES4 model
Freight and passenger rail	Uses emissions reported by the **National Emissions Inventory** at the county-level	PSEI inventory, scaled to years/jurisdictions by tonnage	**PSEI inventory**, scaled to years/jurisdictions by tonnage
Marine vessels	Uses emissions reported by the **National Emissions Inventory** at the county-level	PSEI inventory, scaled to years/jurisdictions by tonnage and vessel calls; ferry fuel consumed, by route	**PSEI inventory**, scaled to years/jurisdictions by tonnage and vessel calls; ferry fuel consumed, by route
Solid Waste and Wastewater			
Solid waste generation and disposal	Applied standard emission factors from U.S. EPA WARM v15 to tonnage estimates		
Wastewater process emissions	Used emission estimates provided by King County Wastewater Treatment Division and estimated emissions from septic systems.	Included biogas emissions and BOD_5 emission estimated from King County Wastewater Treatment Division treatment data, and septic systems	Used emission estimates provided by King County Wastewater Treatment Division and estimated emissions from septic systems.
Refrigerants			
Substitution of ozone-depleting substances (ODS)	National U.S. EPA value scaled to region by population		
Switchgear insulation (SF_6)	Assumed to be included in WA Ecology's emission factor methodology	SF_6 emissions from PSE and SCL	Assumed to be included in WA Ecology's emission factor methodology

Sector	Methodology for Department of Commerce Inventory (2022)	Methodology for Previous Inventories (2008, 2015, 2017, 2019, and 2020)	Methodology for 2022/2023 Inventory Update
Land Use			
Agriculture	Enteric fermentation, manure management, and soil management from U.S. Community Protocol		
Forest and trees	ICLEI Land Use Emissions and Removals Navigator Tool		
Sequestration			
Solid waste disposal	Apply tons to WARM v15 emission factors		
Forest and tree sequestration	ICLEI Land Use Emissions and Removals Navigator Tool		

Appendix B. Detailed Inventory Values and Supplemental Visual

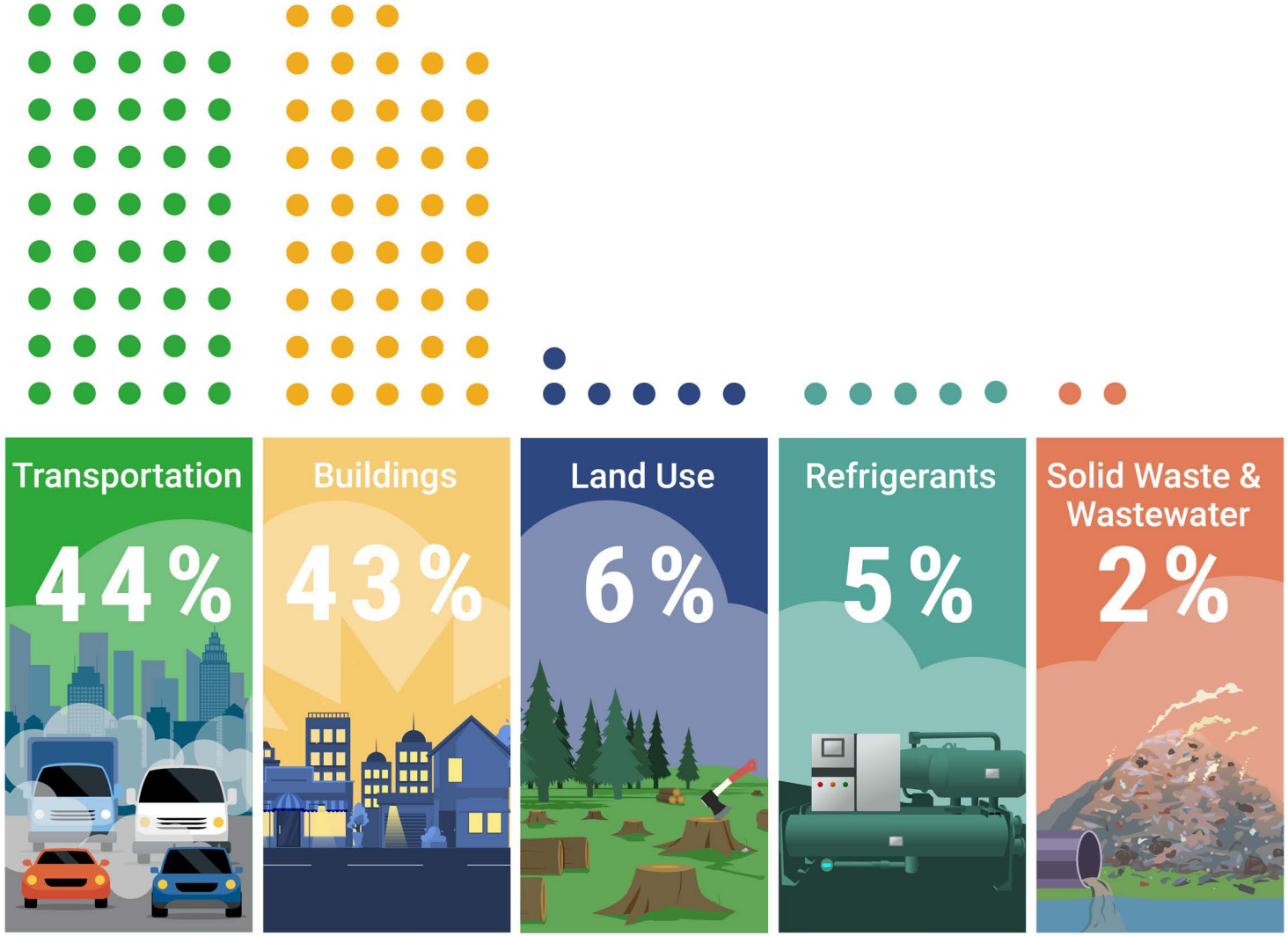
Table 7. Communitywide geographic GHG emissions, by sector and year.

