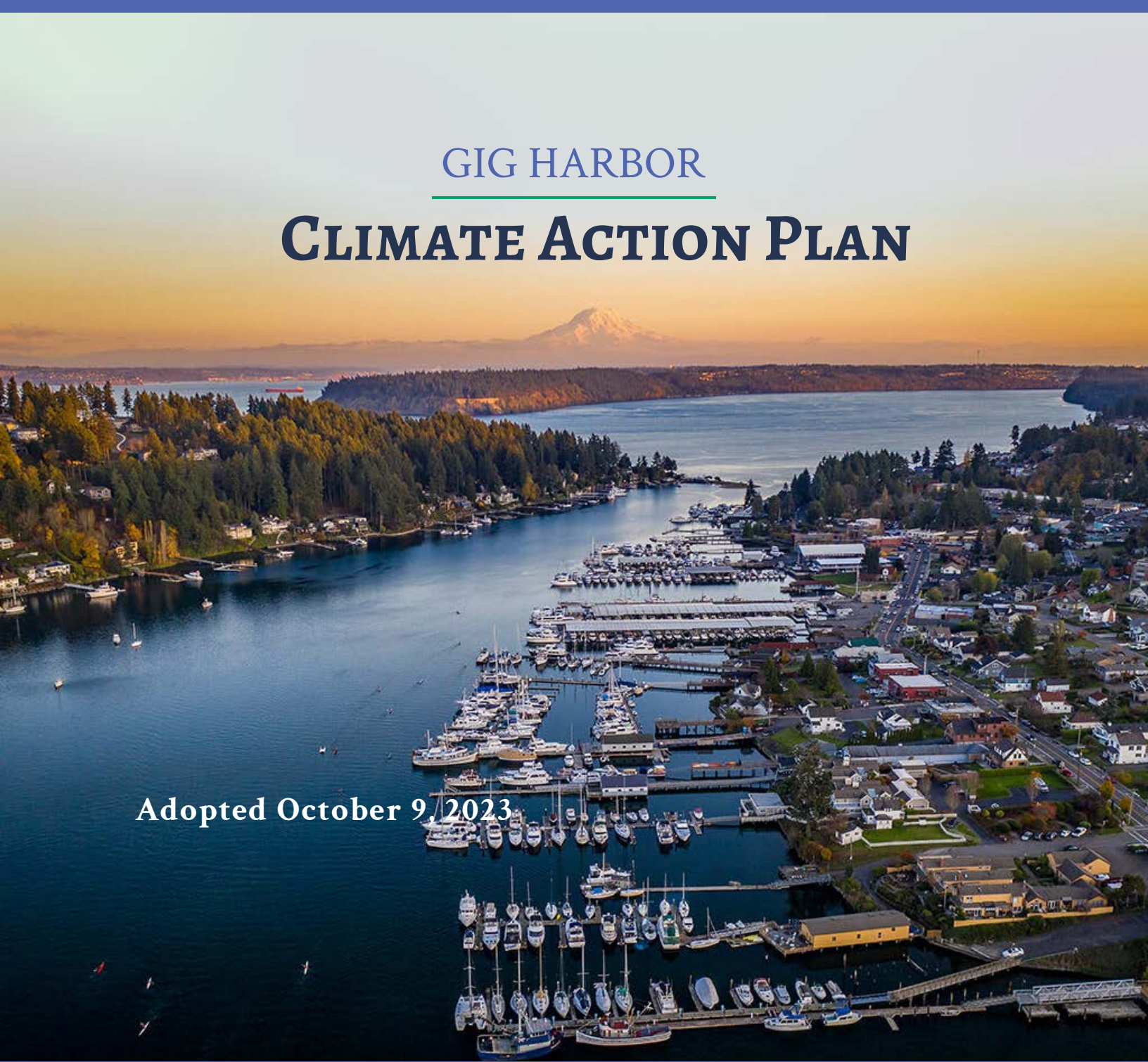




GIG HARBOR **CLIMATE ACTION PLAN**

Adopted October 9, 2023



MESSAGE FROM THE MAYOR AND CITY ADMINISTRATOR

The City of Gig Harbor takes great pride in its very engaged citizenry, many of whom care deeply about the resiliency of their city and the greater Puget Sound region. The last few years have brought a noticeable shift in climate-related events, felt in Gig Harbor as unprecedented heat waves, more frequent snowstorms, and reduced air quality through seasonal wildfires.

The City of Gig Harbor recognizes the importance of planning for climate change and wants to do its part to mitigate climate change and its potential effects. As such, the City has undertaken the responsibility of climate action planning at the local level. In January 2022, the Gig Harbor City Council adopted the City of Gig Harbor Two-Year Strategic Plan 2022-2023, which included priorities to promote environmental sustainability and preserve Gig Harbor's natural beauty by forming a climate action committee, incorporating climate change into the City's Comprehensive Plan, and adopting a climate action plan. The City has made great strides on these actions:

- Staff convened the Climate Change Comprehensive Plan Amendment Committee (CCCPAC), a group of internal and external stakeholders led by City staff throughout the summer of 2022. The group received presentations from regional subject matter experts in climate action planning and provided feedback and guidance on an amendment to the Comprehensive Plan.
- In July 2022, the City was awarded the Early Implementation Climate Planning Grant from the Washington State Department of Commerce Growth Management Services. The grant supports work that incorporates climate action elements into the Comprehensive Plan periodic update.
- In October 2022, the City contracted with Cascadia Consulting Group to develop the Climate Action Plan.
- The proposed amendment crafted by the CCCPAC added climate change goals to the Comprehensive Plan for the first time. The amendment was adopted in November 2022.

The City of Gig Harbor is pleased to present its first ever Climate Action Plan, which represents the City's commitment to climate action through policy change and infrastructure investments. These changes and investments will positively impact generations to come.

The Gig Harbor Climate Action Plan was developed through quantitative and qualitative approaches, including greenhouse gas emissions analysis, strategy evaluation, and soliciting input from Gig Harbor residents, visitors, and regional stakeholders. We hope the goals and aspirations of this plan inspire future leaders to sustain and improve upon this effort.



ACKNOWLEDGEMENTS

The City of Gig Harbor thanks its community for their feedback and collaboration throughout the Climate Action Plan (CAP) development process. Special thanks to those community members who participated in the workshop, and/or took the online survey.

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TABLE OF CONTENTS

MESSAGE FROM THE MAYOR AND CITY ADMINISTRATOR	2
ACKNOWLEDGEMENTS	3
TABLE OF CONTENTS	4
Table of Figures.....	6
ACRONYMS AND KEY TERMS	7
EXECUTIVE SUMMARY	9
Gig Harbor's Emissions.....	10
Gig Harbor's Vision	11
Strategies and Actions At-A-Glance	13
<i>Cross-cutting & Municipal</i>	13
<i>Buildings & Energy</i>	13
<i>Transportation</i>	13
<i>Consumption & Disposal</i>	14
<i>Natural Systems</i>	14
<i>Community Resilience</i>	14
INTRODUCTION	15
Why a Climate Action Plan?	15
<i>Gig Harbor Climate Action to Date</i>	17
CAP DEVELOPMENT & COMMUNITY ENGAGEMENT	18
Engagement Activities.....	18
What We Heard.....	20
GIG HARBOR'S GREENHOUSE GAS EMISSIONS.....	22
2019 Inventory.....	22
Emissions Reduction Targets.....	23
<i>Key Emissions Takeaways</i>	24
CLIMATE IMPACTS.....	26
<i>Climate Change Now</i>	27
<i>Climate Change in the Future</i>	27
STRATEGIES & ACTIONS.....	28
<i>Mitigation and Adaptation</i>	28
<i>Centering Equity</i>	29
<i>Multi-criteria Analysis (MCA)</i>	30
Strategies & Actions Matrix	30

<i>Crosscutting & Municipal</i>	32
<i>Buildings & Energy</i>	34
<i>Transportation</i>	36
<i>Consumption & Disposal</i>	39
<i>Natural Systems</i>	41
<i>Community Resilience</i>	43
IMPLEMENTATION PLAN	45
<i>Oversight & Accountability</i>	45
<i>Quick Wins</i>	45
<i>Monitoring, Evaluation & Reporting</i>	46
<i>Funding</i>	46
<i>Community Involvement</i>	46
<i>Equity</i>	47
APPENDIX A: IMPLEMENTATION MATRIX	48
<i>Implementation Criteria</i>	48
<i>Crosscutting & Municipal</i>	50
<i>Buildings & Energy</i>	52
<i>Transportation</i>	54
<i>Consumption & Disposal</i>	56
<i>Natural Systems</i>	57
<i>Community Resilience</i>	59
APPENDIX B: 2019 GREENHOUSE GAS EMISSIONS INVENTORY REPORT	61
Introduction	61
Methodology.....	61
Analysis Highlights	62
GHG Inventory Summary, by Sector	64
<i>Transportation</i>	64
<i>Buildings & Energy</i>	65
<i>Land Use</i>	67
<i>Refrigerants</i>	68
<i>Solid Waste & Wastewater</i>	68
GHG Emissions Reduction Targets.....	69
<i>Background & Considerations</i>	69
EMISSIONS REDUCTION PATHWAY	70
Pierce County's Modeled Reduction Targets	71

TABLE OF FIGURES

Figure 1. Gig Harbor's 2019 Greenhouse Gas Emissions Inventory	10
Figure 2. Our Vision for Gig Harbor.....	12
Figure 3. Gig Harbor Lighthouse.....	15
Figure 4. Gig Harbor's Climate Action Plan Vision	16
Figure 5. Timeline of Climate Action	17
Figure 6. Gig Harbor Trolley.....	18
Figure 7. Key Engagement Activities	19
Figure 8. Key Themes from Engagement.....	21
Figure 9. Gig Harbor's GHG Emissions Profile (2019)	22
Figure 11. Gig Harbor's Emissions Reduction Targets.....	25
Figure 12. Key Climate Threats for Gig Harbor	26
Figure 13. Strategies and Actions Framework	28
Figure 14. Mitigation and Adaptation Strategies.....	29
<i>Figure 1. Gig Harbor's GHG emissions profile (2019).....</i>	<i>62</i>
<i>Figure 2. GHG emissions per capita (2019).....</i>	<i>62</i>
<i>Figure 3. Transportation GHG emissions by vehicle type (2019).....</i>	<i>64</i>
<i>Figure 4. Building energy GHG emissions, by sector and fuel type (2019).....</i>	<i>65</i>
<i>Figure 5. Building energy GHG emissions, by fuel type (2019)</i>	<i>66</i>
Figure 6. PLC fuel mix (2019).....	67
<i>Figure 7. Land use GHG emissions and removals (2019)</i>	<i>67</i>
Figure 8. Solid waste GHG emissions (2019)	68
Figure 9: Wedge graphic detailing a potential emissions reduction pathway for Pierce County.....	70

ACRONYMS AND KEY TERMS

Climate Action Plan (CAP)	A comprehensive roadmap that outlines specific strategies and actions to reduce greenhouse gas emissions and adapt to climate change impacts.
Climate change	The long-term change in global and regional climate patterns due to increased levels of atmospheric carbon dioxide and other greenhouse gases produced by human activities such as using fossil fuels like coal, oil, and gas.
Climate emergency	The severe, adverse effects of climate change or an extreme weather event caused by climate change, such as wildfire, heatwaves, flooding, and drought.
Climate resilience	The ability of the built environment, ecosystems, and social systems to prepare for, respond to, and recover from climate impacts.
Commute trip reduction (CTR) program	A Washington State Department of Transportation (WSDOT) program that promotes alternatives to driving alone under the Commute Trip Reduction Law (WAC Chapter 468-63) to improve sustainability and reduce traffic congestion. Common elements of CTR programs include transportation demand management strategies such as provision of bicycle amenities, carpool and vanpool incentives, subsidies for transit fares, and implementation of flexible work schedules.
Cross-cutting	Participation by multiple parties in a common goal. For example, City staff, community members and partner organizations working together to implement the CAP.
Decarbonization	Targeted reduction of carbon dioxide and other greenhouse gases emitted into the atmosphere from fossil fuel intensive systems and infrastructure.
Electric vehicles (EVs)	Vehicles that derive all or part of their power from electricity, including: • Plug-In Hybrid Electric Vehicles (PHEVs): Vehicles that run by using a combination of electricity and use of an internal combustion engine and plug into the electric grid to derive power. • Battery Electric Vehicles (BEVs): Vehicles that run completely on electricity using a battery that can be recharged by being plugged into the electric grid.
Electrification	The transition away from using natural gas and other fossil fuels to electricity (typically generated from renewable energy sources like solar and wind), typically to power, heat, and cool homes and vehicles.
Frontline communities	Those who are most likely to be impacted by the effects of climate change. Typically include community members who face historic and current inequities, experience the earliest and most acute impacts of climate change, and have limited resources and/or capacity to adapt to impacts.

Global warming potential (GWP)	Used to describe the relative global warming impacts of different gases based on how much energy the emissions of one gas will absorb over a given period of time, relative to the emissions of carbon dioxide (CO ₂).
Greenhouse gases (GHGs)	Heat-trapping gases that warm the atmosphere such as carbon dioxide (CO ₂), methane (CH ₄), and nitrous oxide (N ₂ O).
Heat pump	An energy-efficient alternative to traditional furnaces and air conditioners that uses electricity to transfer heat from one building location to another rather than generating it.
ICLEI – Local Governments for Sustainability	A global organization focused on supporting local governments in addressing sustainability challenges. ICLEI’s standards, tools, and programs have been utilized by Gig Harbor to evaluate and reduce the City’s GHG emissions.
Metric ton of carbon dioxide equivalent (MTCO₂e)	A common unit of measurement that represents an amount of a greenhouse gas whose impact on climate change has been standardized to that of one unit of carbon dioxide (CO ₂), based on the global warming potential (GWP) of the gas.
Multimodal transportation	Accessible transportation through a variety of travel modes beyond single-occupancy vehicles, including pedestrian, bicycle, and public transit.
Science-based targets (SBTs)	Measurable and actionable greenhouse gas reduction targets developed by individual local governments and based on the best available climate science. These targets represent each community’s equitable share of GHG reductions needed to meet the Paris Agreement’s commitment of keeping average global warming below 1.5°C. There are several established methodologies used to calculate SBTs.
Transit-oriented development	Walkable, pedestrian-oriented, and densely compacted mixed-use (commercial, residential, entertainment) development centered around or located near public transit.
Vehicle miles traveled (VMT)	A metric used in transportation planning to measure the cumulative miles traveled by all vehicles in a geographic region over a period of time.

EXECUTIVE SUMMARY

Gig Harbor's Climate Action Plan (CAP) was developed through a robust analysis and strategic planning process that incorporated the most up-to-date climate science, regional best practices, City staff feedback, and community engagement. In alignment with neighboring King County communities, Gig Harbor has set a goal **to reduce community greenhouse gas (GHG) emissions by 95% by 2050, from a 2019 baseline**, with interim targets of 45% reduction by 2030 and 70% reduction by 2040. This CAP highlights our City's past climate and sustainability action, while also introducing a framework to achieve further emissions reductions and community resiliency.



Figure 1. Gig Harbor at sunset

The actions that make up this plan will provide a roadmap to prepare the City for climate risks, reduce our collective impact on the environment, and enhance the well-being of current and future Gig Harbor residents.

Climate change is already affecting Gig Harbor through rising sea levels, extreme heat events, wildfire smoke, and increased flooding and landslide risk. As climate change continues to progress, additional sea level rise of up to 14 inches in Puget Sound is projected by 2050¹, and extreme heat events and wildfires will become even more common (Pierce County Resilience Plan). Increasing ocean acidification and higher stream temperatures also threaten aquatic plants and animals such as shellfish and salmon.

In addition to environmental impacts, Gig Harbor community health and wellbeing will also be directly affected by climate change. As critical partners of this plan, Gig Harbor **community members provided input** that shaped plan priorities and aligned strategies and actions with the community's vision for Gig Harbor. The planning team solicited input from Gig Harbor communities through an online survey and community workshop. Through this engagement, we learned that Gig Harbor community members are informed about climate change impacts and are **motivated to take climate action**.

Key themes we heard from Gig Harbor communities include:

- Support for **education and incentives** for climate action and **collective action partnerships** with the County and other regional entities for greater impact.
- A desire for the **City to provide leadership, guidance, and resources**.
- Top-priority **climate solutions** include enhanced resilience to climate impacts such as extreme heat, flooding, and wildfires; shifting to renewable energy sources; and improved materials management through sustainable consumption and moving toward zero waste.
- **Concerns regarding equity and access** for all to participate in climate action, with specific focus on addressing cost barriers.

¹ [Interactive Sea Level Rise Data Visualizations, University of Washington, 2018.](#)

- Wide support for **increased walkability** and more **bike-friendly** infrastructure and resources for Gig Harbor.

GIG HARBOR'S EMISSIONS

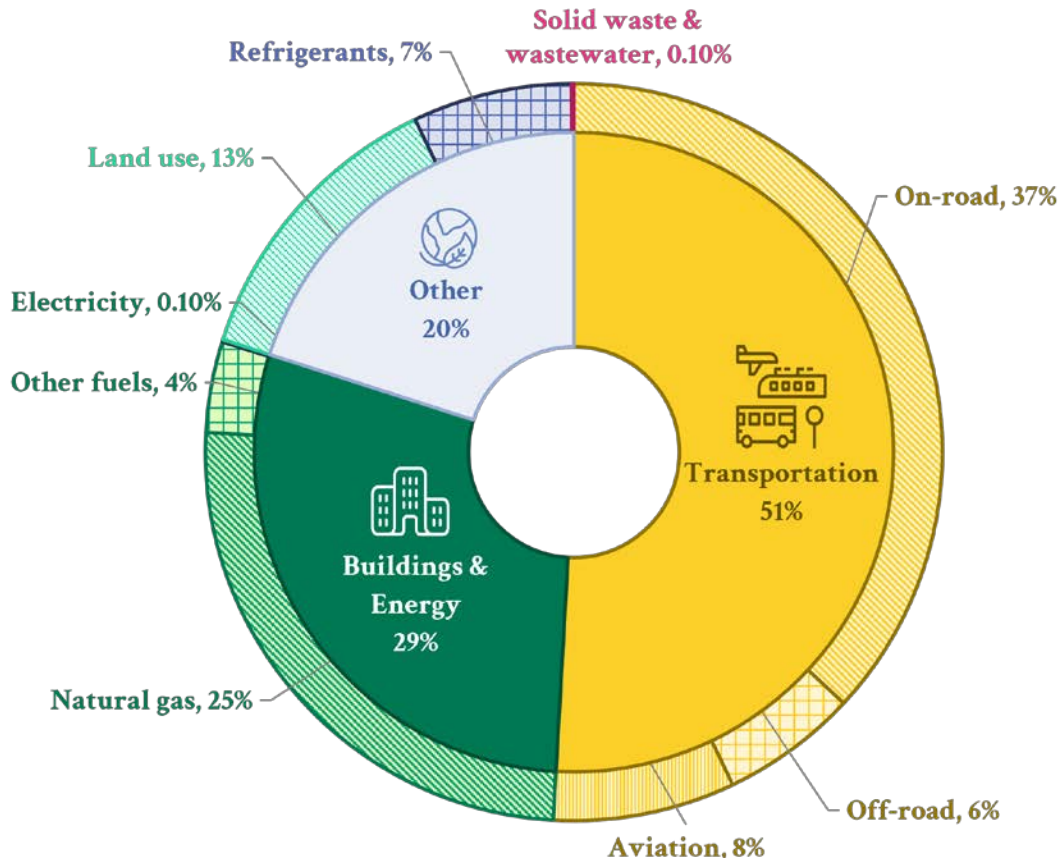
A greenhouse gas (GHG) emissions inventory was conducted for Gig Harbor based on 2019 levels and activities to inform CAP goals, targets, and metrics. An analysis of Gig Harbor's 2019 GHG emissions revealed the following key insights:

Figure 2. Gig Harbor's 2019 Greenhouse Gas Emissions Inventory

Transportation was the largest source of emissions within the community, responsible for **51% (41,743 MTCO₂e)** of Gig Harbor's emissions profile. Within transportation, on-road sources contributed 73% (**30,503 MTCO₂e**).

Buildings and energy were the second largest source of community-wide emissions, contributing **29% (23,907 MTCO₂e)** to Gig Harbor's emissions profile. Within buildings and energy, natural gas was the largest contributor emitting **88% (20,933 MTCO₂e)** of the sector's emissions.

The remaining emissions occur from **land use (13%, 11,042 MTCO₂e)**, **refrigerants (7%, 5,729 MTCO₂e)**, and **solid waste and wastewater (0.1%, 103 MTCO₂e)**.



GIG HARBOR'S VISION

This plan identified and will pursue actions that reduce greenhouse gas (GHG) emissions and build resilience to climate change in Gig Harbor through six distinct, priority focus areas (presented below).

Table 1. Focus Areas and Visions

Focus area	Vision
 Crosscutting & Municipal	Community members and City staff participate in local climate action to reduce community and municipal GHG emissions.
 Buildings & Energy	Residents of Gig Harbor work to reduce building emissions through energy efficiency, building electrification, and renewable energy.
 Transportation	Local transportation systems include accessible multimodal options, electric vehicles, and safe cycling and pedestrian infrastructure.
 Consumption & Disposal	The community reduces waste and greenhouse gas emissions generated from consumption and disposal of goods and materials.
 Natural Systems	The City fosters a climate resilient natural landscape by preserving and expanding vital habitats, ecosystems, and natural resources, and conserving water resources.
 Community Resilience	All Gig Harbor residents are prepared for current and future climate impacts, especially those disproportionately affected by the effects of climate change.

Figure 3. Our Vision for Gig Harbor

We will reduce emissions and increase community resilience to climate impacts by closely collaborating with neighboring communities. We will lead by example in our own City operations to establish Gig Harbor as a regional leader in climate action. We will educate and engage our residents and businesses to cultivate accountability and promote behavior change to address the climate crisis. Our approach to climate action will take the opportunity to reduce existing inequities in our community and improve quality of life for all Gig Harbor residents.

EMISSIONS REDUCTION TARGETS



Reduce emissions
45% by 2030, 70%
by 2040, and 95%
by 2050.



**Electrify 100% of
new buildings by
2030 and 100% of
existing buildings
by 2050.**



**Electrify passenger,
freight, and service
vehicles 100% by
2050.**



**Reduce passenger
vehicle miles
travelled per
capita 10% by 2030
and 25% by 2050.**



**Increase
participation in
community
programs focused
on climate
resilience by 2050.**



**Divert recyclable
and compostable
materials 50% by
2030 and 95% by 2050.**



**Maintain tree
cover and
reduce tree loss
50% by 2030 and
102% by 2050.**



**Protect land
carbon sinks
100% by 2030.**



**Serve all of Gig
Harbor's population by
climate emergency
response services and
departments by 2030.**

STRATEGIES AND ACTIONS AT-A-GLANCE

The following tables introduce targets, strategies, and key actions for the six CAP focus areas. Sector-specific targets and metrics depict what is needed to reach the City's overarching emissions reduction commitment, and strategies and key actions illustrate the City's pathway towards meeting these targets. For a complete list of all actions, see Strategies & Actions Matrix starting on page 30.

Cross-cutting & Municipal

Goal: Reduce community and municipal GHG emissions through internal City policies and initiatives and by encouraging community members and City staff to participate in local climate action.



Targets & Metrics	Strategies	Key Actions
- Reduce emissions 45% by 2030. - Reduce emissions 70% by 2040. - Reduce emissions 95% by 2050.	- Engage the community in climate action. - Reduce GHG emissions from municipal operations. - Integrate climate change into City planning & decision-making. - Increase participation in regional and local climate outreach and advocacy.	CC1.3: Climate partnerships and collaboration CC2.2: Municipal vehicle electrification CC3.1: Climate considerations in government CC3.2: Green, affordable housing

Buildings & Energy

Goal: Reduce building emissions through energy efficiency, building electrification, and renewable energy.



Targets & Metrics	Strategies	Key Actions
- Electrify 100% of new buildings by 2030 and 100% of existing buildings by 2050. - Increase local solar 100 MW by 2030.	- Transition to renewable building energy. - Reduce energy use in new and existing buildings.	BE1.1: Heat pump program expansion BE1.3: WA State Building Code compliance BE1.4: Green Power promotion

Transportation

Goal: Reduce GHG emissions from transportation by expanding the use of electric vehicles, increasing multimodal transportation options, and improving cycling and pedestrian infrastructure.



Targets & Metrics	Strategies	Key Actions
Reduce passenger vehicle miles travelled per capita 10% by 2030 and 25% by 2050.	- Transition to non-fossil fuel vehicles & equipment. - Reduce vehicle travel. - Reduce aviation emissions.	TR1.1: Public EV Infrastructure Plan TR2.1: Regional public transportation

- Electrify passenger, freight, and service vehicles **100%** by 2050.
- Decarbonize offroad equipment **50%** by 2040.

- **TR2.4:** Dense, mixed use, and transit-oriented development

Consumption & Disposal

Goal: Reduce community waste and the GHG emissions generated from consuming and disposing of goods and materials.



Targets & Metrics	Strategies	Key Actions
• Divert recyclable and compostable materials 50% by 2030 and 95% by 2050.	• Reduce waste generation & divert waste from landfills. • Produce and consume food sustainably.	• CD1.2: Phase-in mandatory composting/recycling • CD1.3: Solid waste emissions reduction • CD2.2: Food waste reduction plan

Natural Systems

Goal: Foster climate resilient natural landscape by conserving water resources and preserving and expanding vital habitats, ecosystems, and natural resources.