GHG Emissions by Sector ($MTCO_2e$)	Baseline Year 2007	2008	2015	2017	2019	2020	2022	2023	Contribution to 2023 inventory (%)	Percent change (2007-2023)	Percent change (2019-2023)
Built Environment	10,661,480	10,836,377	11,002,377	11,879,027	11,786,839	9,847,115	10,071,795	10,319,763	43%	-3%	-12%
Electricity	5,722,060	5,815,928	6,325,545	6,612,968	6,663,674	5,071,040	4,789,980	4,411,473	18%	-23%	-34%
Residential	2,430,817	2,470,693	2,646,830	2,838,633	2,750,898	2,351,940	2,238,932	1,988,010	8%	-18%	-28%
Commercial	2,694,977	2,739,187	3,045,286	3,141,193	3,325,891	2,290,172	2,170,184	2,050,590	8%	-24%	-38%
Industrial	596,266	606,048	633,429	633,142	586,884	428,928	380,864	372,873	2%	-37%	-36%
Natural gas	3,903,449	3,967,484	3,586,371	4,237,077	4,073,278	3,670,726	4,284,475	4,861,291	20%	25%	19%
Residential	1,998,338	2,031,120	1,743,931	2,090,735	1,949,304	1,893,810	2,206,637	2,157,291	9%	8%	11%
Commercial	1,285,898	1,306,992	1,276,535	1,428,816	1,428,435	1,243,210	1,499,172	1,551,899	6%	21%	9%
Industrial	619,214	629,372	565,905	717,526	695,539	533,706	578,666	1,152,100	5%	86%	66%
Other sources	1,035,971	1,052,965	1,090,461	1,028,982	1,049,888	1,105,349	997,339	1,046,998	4%	1%	<1%
Fuel oil	470,648	478,369	377,436	327,052	289,613	426,503	396,287	404,121	2%	-14%	40%
Propane	154,431	156,964	127,288	206,437	242,742	244,531	230,964	221,908	1%	44%	-9%
Industrial processes	410,892	417,632	585,738	495,493	517,533	434,315	370,088	420,970	2%	2%	-19%
Transportation & Other Mobile Sources	10,214,065	10,381,622	10,329,161	10,693,225	11,306,925	7,849,873	8,982,595	10,686,437	44%	5%	-5%
On-road vehicles	6,480,478	6,586,787	6,530,791	6,515,026	6,892,843	5,152,108	5,374,927	6,214,910	26%	-4%	-10%
Passenger vehicles	5,332,913	5,420,398	5,308,712	5,296,436	5,461,129	4,079,896	4,243,686	4,862,806	20%	-9%	-11%
Freight and service vehicles	1,035,656	1,052,645	1,082,908	1,070,169	1,281,916	951,234	1,003,009	1,224,492	5%	18%	-4%
Transit vehicles	111,908	113,744	139,171	148,422	149,798	120,978	128,232	127,613	1%	14%	-15%
Aviation	2,362,236	2,400,988	2,669,116	3,007,139	3,200,723	1,486,019	2,295,689	3,137,712	13%	33%	-2%
Non-road equipment	1,150,189	1,169,057	945,354	972,525	1,016,031	1,039,673	1,074,216	1,096,052	5%	-5%	8%
Marine vessels and rail	221,162	224,791	183,900	198,535	197,328	172,074	237,763	237,763	1%	8%	20%
Solid Waste & Wastewater	708,593	720,217	645,643	662,872	587,051	563,177	534,300	497,119	2%	-30%	-15%
Solid waste generation and disposal	639,559	650,050	573,741	589,729	513,096	488,618	463,496	421,306	2%	-34%	-18%
Landfill	605,874	615,813	516,049	508,469	465,699	439,465	416,749	380,449	2%	-37%	-18%
Compost	33,684	34,237	57,692	81,260	47,397	49,152	46,747	40,857	<1%	21%	-14%
Wastewater process emissions	69,035	70,167	71,901	73,143	73,955	74,559	70,804	75,812	<1%	10%	3%
Refrigerants	802,111	815,269	1,077,506	1,128,589	1,184,233	1,207,305	1,271,263	1,287,773	5%	61%	9%
Refrigerants	802,111	815,269	1,077,506	1,128,589	1,184,233	1,207,305	1,271,263	1,287,773	5%	61%	9%
Land Use	845,452	859,321	1,146,964	1,411,117	1,411,702	1,411,702	1,377,902	1,377,902	6%	63%	-2%
Agriculture	142,461	144,798	127,896	117,155	117,740	117,740	83,940	83,940	<1%	-41%	-29%
Forest and trees	702,991	714,523	1,019,068	1,293,962	1,293,962	1,293,962	1,293,962	1,293,962	5%	84%	<1%
Total Emissions	23,231,702	23,612,807	24,201,651	25,774,830	26,276,750	20,879,173	22,237,855	24,168,994	100%	4%	-8%
Sequestration	(4,797,398)	(4,876,098)	(5,570,096)	(5,756,777)	(5,644,950)	(5,628,492)	(5,548,802)	(5,537,452)		15%	-2%
Solid waste disposal sequestration	(466,073)	(473,719)	(440,147)	(539,241)	(427,414)	(410,956)	(331,266)	(319,916)		-31%	-25%
Forest and tree sequestration	(4,331,326)	(4,402,379)	(5,129,949)	(5,217,536)	(5,217,536)	(5,217,536)	(5,217,536)	(5,217,536)		20%	0%

Table 8. Per capita geographic GHG emissions, by year.

GHG Emissions by Sector ($MTCO_2e$) Per Capita	Baseline Year 2007	2008	2015	2017	2019	2020	2022	2023	Percent change (2007-2023)	Percent change (2019-2023)
Built Environment	**5.70**	**5.73**	**5.34**	**5.53**	**5.29**	**4.34**	**4.35**	**4.40**	**-23%**	**-17%**
Electricity	**3.06**	**3.08**	**3.07**	**3.08**	**2.99**	**2.23**	**2.07**	**1.88**	**-39%**	**-37%**
Residential	1.30	1.31	1.28	1.32	1.24	1.04	0.97	0.85	-35%	-31%
Commercial	1.44	1.45	1.48	1.46	1.49	1.01	0.94	0.87	-39%	-42%
Industrial	0.32	0.32	0.31	0.29	0.26	0.19	0.16	0.16	-50%	-40%
Natural gas	**2.09**	**2.10**	**1.74**	**1.97**	**1.83**	**1.62**	**1.85**	**2.07**	**-1%**	**13%**
Residential	1.07	1.07	0.85	0.97	0.88	0.83	0.95	0.92	-14%	5%
Commercial	0.69	0.69	0.62	0.66	0.64	0.55	0.65	0.66	-4%	3%
Industrial	0.33	0.33	0.27	0.33	0.31	0.24	0.25	0.49	48%	57%
Other sources	**0.55**	**0.56**	**0.53**	**0.48**	**0.47**	**0.49**	**0.43**	**0.45**	**-19%**	**-5%**
Fuel oil	0.25	0.25	0.18	0.15	0.13	0.19	0.17	0.17	-32%	32%
Propane	0.08	0.08	0.06	0.10	0.11	0.11	0.10	0.09	15%	-13%
Industrial processes	0.22	0.22	0.28	0.23	0.23	0.19	0.16	0.18	-18%	-23%
Transportation and Other Mobile Sources	**5.46**	**5.49**	**5.01**	**4.97**	**5.08**	**3.46**	**3.88**	**4.55**	**-17%**	**-10%**
On-road vehicles	**3.46**	**3.48**	**3.17**	**3.03**	**3.10**	**2.27**	**2.32**	**2.65**	**-24%**	**-15%**
Passenger vehicles	2.85	2.87	2.57	2.46	2.45	1.80	1.83	2.07	-27%	-16%
Freight and service vehicles	0.55	0.56	0.53	0.50	0.58	0.42	0.43	0.52	-6%	-9%
Transit vehicles	0.06	0.06	0.07	0.07	0.07	0.05	0.06	0.05	-9%	-19%
Aviation	**1.26**	**1.27**	**1.29**	**1.40**	**1.44**	**0.65**	**0.99**	**1.34**	**6%**	**-7%**
Non-road equipment	**0.61**	**0.62**	**0.46**	**0.45**	**0.46**	**0.46**	**0.46**	**0.47**	**-24%**	**2%**
Marine vessels and rail	**0.12**	**0.12**	**0.09**	**0.09**	**0.09**	**0.08**	**0.10**	**0.10**	**-14%**	**14%**
Solid Waste & Wastewater	**0.38**	**0.38**	**0.31**	**0.31**	**0.26**	**0.25**	**0.23**	**0.21**	**-44%**	**-20%**
Solid waste generation and disposal	**0.34**	**0.34**	**0.28**	**0.27**	**0.23**	**0.22**	**0.20**	**0.18**	**-48%**	**-22%**
Landfill	0.32	0.33	0.25	0.24	0.21	0.19	0.18	0.16	-50%	-23%
Compost	0.02	0.02	0.03	0.04	0.02	0.02	0.02	0.02	-3%	-18%
Wastewater process emissions	**0.04**	**0.04**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**-12%**	**-3%**
Refrigerants	**0.43**	**0.43**	**0.52**	**0.52**	**0.53**	**0.53**	**0.55**	**0.55**	**28%**	**3%**
Refrigerants	**0.43**	**0.43**	**0.52**	**0.52**	**0.53**	**0.53**	**0.55**	**0.55**	**28%**	**3%**
Land Use	**0.45**	**0.45**	**0.56**	**0.66**	**0.63**	**0.62**	**0.59**	**0.59**	**30%**	**-7%**
Agriculture	**0.08**	**0.08**	**0.06**	**0.05**	**0.05**	**0.05**	**0.04**	**0.04**	**-53%**	**-32%**
Forest and trees	**0.38**	**0.38**	**0.49**	**0.60**	**0.58**	**0.57**	**0.56**	**0.55**	**47%**	**-5%**
Total Emissions	**12.42**	**12.49**	**11.74**	**11.99**	**11.80**	**9.20**	**9.59**	**10.29**	**-17%**	**-13%**
Sequestration	**(2.56)**	**(2.58)**	**(2.70)**	**(2.68)**	**(2.54)**	**(2.48)**	**(2.39)**	**(2.36)**	**-8%**	**-7%**
Solid waste disposal sequestration	(0.25)	(0.25)	(0.21)	(0.25)	(0.19)	(0.18)	(0.14)	(0.14)	**-45%**	**-29%**
Forest and tree sequestration	(2.31)	(2.33)	(2.49)	(2.43)	(2.34)	(2.30)	(2.25)	(2.22)	**-4%**	**-5%**

Figure 36. Sources of geographic-based GHG emissions in 2023, by sector.



Appendix C. K4C Inventories Comparison

Table 9 shows total GHG emissions for King County and K4C cities in 2019, 2022, and 2023. Countywide emissions declined by 8% over this period, with Bellevue, Des Moines, Duvall, and Kenmore showing the greatest reductions. Note that inventory values indicated with an asterisk (*) used an alternate inventory methodology, limiting direct comparisons.