Targets & Metrics	Strategies	Key Actions
• Maintain tree cover and reduce tree loss 50% by 2030 and 102% by 2050. • Protect land carbon sinks 100% by 2030.	• Increase urban tree canopy and expand community green spaces. • Promote water conservation and enhance water system resiliency. • Protect and restore valuable natural resources that sequester carbon.	• NS1.1: Urban Forestry Plan and tree planting incentive program • NS2.1: Native vegetation protection • NS2.4: New stormwater development plan • NS3.1: Carbon-sequestering natural resource protection

Community Resilience

Goal: Ensure that all Gig Harbor residents are prepared for current and future climate impacts.



Targets & Metrics	Strategies	Key Actions
• Serve all of Gig Harbor's population by climate emergency response services and departments by 2030. • Increase participation in community programs focused on climate resilience by 2050.	• Increase community resilience to climate impacts. • Prepare infrastructure & services for climate change. • Prepare for sea level rise and coastal erosion.	• CR1.2: Wildfire smoke and public health awareness • CR1.3: Encourage adaptation upgrades • CR2.1: Climate emergency communication and resources • CR3.2: Coastal wetland and park expansion

INTRODUCTION



Figure 4. Gig Harbor Lighthouse

Located on Gig Harbor Bay in Puget Sound, the City of Gig Harbor has historical roots in commercial fishing and still maintains a deep community connection to the Harbor. This lasting tie to the water, beginning with the Puyallup Tribe, or Swiftwater People, remains today as a setting of recreation, work, and community connection.² Gig Harbor's active and quickly-growing population is supported by the community's thriving independent businesses, access to outdoor recreation and parks, and proximity to metropolitan areas, like the nearby City of Tacoma. For the 12,000 residents of Gig Harbor, climate change stands as one of most pressing issues today. Climate impacts threaten the City's livelihood, natural resources, and unique community character, particularly with regards to sea level rise, extreme heat, flooding, and coastal erosion.

Recognizing the importance of reducing our environmental impact and serving as a leader in climate action, Gig Harbor has already taken steps to promote environmental stewardship and respond to climate change. Organizations like Harbor WildWatch and the Key Peninsula-Gig Harbor Islands Watershed Council provide the community with education and outreach on critical environmental issues. Gig Harbor has supported regional emissions reduction goals and has considered climate impacts in future planning and development activities. Most recently, the City convened a **Climate Change Comprehensive Plan Amendment Committee (CCCPAC)** to develop actionable climate goals during the City's 2022 comprehensive plan update process.

Effective climate action deeply considers local climate vulnerabilities and community needs, while taking bold action to address the global climate crisis. Using the power of local climate action, this GHG emissions reduction and climate adaptation strategy will allow Gig Harbor to maintain a safe, healthy, and sustainable community for future generations. The strategies and actions in this plan work in tandem with regional and state goals to provide a pathway for Gig Harbor's future planning and that of peer cities.

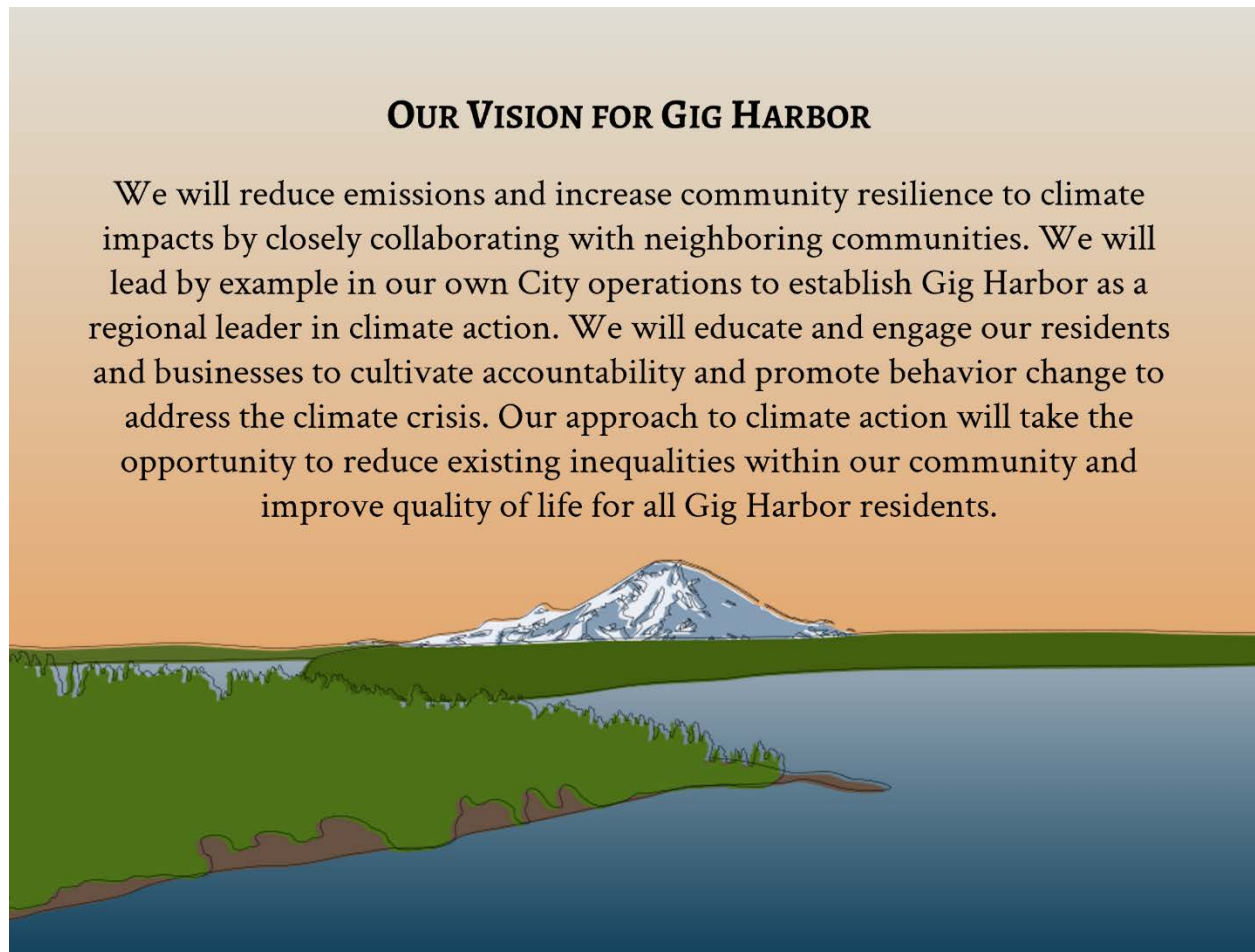
WHY A CLIMATE ACTION PLAN?

This **Climate Action Plan (CAP)** was initiated by the City Council, stewarded by the CCCPAC, and co-developed with internal and external stakeholders to reflect the community's vision of a resilient and thriving city, both now and in the future. The document weaves strategies and actions specific to Gig Harbor, demonstrating the City's commitment to and leadership in climate action, while maximizing co-benefits to both the local community and global climate. Co-benefits are those actions or infrastructure that serve to accomplish more than one climate action goal. The CAP reinforces the goals set by the Gig Harbor

² *About Gig Harbor*. Retrieved from Gig Harbor "The Maritime City": <https://www.visitgigharborwa.com/who-we-are>

Comprehensive Plan and provides a roadmap to work towards our vision of a more resilient, sustainable, and equitable future for all residents of Gig Harbor.

Figure 5. Gig Harbor's Climate Action Plan Vision



GIG HARBOR CLIMATE ACTION TO DATE

Gig Harbor's commitment to environmental leadership and stewardship began decades before the development of this plan. The timeline below depicts our history of climate action.

Figure 6. Timeline of Climate Action



CAP DEVELOPMENT & COMMUNITY ENGAGEMENT

The CAP planning process began with a 2019 **communitywide GHG inventory** to understand baseline GHG emissions sources and inform the development of CAP.³ The City developed focus areas, strategies, and actions based on a strategic, multi-step process to meet established CAP **goals and targets**. The project team built an initial strategies and actions list through a policy analysis of nearby jurisdictions, regional climate efforts, and the creation of new actions to meet community priorities. Next, the project team tailored these actions to be specific to Gig Harbor's climate risks, build on previous City efforts, and integrate innovative solutions from across the region. The City used findings from the inventory report in addition to community feedback to identify **impactful, community-supported actions** that align with Gig Harbor's vision.

Throughout the CAP development process, community engagement played a critical role in shaping CAP priorities and ensuring that strategies and actions align with the community's vision for Gig Harbor. To plan for key community engagement activities and touchpoints, the planning team developed a **Community Engagement Plan**. This plan outlined a strategic framework for engaging Gig Harbor communities, including frontline communities and internal stakeholders.



Figure 7. Gig Harbor Trolley

The Community Engagement Plan identified the following **engagement goals**:

- Create a baseline understanding around climate change impacts and creatively solicit feedback without overwhelming Gig Harbor communities.
- Gather community perspectives and feedback on key elements of the plan that are representative of the Gig Harbor community.
- Build City and communitywide support and buy-in to meet shared priorities identified by the City and Gig Harbor communities and guide implementation.

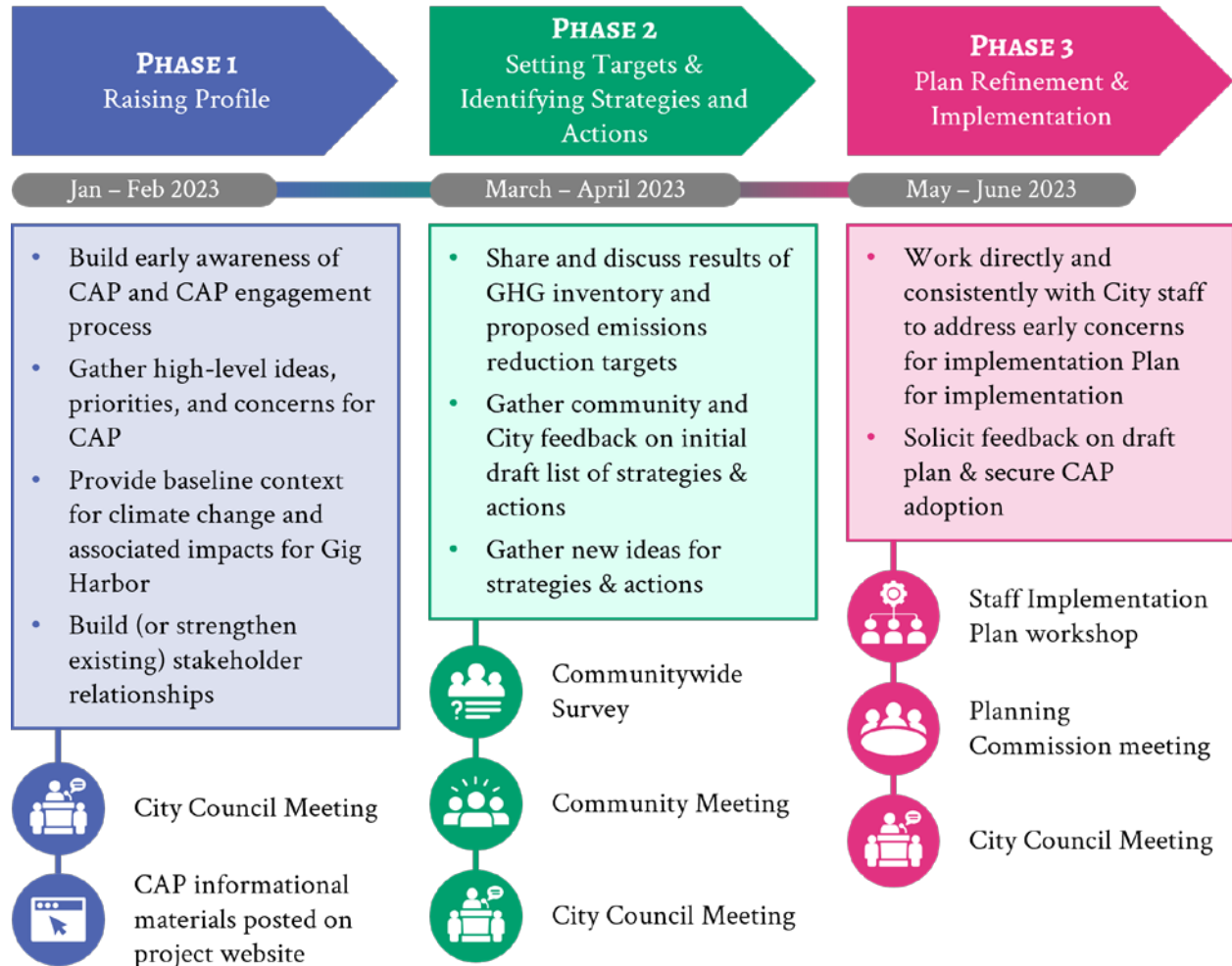
ENGAGEMENT ACTIVITIES

The planning team engaged the Gig Harbor community at three critical points within the CAP development process (see Figure 8 below). Activities included a communitywide survey, community meeting, and City

³ The baseline inventory year was strategically selected to be 2019 because it is the most recent year prior to the COVID-19 pandemic and is therefore the most representative of “normal” community emissions.

staff implementation workshop. In addition, the final CAP was presented for discussion at public meetings with the Planning Commission, City Council, and the public.