Table 9. King County and K4C communitywide GHG inventories trends comparison – all emissions.

Total Emissions ($MTCO_2e$)				
K4C City	2019	2022	2023	Percent Change (2019-2023)
King County	*26,276,750*	*22,237,855*	*24,168,994*	*-8.0%*
Bellevue	2,095,119*	1,613,586*	1,726,887*	-17.6%
Bothell	603,794	503,617	529,746	-12.3%
Burien	255,911	241,288	259,290	1.3%
Des Moines	251,062	215,924	209,115	-16.7%
Duvall	66,518	55,750	55,733	-16.2%
Issaquah	473,419*	397,876*	455,690	-
Kenmore	209,835	177,708	175,661	-16.3%
Kent	1,760,317	1,472,313	1,482,807	-15.8%
Kirkland ^	1,041,001	874,222	909,412	-12.6%
Lake Forest Park	93,949	82,389	85,840	-8.6%
Maple Valley	195,701	177,119	181,414	-7.3%
Mercer Island	358,777*	308,121*	307,833*	-14.2%
Newcastle	129,168	114,663	110,320	-14.6%
Normandy Park	57,861	50,812	50,244	-13.2%
North Bend	76,696	71,521	71,258	-7.1%
Redmond	-	717,198*	814,855*	-
Renton	1,453,487	1,190,865	1,350,120	-7.1%
Sammamish	540,322	478,725	499,678	-7.5%
Seattle	-	5,920,100*	-	-
Shoreline	404,887	350,005	395,297	-2.4%
Snoqualmie	128,748	111,755	109,898	-14.6%
Tukwila	639,269	541,814	746,700	16.8%

*** This inventory value was completed using an alternative inventory methodology prepared and maintained by the city itself.**

^ Kirkland maintains and publishes their own inventories using an alternate methodology which are not represented in this table.

- A blank value indicates that the jurisdiction does not have inventories completed with a comparable methodology.

Table 10 shows core GHG emissions for King County and K4C cities in 2019, 2022, and 2023. Core emissions in this inventory include electricity (residential and commercial), natural gas (residential and commercial), on-road vehicles, and solid waste generation and disposal. Countywide core emissions declined by 14.7% over this period, with all cities that have a complete data series seeing a reduction in core emissions. Note that inventory values indicated with an asterisk (*) used an alternate inventory methodology, limiting direct comparisons.

Table 10. King County and K4C communitywide GHG inventories trends comparison – core emissions.

Core Emissions ($MTCO_2e$)				
K4C City	2019	2022	2023	Percent Change (2019-2023)
King County	*16,860,467*	*13,953,348*	*14,384,008*	*-14.7%*
Bellevue	1,896,847*	1,409,530*	1,510,603*	-20.4%
Bothell	475,423	392,190	399,338	-16.0%
Burien	144,289	134,746	138,270	-4.2%
Des Moines	184,884	157,056	140,977	-23.7%
Duvall	41,877	37,698	33,742	-19.4%
Issaquah	406,877*	321,836*	315,400	-
Kenmore	147,285	126,055	114,699	-22.1%
Kent	1,245,315	1,024,337	1,017,920	-18.3%
Kirkland ^	782,103	660,692	651,748	-16.7%
Lake Forest Park	54,735	48,846	47,385	-13.4%
Maple Valley	133,356	121,534	115,441	-13.4%
Mercer Island	259,566*	229,698*	225,440*	-13.1%
Newcastle	94,907	82,918	72,034	-24.1%
Normandy Park	40,212	35,574	31,057	-22.8%
North Bend	55,574	51,629	47,217	-15.0%
Redmond	-	528,566*	618,904*	-
Renton	1,045,417	863,129	848,214	-18.9%
Sammamish	342,408	314,237	300,658	-12.2%
Seattle	-	2,883,400*	-	-
Shoreline	268,912	229,916	253,780	-5.6%
Snoqualmie	90,481	78,944	71,464	-21.0%
Tukwila	483,591	379,761	433,545	-10.3%

*** This inventory value was completed using an alternative inventory methodology prepared and maintained by the city itself.**

^ Kirkland maintains and publishes their own inventories using an alternate methodology which are not represented in this table.

- A blank value indicates that the jurisdiction does not have inventories completed with a comparable methodology.

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