Figure 8. Key Engagement Activities



COMMUNITY SURVEY

The community survey gathered community feedback on CAP strategies and actions and collected new action ideas. The planning team utilized this survey input to refine CAP priorities, understand levels of community support, and gather detailed feedback on draft strategies and actions.

The survey was published on the project webpage and promoted through City social media and newsletters. It was open for approximately three weeks (March 8 – 31, 2023) and received 117 survey responses.⁴

COMMUNITY MEETING

The community meeting was designed to build on the momentum from the communitywide survey and was the first live feedback event for the Gig Harbor CAP. At the event, the planning team shared an overview of

⁴ www.cityofgigharbor.net/776/Climate-Action-Plan

the CAP planning process, previewed GHG inventory results, and broke participants out into small groups to gather detailed feedback on proposed strategies and actions.

The online community meeting was held on Wednesday, March 29th, 2023 from 5:30 to 7 pm through Zoom. The workshop was attended by 17 community members.

STAFF IMPLEMENTATION WORKSHOP

Targeted outreach to key internal stakeholders, such as City Staff, City Council, and the Planning Commission included a Staff Implementation Workshop and two Council and Planning Commission briefings. The Staff Implementation Workshop gathered City Staff input on strategies and actions, identified key considerations for implementation based on departments, such as lead implementor, potential funding sources, timeframe, opportunities for collaboration within the City and with outside partners, and sequencing.

The City Staff Implementation Workshop was held in-person on Thursday, May 18, 2023, from 10 am – 12 pm. Ten total staff from Planning, Engineering, Stormwater, Code Enforcement, and Building departments attended the workshop.

WHAT WE HEARD

Figure 9 below shares key themes, priorities, concerns, and action-specific feedback heard directly from Gig Harbor communities through the engagement process. Gig Harbor community members had strong consensus across the survey and community workshop in their priorities and concerns around climate impacts.

The project team summarized and incorporated feedback gathered from the survey and community meeting into the plan. Gig Harbor City staff further refined actions during implementation planning.

Figure 9. Key Themes from Engagement



GIG HARBOR'S GREENHOUSE GAS EMISSIONS

2019 INVENTORY

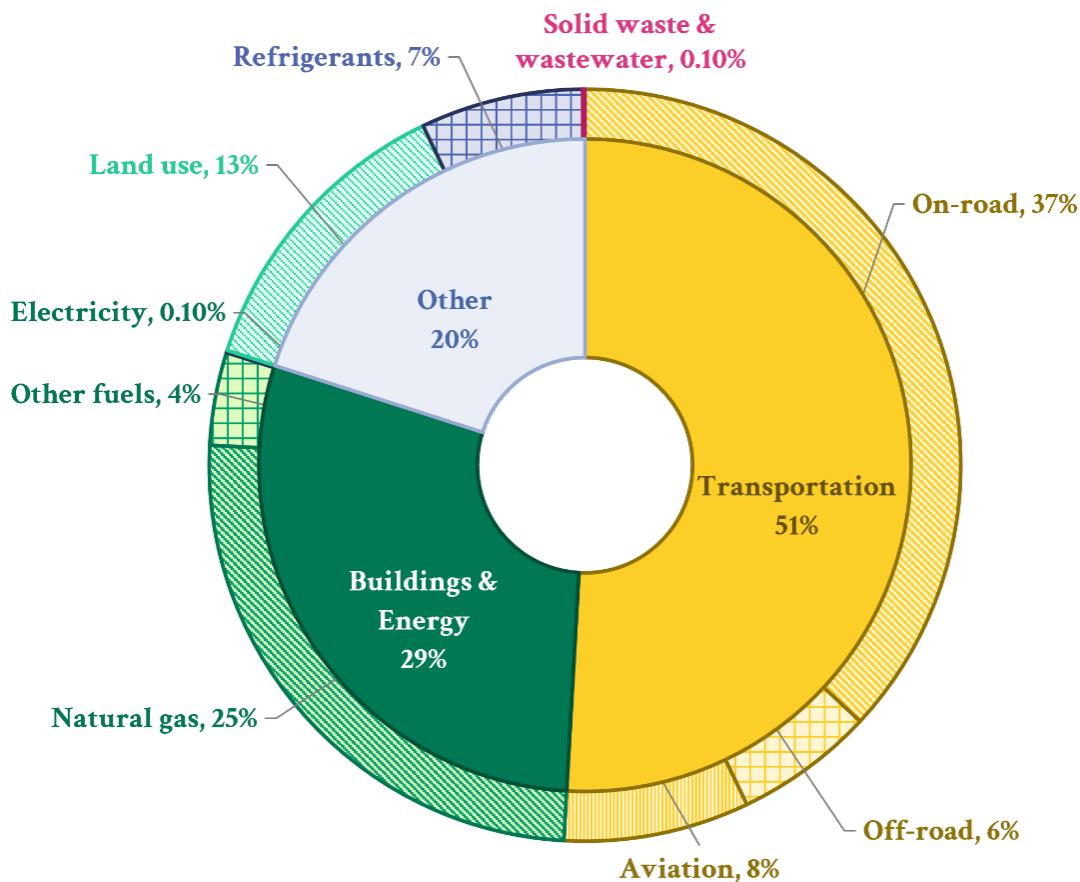
In 2019, the Gig Harbor community emitted an estimated **82,524 MTCO₂e** from transportation, building energy, land use, refrigerants, solid waste, and wastewater. These emissions are equivalent to 18,364 gasoline vehicles driven for one year. Figure 10 outlines the sectors and emissions that make up Gig Harbor's baseline 2019 emissions profile.

Figure 10. Gig Harbor's GHG Emissions Profile (2019)

Transportation was the largest source of emissions within the community, responsible for **51% (41,743 MTCO₂e)** of Gig Harbor's emissions profile. Within transportation, on-road sources contributed 73% (**30,503 MTCO₂e**).

Buildings and energy were the second largest source of community-wide emissions, contributing **29% (23,907 MTCO₂e)** to Gig Harbor's emissions profile. Within buildings and energy, natural gas was the largest contributor emitting **88% (20,933 MTCO₂e)** of the sector's emissions.

The remaining emissions occur from **land use (13%, 11,042 MTCO₂e)**, **refrigerants (7%, 5,729 MTCO₂e)**, and **solid waste and wastewater (0.1%, 103 MTCO₂e)**.



Gig Harbor's 2019 GHG emissions inventory includes emissions from transportation, buildings & energy, and other sources. These categories are further broken down as follows:

- **Transportation 51%**
 - **On-road (37%):** Includes passenger, light-duty, and heavy-duty vehicles (including freight and transit vehicles).
 - **Aviation (8%):** SeaTac Airport emissions scaled to Gig Harbor based on regional local income.
 - **Off-road (6%):** Includes a variety of vehicles and equipment such as those used for construction, commercial, industrial, and lawn/garden purposes.
- **Buildings & Energy 29%**
 - **Natural gas (25%):** Includes natural gas consumption used to power and heat residential, commercial, and industrial buildings in Gig Harbor.
 - **Other fuels (4%):** Includes energy from propane and fuel oil used to heat homes and buildings.
 - **Electricity (0.1%):** Peninsula Light Company (PLC), which supplies the jurisdiction with power, sources 95% of electricity production from carbon-free fuel.
- **Other 20%**
 - **Land use (13%):** Accounts for the carbon released when tree cover or vegetation is lost or converted to an alternative land type.
 - **Refrigerants (7%):** Emissions caused by the leakage of refrigerants, primarily hydrofluorocarbons (HFCs), commonly used as coolants for refrigeration equipment and air conditioning equipment.
 - **Solid waste & wastewater (0.1%):** Emissions from wastewater treatment, landfill and compost facility operations, and the decomposition of waste.

EMISSIONS REDUCTION TARGETS

In alignment with the latest climate science and community feedback, Gig Harbor is adopting targets, using a 2019 baseline, that are consistent with Pierce County and Washington State GHG emission reduction targets of:

- **Pierce County** has committed to an emissions reduction target of 45% by 2030 from a 2015 baseline, it has not yet committed to targets for 2040 or 2050.⁵
- **Washington state** has committed to emissions reduction targets of 70% by 2040 and 95% by 2050 below 1990 levels.⁶

Pierce County targets were developed through a quantitative “wedge analysis” modeling process (See **Appendix B: 2019 Greenhouse Gas Emissions Inventory Report**). The planning team referenced an available target scenario assessment for Pierce County that identified potential pathways for achieving County targets (Appendix B: 2019 Greenhouse Gas Emissions Inventory Report, GHG Emissions Reduction Targets).⁷ This analysis depicts future emission reductions that could be achieved through federal, state, regional, and local policies and strategies.

⁵ [Sustainability-2030-Pierce-Countys-Greenhouse-Gas-Reduction-Plan \(piercecounitywa.gov\)](https://www.piercecountywa.gov/sustainability-2030-pierce-countys-greenhouse-gas-reduction-plan)

⁶ [Tracking greenhouse gases - Washington State Department of Ecology](https://www.wa.gov/energy/Tracking-greenhouse-gases)

⁷ [2022_GeographicInventory_Report_FINAL \(piercecounitywa.gov\)](https://www.piercecountywa.gov/2022-GeographicInventory-Report-FINAL)

KEY EMISSIONS TAKEAWAYS

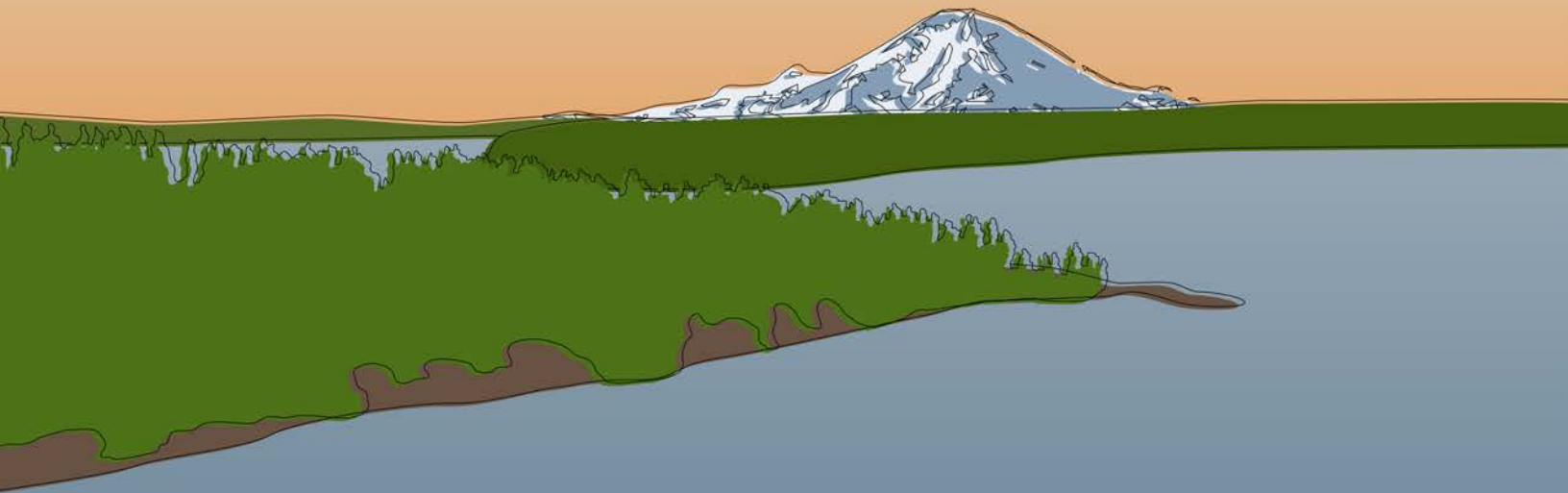
The Gig Harbor 2019 GHG emissions inventory (Figure 10) revealed the following key insights:

- **Transportation** was the largest source of emissions within the community, responsible for 51% (41,743 MTCO₂e) of Gig Harbor's emissions. Within transportation, on-road sources (from passenger and freight vehicles) were the highest contributors. It is common for transportation emissions to be the top contributor, specifically when a jurisdiction's electricity provider relies on renewable sources.
- **Building energy** was the second largest source of communitywide emissions, making up 29% (23,907 MTCO₂e) of Gig Harbor's emissions profile. Within buildings and energy, natural gas consumption was the largest contributor of GHG emissions.
- **Land use** was the third largest source of communitywide emissions, contributing 13% (11,042 MTCO₂e) to Gig Harbor's emissions. This is in line with Pierce County land use emissions, where land use emissions trend higher than neighboring counties, like King County, due to higher rates of forest land conversion for settlement.⁸
- The remaining emissions come from **refrigerant leakage** (7%, 5,729 MTCO₂e), and **solid waste and wastewater management** (0.1%, 103 MTCO₂e).

Based on the City's emissions profile, Gig Harbor is adopting a suite of goals and strategies to electrify passenger and service vehicles, reduce vehicle miles traveled, electrify buildings, increase building efficiency, and reduce loss of tree cover to drive down emissions. In addition, many CAP mitigation actions not only reduce GHG emissions but also provide co-benefits that promote climate equity and support vulnerable communities. Co-benefits of mitigation actions include improving air quality, expanding green space, promoting sustainable, affordable housing, and minimizing public health risks.

⁸ [King County, King County Greenhouse Gas Emissions, 2021](#)

Figure 11. Gig Harbor's Emissions Reduction Targets



EMISSIONS REDUCTION TARGETS



Reduce emissions
45% by 2030, 70%
by 2040, and 95%
by 2050.



Electrify 100% of
new buildings by
2030 and 100% of
existing buildings
by 2050.



Electrify passenger,
freight, and service
vehicles 100% by
2050.



Reduce passenger
vehicle miles
travelled per
capita 10% by 2030
and 25% by 2050.



Increase
participation in
community
programs focused
on climate
resilience by 2050.



Divert recyclable
and compostable
materials 50% by
2030 and 95% by 2050.



Maintain tree
cover and
reduce tree loss
50% by 2030 and
102% by 2050.



Protect land
carbon sinks
100% by 2030.

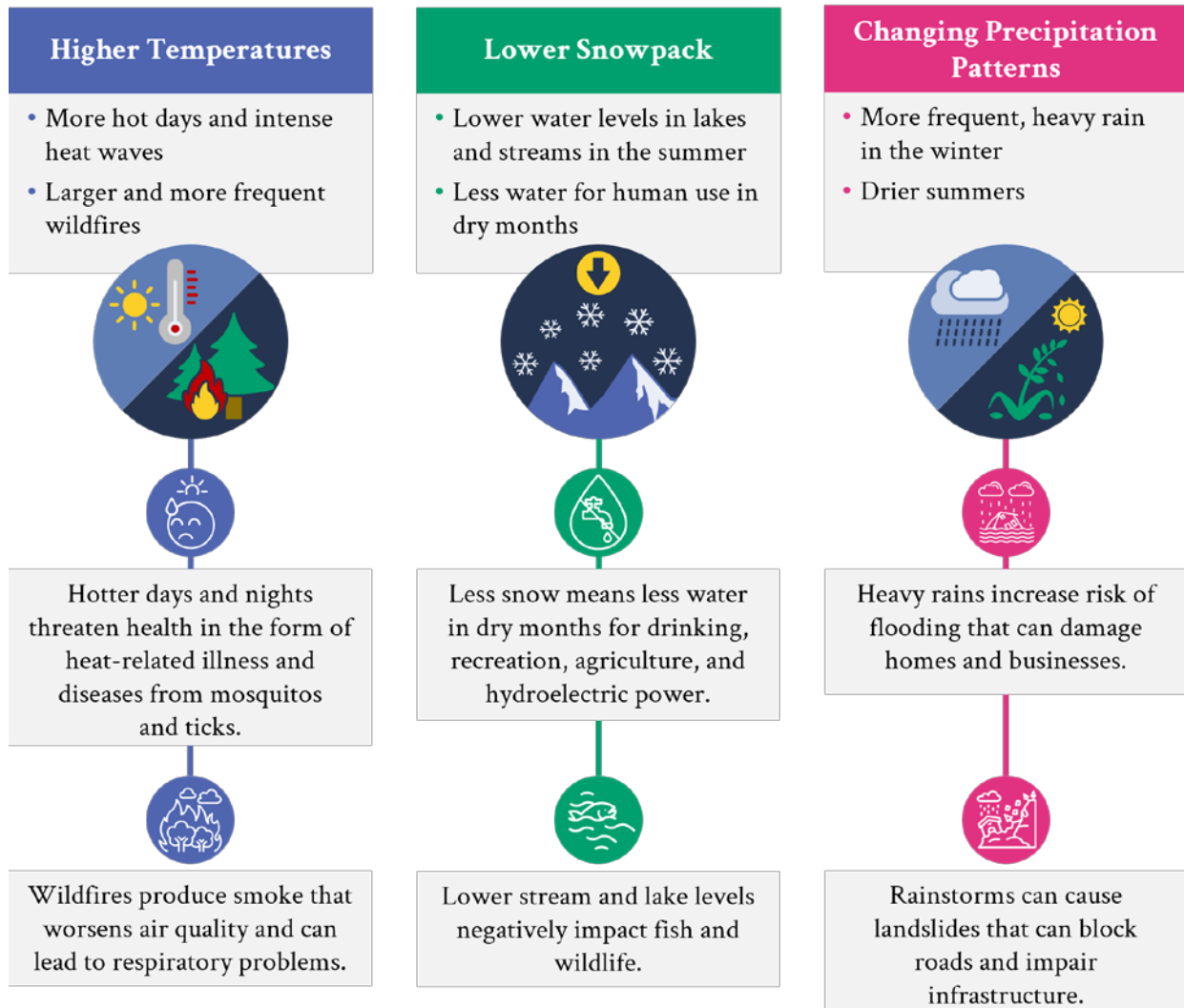


Serve all of Gig
Harbor's population by
climate emergency
response services and
departments by 2030.

CLIMATE IMPACTS

Figure 12. Key Climate Threats for Gig Harbor

KEY CLIMATE THREATS:



Gig Harbor and Sea Level Rise

As a coastal community, Gig Harbor is experiencing sea level rise—nearly eight inches over the last century, according to NOAA (Pierce County Resilience Plan), with up to 14 inches of additional sea level rise projected by 2050. The city will lose additional coastal land such as beaches, river deltas, and wetlands. This leaves Gig Harbor land vulnerable to coastal flooding, which can cause property and infrastructure damage and lead to potential displacement of residents and workers. The ocean is also becoming more acidic, which has the potential to increase shellfish toxicity via increased algae blooms—which is harmful to people who may eat toxic shellfish and a negative impact on the local economy.

CLIMATE CHANGE NOW

Climate change is already affecting Gig Harbor in the form of extreme heat and wildfires, changing rainfall patterns, rising sea levels, ocean acidification, lower winter snowpack, and rising stream temperatures.⁹ Average temperatures are already 1.3 degrees Fahrenheit higher than last century, punctuated by longer, hotter heat waves. Most notably, the heat dome of June 2021 saw temperatures in the region reach 30 degrees higher than average.¹⁰ Warmer winters result in lower snowpack in the region's mountain ranges, which strains summer water availability in reservoirs, lakes, and streams.¹¹ The region is also experiencing changing rainfall patterns—more frequent, heavy rainstorms—increasing damaging flooding and landslides.¹²

CLIMATE CHANGE IN THE FUTURE

Longer, hotter summers and less rain during the summer months will make wildfires more common in the future. Higher temperatures also accelerate Olympic Peninsula glacier melt, resulting in less summer stream water and higher stream temperatures. Climate projections predict warming up to 3 degrees Fahrenheit by 2080, leading to lake closures for fishing and recreation, and the continued decline of salmon populations. Extreme precipitation is likely to increase, especially in the spring and fall, as more precipitation falls as rain instead of snow. Since record-keeping began in the Seattle area (in the 1980s), 2014 and 2017 were the only two years with more than 10 days with over an inch of rainfall. In future years, frequent heavy rainfall is expected to increase (more than 10 days a year with over an inch of rain), leading to more frequent flooding and landslides.

⁹ [Pierce County Climate Change Resilience](#)

¹⁰ [Tacoma Climate Change Resilience Study \(2016\)](#)

¹¹ [Puyallup Tribe's Climate Change Impact Assessment and Adaptation Options \(2016\)](#)

¹² [Pierce County Climate Change Resilience](#), [Changes toward Earlier Streamflow Timing across Western North America](#), [Tacoma Climate Change Resilience Study](#), [State of Knowledge: Climate Change in Puget Sound](#)

STRATEGIES & ACTIONS

The strategies and actions in this CAP were developed and refined based on the latest climate science, regional targets, and direct public feedback. Regional and local resources referenced for action development include the CAPs of peer cities, Puget Sound Regional Council's VISION 2050, and priorities noted by the Gig Harbor CCCPAC. Reviewing these resources helped ensure that this plan's strategies and actions will meet Gig Harbor's GHG reduction targets and align with regional efforts and climate mitigation and adaptation best practices. Strategies and actions are foundational to meeting the targets, metrics, and goals developed for each focus area, as shown in Figure 8.

Public input directly informed and guided the goals, targets, metrics, strategies, and actions in this plan. Strategies and actions aim to address major emissions sources for Gig Harbor, as well as projected climate impacts.

Figure 13. Strategies and Actions Framework



MITIGATION AND ADAPTATION

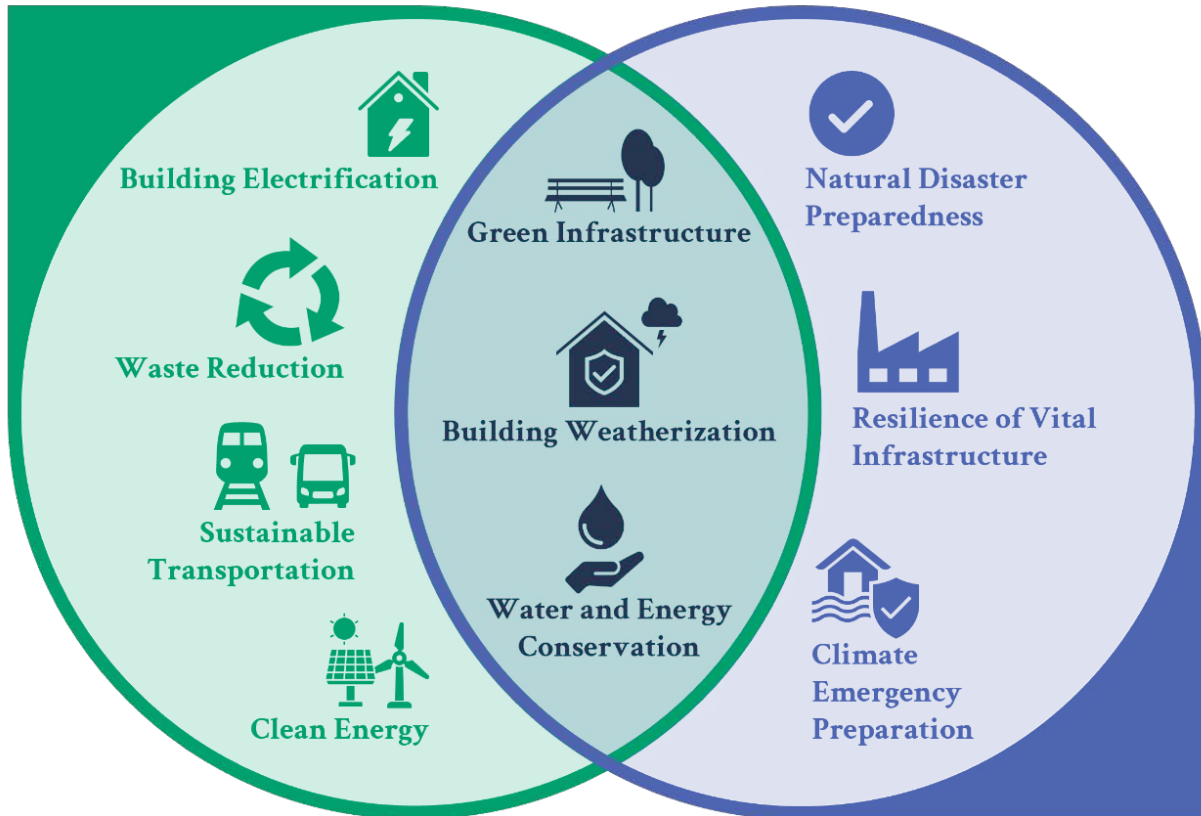
To achieve our vision for Gig Harbor, this CAP includes both climate mitigation and adaptation strategies and actions. **Both are necessary for a sustainable and resilient future.** Wherever possible, the plan includes actions that provide both mitigation and adaptation benefits, such as those in the center of Figure 14 below.

- **Mitigation** actions address the **cause** of climate change by reducing GHG emissions and increasing carbon “sinks” to store these gases.
- **Adaptation** actions address and manage the **impacts** of climate change by protecting and building resilience for vulnerable social and biological systems. In addition to mitigation efforts, we must prepare for and adapt to the unavoidable impacts of climate change we are already experiencing.

Figure 14. Mitigation and Adaptation Strategies

Mitigation

Address the cause



Adaptation

Address the impacts

CENTERING EQUITY

Gig Harbor's climate action has implications beyond its own city border due to the global nature of GHG emissions. Climate change disproportionately affects frontline communities on both a local and global scale. In Gig Harbor, these communities include Black, Indigenous, Hispanic or Latino, people with low or no income, unhoused individuals, youth, immigrants, people with disabilities, people with limited English proficiency, and other identities who face current or historic inequities. Incorporating climate equity principles and understanding the social and racial impacts of proposed climate actions will improve the equitable distribution of benefits (e.g., improving public health and increasing access to services) and reduce disparities. In committing to climate action, the City is working towards reducing disproportionate climate impacts on at-risk local, regional, and global populations.

Climate change is already impacting life in Gig Harbor, and some groups of people experience climate impacts more severely, making it more difficult to adapt. In addition to race and income as determinants of risk for climate impacts, other groups of people experience specific threats from climate change. Older

adults, babies and small children, pregnant people, people with pre-existing conditions, differently abled individuals, people with language and literacy barriers, and outdoor workers are at higher risk of negative health and wellbeing outcomes from climate hazards such as extreme heat and flooding. The Gig Harbor CAP includes actions that promote resilience for the whole community and prioritizes actions with shared benefits, ensuring these benefits are accessible for and align with existing priorities of overburdened communities. Equity was included as a criterion in the multi-criteria analysis of proposed actions.

Public engagement efforts ensured that the community had the opportunity to provide input on the CAP through a survey and a community meeting. However, the engagement opportunities were both held virtually; there was no targeted outreach to difficult-to-reach communities; and translation and interpretation services were not used for events or materials. It is also important to note that most survey respondents identified as white and female. These engagement shortcomings were considered in the development of actions and incorporation of community feedback.

MULTI-CRITERIA ANALYSIS (MCA)

The planning team reviewed potential actions through a qualitative multi-criteria analysis—a scoring system that ranks actions against a set of decision criteria. The MCA assigns qualitative numerical scores to each action for each criterion (see table below) to arrive at an overall priority score. Each criterion is scored on a 1 (low) to 5 (high) scale and criteria were weighted equally.

Table 2. MCA criteria weights and definitions

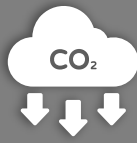
Criterion	Weight	Definition
Impact	20%	What is the scope and likelihood that the action will reduce GHG emissions or enhance resiliency? By when? Can impact be measured and tracked?
Cost	20%	What is the cost to the City?
Co-benefits	20%	Does the action support 1) public health, 2) the green economy, and 3) healthy natural systems?
Feasibility	20%	Are there regulatory, political, or technological constraints related to action implementation? Is the action adaptable to new technologies?
Equity	20%	Does the action reduce vulnerability for all populations/groups? Are benefits distributed equitably across the community?

STRATEGIES & ACTIONS MATRIX

The matrix below is organized into focus areas that represent categories of emissions reduction and adaptation priorities. The **Implementation Plan and Matrix** starts on page 45 provides details on the City's plan for implementing these actions.

STRATEGIES & ACTIONS ICON LEGEND

These icons indicate actions which are impactful for each MCA criterion.

				
Impact	Cost	Co-benefits	Feasibility	Equity
The action has high potential to reduce emissions and/or increase resiliency.	The action is relatively low in cost.	The action has high co-benefits of improving public health, the green economy, and natural systems.	The action is realistic and easy to implement.	The action reduces vulnerabilities for frontline communities, and action benefits are distributed fairly.



CROSSCUTTING & MUNICIPAL

The Crosscutting & Municipal focus area includes measures to reduce community and municipal GHG emissions through cross-sectoral activities and internal City policies and initiatives.

Goal: Reduce community and municipal GHG emissions through internal City policies and initiatives and by encouraging community members and City staff to participate in local climate action.

Metric	2030 Target	2050 Target
Reduce overall City emissions (% reduction)	45% below 2019 baseline	95% below 2019 baseline

Action ID	Action Short Name	Action Description	Icons
Strategy 1: Engage the community in climate action.			
CC1.1	Climate and sustainability in schools	Partner with local schools to educate youth on climate and sustainability issues. Encourage energy efficiency and electrification of building operations, and support waste reduction and recycling in schools.	
CC1.2	Climate education and awareness	Expand climate education campaigns to encourage the Gig Harbor community to advocate for state and federal legislation that supports local climate mitigation and adaptation efforts. Develop a climate outreach and education campaign or program to support ongoing community engagement in climate action by creating initiatives such as addressing misinformation in energy use or building climate pledge programs. Maintain a publicly available platform to track CAP and GHG reduction progress.	
CC1.3	Climate partnerships and collaboration	Partner with neighboring cities and other Pierce County groups to advance regional initiatives to improve climate mitigation measures and increase community resilience to climate change.	

Action ID	Action Short Name	Action Description	Icons
Strategy 2: Reduce GHG emissions from municipal operations.			
CC2.1	City carpool and commute reduction programs	Reduce emissions from City staff commuting by implementing an incentive program for carpooling, biking, or taking public transportation to work. Preserve and expand flexible scheduling and remote work options for staff.	
CC2.2	Municipal vehicle electrification	Transition the municipal vehicle fleet to all electric.	
CC2.3	Municipal solar installation	Retrofit City buildings with on-site solar and renewable energy storage systems.	
Strategy 3: Integrate climate change into City planning & decision-making.			
CC3.1	Climate considerations in government	Consider climate impacts when reviewing or approving major City developments, infrastructure changes, and policies. Ensure all City plans (e.g., Comprehensive Plan, Emergency Management Plan) account for climate change and its impact on vulnerable communities. Incorporate environmental justice criteria and priorities into zoning, land use planning, permitting policies, and development of new projects.	
CC3.2	Green, affordable housing	Review and update land use, zoning, and planning policy to prioritize the development of green, affordable housing. Utilize equitable, transit-oriented development planning strategies to allow for broader housing types in single family zones.	
Strategy 4: Increase participation in regional and local climate outreach and advocacy.			
CC4.1	Collaboration with local tribes	Work with local tribal groups to share resources and ideas on climate change issues.	



BUILDINGS & ENERGY

The Buildings & Energy sector is the second highest contributor to Gig Harbor's GHG emissions, accounting for 29% in 2019. These emissions come from energy used to power, heat, and cool buildings in our community. The strategies and actions within this focus area are designed to facilitate the use of renewable energy sources, while also promoting more efficient energy use in new and existing buildings.

Goal: Reduce building GHG emissions through energy efficiency, building electrification, and renewable energy.

Metric	2030 Target	2050 Target
Increase local solar (total new MW)	100 MW	250 MW
Electrify new buildings (% fossil fuel use converted to electric)	100%	100%
Electrify existing buildings (% fossil fuel use converted to electric)	20%	100%
Reduce energy use in existing buildings (% reduction in energy use)	25%	45%

Action ID	Action Short Name	Action Description	Icons
Strategy 1: Transition to renewable building energy.			
BE1.1	Heat pump program expansion	Partner with Peninsula Light Company to expand regional electric heat pump incentives to replace natural gas-powered furnaces and increase energy efficiency in City and residential buildings. Action will focus particularly on replacing expensive oil and gas heating systems with efficient heat pump systems and serving low-income residents.	
BE1.2	Contractor incentive & training program	Work with regional jurisdictions and agencies to expand upstream and midstream incentives for building electrification retrofits to local distributors and contractors. Create or promote a contractor training and/or certification program focused on efficient, electric heat pump installation.	

Action ID	Action Short Name	Action Description	Icons
BE1.3	WA State Building Code compliance	Promote transition from natural gas in new buildings by implementing building codes that align with the policies outlined by the Washington State Building Code Council.	
BE1.4	Green power promotion	Enroll City facilities and encourage businesses and residents to enroll in Peninsula Light Company's Renewable Option Program.	
BE1.5	Solar energy grid resiliency and community solar projects	Improve local energy resiliency by accelerating improvements to the energy grid and solar energy storage through subsidy and grant programs. Create incentives and explore grant opportunities to support community solar projects.	
Strategy 2: Reduce energy use in new and existing buildings.			
BE2.1	Energy efficiency retrofits	Encourage early adoption of efficiency retrofits before they are required through local or state mandates; partner with local organizations to provide and promote energy efficiency incentives. Develop free home energy audits and upgrade programs for income-eligible residents.	
BE2.2	Green Infrastructure Policy	Integrate green building guidelines into the Gig Harbor Municipal Code (GHMC). Educate City planning and permitting staff on new energy codes and methods for incentivizing decarbonization in buildings.	



TRANSPORTATION

Transportation is the highest contributor to Gig Harbor's GHG emissions, accounting for 51% in 2019. These emissions occur from on-road vehicles, such as personal vehicles or public transportation, and off-road vehicles, such as construction and agricultural equipment. The strategies and actions in the transportation focus area concentrate on transitioning away from fossil fuels to electric vehicles, reducing vehicle miles travelled, and reducing aviation emissions.

Goal: Reduce greenhouse gas emissions from transportation by expanding the use of electric vehicles, increasing multimodal transportation options, and improving cycling and pedestrian infrastructure.

Metric	2030 Target	2050 Target
Electrify passenger vehicles (% new EV vehicles sold)	65%	100%
Electrify freight/service vehicles (% new EV vehicles sold)	25%	100%
Decarbonize or electrify offroad equipment (% reduction in emissions)	20%	95%
Reduce passenger vehicle miles traveled per capita (% reduction in VMT)	10%	25%
Advocate to decarbonize aviation fuels (% reduction in fuel carbon intensity)	20%	95%

Action ID	Action Short Name	Action Description	Icons
Strategy 1: Transition to non-fossil fuel vehicles & equipment.			
TR1.1	Public EV Infrastructure Plan	Develop and implement an EV Charging Infrastructure Plan that guides expansion of EV charging capacity throughout the city. Mandate EV ready outlets in all new residential buildings and EV charging stations in newly-constructed buildings.	

Action ID	Action Short Name	Action Description	Icons
TR1.2	Community EV education	Create EV communication and outreach programs in the Gig Harbor Community that explain the benefits of EVs, rebates available for EV purchasing, charger locations, and other helpful information.	
TR1.3	Electric trolley	Transition to all-electric vehicles for the Gig Harbor Summer Trolley.	
TR1.4	Gas powered landscaping equipment phase out	Set target dates to phase out gas-powered landscaping equipment and transition to using electric equipment (lawnmowers, leaf blowers, etc.). Allocate funding for municipal battery-powered equipment upgrades and to avoid breaks due to charging needs, especially for cost burdened residents.	
Strategy 2: Reduce vehicle travel.			
TR2.1	Regional public transportation	Advocate and engage in regional opportunities to improve Gig Harbor's public transportation network, including expanding routes offered by the Pierce Transit bus system, the frequency and routes of the Summer Trolley, and electric bike or scooter ride share programs. Focus access on neighborhoods that are not currently served by transit and to services, jobs, and activities for seniors, people with disabilities, and low-income residents.	
TR2.2	Bike infrastructure	Encourage cycling by providing bicycle lockers, showers, racks, and other cycling infrastructure at commercial centers and at city workplaces.	
TR2.3	Curb management	Incentivize businesses and developers to optimize curbside areas for low-carbon travel modes (bicycles, scooters, etc.).	
TR2.4	Dense, mixed use, and transit-oriented development	Review and update land use, zoning, and planning policy to promote dense, mixed-use, and transit-oriented development and enhance options for rideshare, walking, and biking in Gig Harbor. This may include altering zoning and planning policies to integrate Transportation Demand Management (TDM) standards into Comprehensive Plan policies related to development.	

Action ID	Action Short Name	Action Description	Icons
Strategy 3: Reduce aviation emissions.			
TR3.1	Aviation industry education and advocacy	Educate residents on air travel alternatives for personal and business trips, such as regional trains or buses. Encourage local advocacy to support statewide aviation decarbonization legislation, including using sustainable aviation fuel and adoption of fuel efficiency measures.	



CONSUMPTION & DISPOSAL

Waste in landfills, particularly food waste, is a major source of methane, a GHG that is 80 times more damaging than carbon dioxide. Emissions associated with local purchasing and consumption also contribute significantly to global emissions. The following actions and strategies work to reduce waste generation, divert waste through compost and recycling, and consume sustainably.

Goal: Reduce community waste and the greenhouse gas emissions generated from consuming and disposing of goods and materials.

Metric	2030 Target	2050 Target
Divert recyclable and compostable materials (% reduction in landfill waste)	50%	95%

Action ID	Action Short Name	Action Description	Icons
Strategy 1: Reduce waste generation & divert waste from landfills.			
CD1.1	Recycling requirements in new buildings	Ensure adequate space for recycling and compost collection in new buildings.	
CD1.2	Phase-in mandatory composting/recycling	Phase in mandates for municipal, residential and commercial recycling and composting as required by the state; support businesses, building owners, and community members to comply through educational campaigns and technical assistance programs.	
CD1.3	Solid waste emissions reduction	Support state-level policies that promote packaging with the lowest lifecycle GHG emissions. Collaborate with regional waste haulers to develop plans to reduce local emissions from the collection, transport, and disposal of Gig Harbor's waste.	
Strategy 2: Produce and consume food sustainably.			
CD2.1	Garden access and creation	Support access to and the creation of community gardens at shared spaces and organizations such as schools, churches, and parks.	

Action ID	Action Short Name	Action Description	Icons
CD2.2	Food waste reduction plan	Create residential and commercial food waste reduction best practices following the release of the Washington State Food Waste Reduction Plan/Use Food Well Plan, including developing systems to track and report food donations in Gig Harbor.	

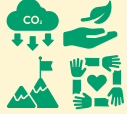


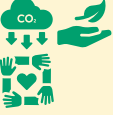
NATURAL SYSTEMS

Water and natural systems are particularly vulnerable to climate impacts. Warmer temperatures and changing precipitation patterns will cause more frequent and prolonged water shortages. Extreme storms and rains threaten to overwhelm Gig Harbor's wastewater and stormwater infrastructure, and climate impacts like flooding and wildfires will affect downstream water quality. Meanwhile, natural systems such as trees, grasses, and soils naturally store and capture carbon from the atmosphere, making them a valuable tool to combat climate change. The Natural Systems focus area strategies and actions focus on maintaining urban tree canopy, protecting carbon sinks, and water conservation.

Goal: Foster climate resilient natural landscape by conserving water resources and preserving and expanding vital habitats, ecosystems, and natural resources.

Metric	2030 Target	2050 Target
Maintain tree cover & reduce canopy loss (% reduction tree loss)	50%	102%
Protect critical areas/land carbon sinks (% area protected)	100%	100%

Action ID	Action Short Name	Action Description	Icons
Strategy 1: Increase urban tree canopy and expand community green spaces.			
NS1.1	Urban Forestry Management Plan (UFMP) and tree planting program	Support the implementation of the UFMP, including update of tree regulations, encouraging residents and property owners to expand tree planting on private property. Offer tree-awareness campaigns and classes to educate the community on tree planting best practices and develop tree planting demonstration programs. Prioritize actions that increase tree canopy, especially in areas subject to urban heat island effect and for overburdened communities.	
Strategy 2: Promote water conservation and enhance water system resiliency.			

Action ID	Action Short Name	Action Description	Icons
NS2.1	Native vegetation protection	Continue to use the best available climate science to identify and protect environmentally critical areas to protect native habitats. Engage the public in promoting native vegetation through public outreach campaigns and partner with relevant community organizations to leverage volunteers, such as Harbor Gardeners or Tacoma Tree Foundation.	
NS2.2	Water-efficient landscape standards	Develop additional educational campaigns to encourage drought-resistant native landscaping and design. Work with landscape companies and homeowner associations to educate and incentivize drip irrigation and low fertilizer/pesticide management techniques. Adopt policies which allow homeowners to remove water-intensive lawns.	
NS2.3	Stormwater runoff pollution reduction	Expand existing capacity to reduce pollution in stormwater runoff of both private and public projects.	
NS2.4	New stormwater development plan	Align with existing programs to replace outdated stormwater infrastructure and encourage green stormwater infrastructure that utilizes low impact development (LID) techniques to protect water quality.	
NS2.5	Rainwater reuse education	Educate the Gig Harbor community on the financial and environmental benefits of reusing rainwater. Continue to support rain garden education programs and classes.	
NS2.6	Reclaimed water program	Conduct a needs assessment and build capacity for the reclaimed water program, building on existing City efforts.	

Strategy 3: Protect and restore valuable natural resources that sequester carbon.

NS3.1	Carbon-sequestering natural resource protection	Protect and restore natural resources that sequester carbon and provide buffers during flooding events, such as wetlands, estuaries, and forests.	
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COMMUNITY RESILIENCE

Climate change disproportionately impacts vulnerable communities in Gig Harbor. Gig Harbor faces a variety of climate-related threats, including extreme heat, heavy rains, flooding, sea-level rise, and wildfire smoke. These impacts put our safety and health at risk, exacerbate existing inequities, and threaten our quality of life. The following strategies and actions focus on increasing resilience for both people and infrastructure to climate impacts.

Goal: Ensure that all Gig Harbor residents are prepared for current and future climate impacts.

Metric	2030 Target	2050 Target
All of Gig Harbor's population served by climate emergency response services.	All community members by 2030.	All community members by 2050.
Increase in participation in community programs focused on climate resilience.	Increase in participation by 2030.	Increase in participation by 2050.

Action ID	Action Short Name	Action Description	Icons
Strategy 1: Increase community resilience to climate impacts.			
CR1.1	Energy-resilient critical facilities	Increase energy resilience of critical facilities through battery storage and low carbon alternative backup generators.	
CR1.2	Wildfire smoke and public health awareness	Look to Puget Sound Clean Air Agency guidelines to further educate residents on HVAC filters, use of masks, and other safety tips during periods of low air quality and increased wildfire smoke, especially for vulnerable populations such as the elderly or those facing health disparities.	
CR1.3	Encourage adaptation upgrades	Offer rebate and incentive programs in the community to encourage commercial and residential adaptation measures (e.g., cool roofs, green roofs, cool pavement, ceiling fans, air filters). Build awareness of other state and regional incentive programs and offer stronger incentives for low-income residents.	

Action ID	Action Short Name	Action Description	Icons
Strategy 2: Prepare infrastructure and services for climate change.			
CR2.1	Climate emergency communication and resources	Update Gig Harbor's emergency management plan to ensure streamlined communication is developed for quick deployment during climate emergencies and to protect vulnerable populations. Prepare for emergencies by adding additional community cooling centers and air shelters in case of extreme heat and floods.	
Strategy 3: Prepare for sea level rise and coastal erosion.			
CR3.1	Sea-level rise and coastal resiliency	Secure existing coastal infrastructure in flood zones and consider new zoning restrictions to limit development in areas at risk of flooding from increased wave strength and higher tides due to sea-level rise.	
CR3.2	Coastal wetland and park expansion	Expand wetlands and waterfront parks to mitigate flood risk and respond to the rising intensity and frequency of coastal storms.	

IMPLEMENTATION PLAN

This CAP is a strategic and coordinated plan that relies on all members of the Gig Harbor community. The City must work collectively with Gig Harbor residents and communities to reduce GHG emissions and create a resilient and sustainable future. The following section provides a framework for implementing the strategies and actions outlined in this CAP.

OVERSIGHT & ACCOUNTABILITY

The City of Gig Harbor will coordinate to ensure the CAP is implemented to meet desired outcomes through ongoing oversight. The City will continue allocating staff resources and budget to ensure successful CAP implementation.

Key activities and responsibilities of departments include:

- **Community Development Department:** Fundraising for capital projects, updating regulations, and providing updates to City Council, City Administrator, and Mayor.
 - **Planning Division:** Measuring outcomes and long-range strategic planning (reflecting CAP goals and actions in comprehensive plan policy updates).
 - **Building Division:** Adoption, implementation, and oversight of building and construction regulations.
- **Public Works Department:** Managing budgets and fundraising for capital projects, maintaining or retrofitting street lighting, pedestrian projects, etc., integration with public works standards, and GIS data management.
 - **Parks Division:** Integration with the PROS Plan.
 - **Utilities:** Partner with Pierce County on solid waste, recycling, and composting

QUICK WINS

City Council requested a table of *quick wins* in addition to the more detailed implementation matrix in Appendix A. While there are a number of actions which are already in progress or ongoing, the following set of actions can be reasonably accomplished within the next five years, or through non-project policy or regulatory changes.

Focus Area	Action ID	Action Short Name
Crosscutting & Municipal	CC3.1	Climate considerations in government
Transportation	TR2.1	Regional public transportation
Transportation	TR2.2	Bike infrastructure
Transportation	TR2.3	Curb management
Transportation	TR2.4	Promote dense, mixed use, and transit-oriented development
Natural Systems	NS1.1	Urban Forestry Management Plan and tree planting incentive program

Natural Systems	NS2.1	Native vegetation protection
Natural Systems	NS3.1	Carbon-sequestering natural resource protection

MONITORING, EVALUATION & REPORTING

It is critically important to maintain climate action by tracking and reporting progress. This plan is a living document that will evolve between now and the next planned update in 2033. The **Planning Division** will monitor progress and prepare annual CAP progress reports. If these reports indicate the City is not on track to meet targets, the City may choose to strengthen or add actions as necessary. This direction will be informed by **the latest climate science, best practices, and allocated budget and staffing**. To effectively monitor, evaluate, and report on the plan, the CAP team will:

- Provide City Council and City Administrator with an **annual progress report**, alongside the Comprehensive Plan progress report.
- Prepare a **GHG inventory** every two to three years.
- **Utilize GIS data management** to track capital improvement project progress, percentage of hard surface for stormwater management, tree canopy cover, and the number and health of urban trees.
- Share progress towards CAP goals through **biennial status reports** and provide regular updates to City website for the residents of Gig Harbor.

FUNDING

Financing climate projects and initiatives may be achieved by seeking out specific funds for CAP implementation or incorporating CAP funding into existing and upcoming City projects. During implementation, the City should identify potential revenue sources or funding strategies for each CAP action. The CAP team may consider **existing funds and opportunities** to include climate action funding within a City department budget or within a project RFP. The City may also seek out **new funds** by exploring available grants at the local, state, or national level. New funding sources may also include partners interested in **co-funding** an action or introducing climate action projects in City department **budget updates**. Specific sources of funding or funding partnerships include:

- EPA implementation grants
- WA Commerce grants (2027 expected implementation grants)
- Public works collaboration on project-specific grants
- Pierce County partnerships
 - Local environmental group collaboration on project-specific grants

COMMUNITY INVOLVEMENT

Gig Harbor communities will continue to play a critical role in plan implementation. To meet goals outlined in this plan, the City will depend on continued active engagement with the community. The City will prioritize engagement synergies and collaborate with the Comprehensive Plan update, as well as look for other opportunities to engage where CAP goals align. The CAP team will also serve as a resource to the

community during implementation by developing and promoting accessible CAP outreach materials, resources, and engagement opportunities. The CAP team plans to:

- Sponsor Earth Day events and partner with local environmental organizations.
- Support and partner with the Parks Department for Parks Appreciation Day and clean-up day.
- Fund and partner with the Downtown Waterfront Alliance's Giggling up the Harbor clean-up event.

Community engagement is the primary focus or a critical element of the following actions:

Focus Area	Action ID	Action Short Name
Crosscutting & Municipal	CC1.1	Climate and sustainability in schools
Crosscutting & Municipal	CC1.2	Climate education and awareness
Buildings & Energy	BE1.2	Contractor incentive & training program
Transportation	TR1.2	Community EV education
Transportation	TR3.1	Aviation industry advocacy and education
Consumption & Disposal	CD2.1	Garden access and creation
Natural Systems	NS1.1	Urban Forestry Plan and tree planting incentive program
Natural Systems	NS2.1	Native vegetation protection
Natural Systems	NS2.2	Water-efficient landscape standards
Natural Systems	NS2.5	Rainwater reuse education
Community Resilience	CR1.2	Wildfire smoke and public health awareness
Community Resilience	CR2.1	Climate emergency communication and resources

EQUITY

CAP implementation will consider and center equity by reflecting on the following considerations for actions during implementation:

- **Disproportionate impacts**
 - Does this action generate externalities, or unintended impacts, which affect communities of color and/or low-income communities?
 - If yes, how can we mitigate these impacts and ensure that the implementation is equitable?
- **Access to participation and technical knowledge**
 - Does this action incorporate a range of access needs?
 - How can we conduct more effective outreach for affected communities of color and low-income communities?
- **Tracking progress**
 - How will the City measure success in its equity and inclusion efforts for this action?
 - How can we include and uplift communities of color and low-income communities through this action?

APPENDIX A: IMPLEMENTATION MATRIX

An Implementation Matrix is used to identify key implementation impacts and details for each action. The Implementation Matrix includes the 7 key implementation criteria.

IMPLEMENTATION CRITERIA

The table below presents an example of the information conveyed in each column of the implementation matrix:

Impact	Cost	Timeline	Funding Sources	Lead Implementor	Partnership Opportunities	Implementation Considerations
Relative measure of the action's potential to reduce emissions and increase resiliency.	Estimate of how much the action will be for the City to implement.	The timeframe for starting to implement an action.	Known or new funding sources, including City budgets, local, federal relief programs, state and federal grants, and incentive programs.	City department responsible for overseeing implementation. Existing staff capacity and departmental budgets may need to be re-evaluated regularly to ensure sufficient resources for implementation.	Known regional partners to support implementation.	General factors the City will consider when implementing the action, such as sequencing and/or key next steps.

NOTES ON TIMELINE

The Implementation Matrix indicates how the City will strategically phase and sequence implementation to prioritize: early wins or actions that will take longer to implement or have dependent actions that need to be sequenced.

ICON LEGEND						
Impact		= Low potential to reduce emissions and enhance resiliency	 	= Moderate potential to reduce emissions and enhance resiliency	  	= High potential to reduce emissions and enhance resiliency
Cost		= Low cost, from no cost to less than \$100K	 	= Moderate cost, from \$100K to \$1 million	  	= High cost, from \$1 to \$10 million
Timeline		= Short-term 1 – 5 years - Easy, early wins and foundation steps - Actions that may require substantial time or resources, so it is important to start as soon as possible -Actions that align with or could support other City plans, projects, or updates and should be implemented concurrently	 	= Medium-term 5 - 10 years - Actions that might require additional resources to implement or cannot occur until foundational actions are implemented	  	= Long-term 10+ years - Actions that are not as time sensitive as shorter-term actions - Actions that require substantial infrastructure and resources or build upon foundational short and midterm actions

CROSSCUTTING & MUNICIPAL

Action ID	Action Short Name	Impact	Cost	Timeline	Lead Implementor	Partnership Opportunities	Funding Sources	Implementation Considerations
CC1.1	Climate and sustainability in schools	↓	\$	🕒🕒	Planning, Administration	Schools		Need for a communications plan and appropriate staffing.
CC1.2	Climate education and awareness	↓	\$ \$	🕒	Planning, Administration	Schools, Pierce County Climate Planning		
CC1.3	Climate partnerships and collaboration	↓	\$	🕒	Planning, Administration	Schools		Flexibility for staff to participate in regional climate groups/meetings.
CC2.1	City carpool and commute reduction programs	↓ ↓	\$	Ongoing	Administration	Pierce Transit	WSDOT: Transportation Demand Management Grants	Existing commute reduction program, flexible scheduling, and remote work is available within the wellness program.
CC2.2	Municipal vehicle electrification	↓ ↓ ↓	\$ \$	In progress	Public works		Charging and fueling Infrastructure Discretionary Grant Program ; WSDOT: Zero-emission vehicle grants	Add public vehicle charging stations to the sports complex project and the public works operations center. Vehicle charging stations currently available in Millville and Maritime Pier parking lots.
CC2.3	Municipal solar installation	↓ ↓ ↓	\$ \$ \$	🕒🕒🕒	Public Works, Operations		DOE GRIP Grants	Aligns with State mandates. Need to evaluate which City buildings

Action ID	Action Short Name	Impact	Cost	Timeline	Lead Implementor	Partnership Opportunities	Funding Sources	Implementation Considerations
								and locations are feasible for solar electricity and hot water.
CC3.1	Climate considerations in government	↓ ↓ ↓	\$ \$	🕒	Planning, Administration			Comprehensive Plan goals and policies around displacement, equitable development, siting facilities. Overlap with the Emergency Management and Hazard Mitigation Plan update and the Parks and Recreation Open Space (PROS) plan.
CC3.2	Green, affordable housing	↓ ↓ ↓	\$ \$	In progress	Community Development	WA State Resources		Housing needs assessment (HNA) will incorporate strategies into the Comprehensive Plan.
CC4.1	Collaboration with local tribes	↓ ↓	\$	In Progress	Community Development, Public Works	Puyallup Tribe, Squaxin Island Tribe		Regular communications and collaboration with five local tribes. Specifically, Puyallup Tribe and Squaxin Island Tribe are close partners.

BUILDINGS & ENERGY

Action ID	Action Short Name	Impact	Cost	Timeline	Lead Implementor	Partnership Opportunities	Funding Sources	Implementation Considerations
BE1.1	Heat pump program expansion	↓ ↓ ↓	\$ \$	🕒	Building			Adopt energy code updates in October 2023.
BE1.2	Contractor incentive & training program	↓ ↓	\$ \$	🕒 🕒	Building	L&I		Adopt energy code updates in October 2023.
BE1.3	WA State Building Code compliance	↓ ↓ ↓	\$	🕒	Building		Ecology: Wood stove education & enforcement grants	Adopt energy code updates in October 2023.
BE1.4	Green Power promotion	↓ ↓	\$	🕒	Public Works			Provide information on City website to raise awareness of applicable PSE and Peninsula Light programs.
BE1.5	Solar energy grid resiliency and community solar projects	↓ ↓ ↓	\$ \$	🕒 🕒 🕒	City Council, Public Works, Community Development	PSE and Solar contractors	DOE Grid Resilience and Innovation Partnerships (GRIP) Program; WA Department of Commerce	Opportunity to provide permitting process incentives.

Action ID	Action Short Name	Impact	Cost	Timeline	Lead Implementor	Partnership Opportunities	Funding Sources	Implementation Considerations
							Solar Plus Storage	
BE2.1	Energy efficiency retrofits	↓ ↓	\$ \$	🕒 🕒	Administration	PSE, Peninsula Light	Energy Efficiency and Conservation Block Grant Program ; Building Codes Implementation for Efficiency and Resilience ; WA Department of Commerce Solar Plus Storage	Provide information on City website about applicable PSE and Peninsula Light programs for consumers.
BE2.2	Green Infrastructure Policy	↓ ↓ ↓	\$ \$	🕒 🕒	Community Development			Track and align with future energy code and design manual updates.

TRANSPORTATION

Action ID	Action Short Name	Impact	Cost	Timeline	Lead Implementor	Partnership Opportunities	Funding Sources	Implementation Considerations
TR1.1	Public EV Infrastructure Plan	↓ ↓ ↓	\$ \$	🕒 🕒	Public Works, Community Development	Peninsula Regional Transportation Planning Organization (RTPO)	Charging and fueling Infrastructure Discretionary Grant Program; Grants for Energy Efficiency and Renewable Energy Improvements at Public School Facilities	Consider Level II vs Level III charging stations.
TR1.2	Community EV education and incentives	↓ ↓	\$ \$	🕒 🕒	Administration		Federal Incentives; State Incentives	Provide information on City website about applicable programs for consumers.
TR1.3	Electric trolley	↓	\$ \$	🕒 🕒	Administration	Pierce Transit		Consider electric trolley cost.
TR1.4	Ban on gas powered landscaping equipment	↓ ↓	\$ \$	🕒 🕒	Administration, Public Works			Consider cost to replace municipal landscaping equipment and address challenges of public enforcement.

Action ID	Action Short Name	Impact	Cost	Timeline	Lead Implementor	Partnership Opportunities	Funding Sources	Implementation Considerations
TR2.1	Regional public transportation	↓ ↓ ↓	\$ \$	🕒	Administration, Public Works	Pierce Transit	Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation	Propose a trial period for bike/scooter share program to ensure safety and use.
TR2.2	Bike infrastructure	↓ ↓	\$ \$	🕒 🕒	Planning, Public Works			Codify bike rack requirements. Active Transportation Plan overlap.
TR2.3	Curb management	↓	\$	🕒	Planning, Public Works	Chamber of Commerce, Downtown Waterfront Alliance		Public Works Standards update.
TR2.4	Promote dense, mixed use, and transit-oriented development	↓ ↓ ↓	\$ \$	🕒	Planning, Public Works	Pierce Transit	WSDOT Transportation Demand Management Grants	Compliance with WA State goals and policies around mixed use development, housing inventory, and transit access.
TR3.1	Aviation industry advocacy and education	↓ ↓ ↓	\$ \$	🕒 🕒 🕒	Administration			

CONSUMPTION & DISPOSAL

Action ID	Action Short Name	Impact	Cost	Timeline	Lead Implementor	Partnership Opportunities	Funding Sources	Implementation Considerations
CD1.1	Recycling requirements in new buildings	↓	\$	🕒🕒	Community Development	Developers, HOAs	Ecology: Waste Reduction and Recycling Education Grants	Need to conduct outreach to developers and HOAs.
CD1.2	Phase-in mandatory composting/recycling	↓ ↓ ↓	\$ \$	🕒🕒	Public Works, Administration	Waste Management (WM)	Ecology: Waste Reduction and Recycling Education Grants	Need to conduct outreach and education campaigns. Consider equity, incentives, and support passing costs to customers.
CD1.3	Solid waste emissions reduction	↓	\$	🕒🕒🕒	Public Works, Administration	WM, Pierce County, Tribes	Solid Waste Infrastructure for Recycling Grant Program	Administration to advocate for state-level action to implement. Support emission reduction policies across jurisdictions.
CD2.1	Garden access and creation	↓	\$ \$	🕒🕒	Planning, Parks	Pierce Conservation District	WSDA Grants	Grants available for schools and community organizations. Opportunity to partner in grant process and support with City funds.
CD2.2	Food waste reduction plan	↓ ↓	\$	🕒	Administration	WM, Fish Food Bank		Need outreach and planning to restaurants and businesses.

NATURAL SYSTEMS

Action ID	Action Short Name	Impact	Cost	Timeline	Lead Implementor	Partnership Opportunities	Funding Sources	Implementation Considerations
NS1.1	Urban Forestry Management Plan (UFMP) and tree planting program	↓ ↓ ↓	\$ \$	Ongoing	Planning, Public Works		Urban and Community Forestry Grant	Comprehensive Plan and NPDES Stormwater Permit overlap.
NS2.1	Native vegetation protection	↓ ↓	\$ \$	Ongoing	Planning, Public Works	West Sound Stormwater Outreach Group (WSSOG), Pierce Conservation District, HOAs	Stormwater Capacity Grant	Synergies with Natural Yard Campaign.
NS2.2	Water-efficient landscape standards	↓	\$	Ongoing	Planning, Public Works		Stormwater Capacity Grant	Synergies with Water Use Efficiency and Natural Yard Campaign.
NS2.3	Stormwater runoff pollution reduction	↓ ↓	\$ \$	Ongoing	Public Works	Pollution Prevention Assistance		Staff for source control inspections per NPDES Permit requirements.
NS2.4	New stormwater	↓ ↓ ↓	\$ \$ \$	Ongoing	Public Works		National Culvert Removal	Synergy with Stormwater Manual.

	development plan						Replacement and Restoration Grant Program	
NS2.5	Rainwater reuse education	↓	\$ \$	🕒	Public Works	Pierce Conservation District, Tacoma-Pierce County Health Department	Stormwater Capacity Grant ; Green Stormwater Mini-Grants	Staff for reintroduction of rain barrel workshops.
NS2.6	Reclaimed water program	↓	\$	🕒	Public Works			Build off existing City work.
NS3.1	Carbon-sequestering natural resource protection	↓ ↓	\$ \$	🕒	Planning, Parks		Pierce County Conservation Futures	PROS Plan overlap.

COMMUNITY RESILIENCE

Action ID	Action Short Name	Impact	Cost	Timeline	Lead Implementor	Partnership Opportunities	Funding Sources	Implementation Considerations
CR1.1	Energy-resilient critical facilities	↓ ↓ ↓	\$ \$	🕒🕒	Public Works	Gig Harbor Fire		Research low-carbon alternatives and accessibility for critical facilities.
CR1.2	Wildfire smoke and public health awareness	↓ ↓	\$	🕒	Administration	Puget Sound Clean Air Agency, Schools, Greater Gig Harbor Foundation, senior groups, Rotary		Opportunity to combine outreach and community education.
CR1.3	Encourage adaptation upgrades	↓ ↓ ↓	\$ \$	🕒	Administration, Community Development	Peninsula Light, PSE, WA State, FEMA	Weatherization Programs; Matchmaker Program - Washington State Weatherization	Provide information on City website about applicable programs for consumers.
CR2.1	Climate emergency communication and resources	↓ ↓ ↓	\$ \$	In Progress	Planning, Administration	Churches, Fire, Police	Community Facilities Direct Loan & Grant Program in	Emergency Management Plan overlap.

Action ID	Action Short Name	Impact	Cost	Timeline	Lead Implementor	Partnership Opportunities	Funding Sources	Implementation Considerations
							Washington	
CR3.1	Sea-level rise and coastal resiliency	↓ ↓ ↓	\$ \$ \$	⌚ ⌚ ⌚	Community Development, Public Works	Pierce County, US Army Corps of Engineers	Hazard Mitigation Assistance Grants ; Flood Mitigation Assistance Grant Program	New zoning restrictions will likely come from FEMA.
CR3.2	Coastal wetland and park expansion	↓ ↓	\$ \$ \$	⌚ ⌚ ⌚	Planning, Parks	Fish and Wildlife, Ecology	Wetlands conservation grants	Increase buffer requirements and consider City infrastructure built out around existing wetlands.

APPENDIX B: 2019 GREENHOUSE GAS EMISSIONS INVENTORY REPORT

INTRODUCTION

Cascadia Consulting Group (Cascadia) prepared this report to present the results of the City of Gig Harbor's 2019 greenhouse gas (GHG) inventory and recommend targets for the City to consider adopting in conjunction with the City's Climate Action Plan (CAP).

In 2022, Gig Harbor's City Council committed to climate action by integrating climate into their Comprehensive Plan Update, developing a CAP, and organizing the Climate Change Comprehensive Plan Amendment Committee (CCCPAC).¹³ To support the City's commitment to sustainability, the City conducted a baseline communitywide GHG emissions inventory. Using the baseline GHG inventory, Gig Harbor will be able to quantify communitywide emissions to identify opportunities for impactful emissions reduction strategies and track progress towards reduction goals.

METHODOLOGY

This baseline GHG inventory quantifies communitywide emissions within Gig Harbor— including emissions from residents, businesses, and visitors of Gig Harbor. These emissions come from on- and off-road transportation used to move people, products, and solid waste; energy consumption to power, heat, and cool homes and buildings; land-use changes; and fugitive emissions from refrigerants, solid waste management, and wastewater operations. Emissions were calculated using locally specific data, when available. When local data was not available, emissions were scaled down by population, employment, or income using available national or regional data.

Emissions were quantified for the 2019 calendar year. This year was chosen because it is the most recent pre-COVID-19 year, and therefore the most representative of “typical” community emissions. Future inventories may be conducted to track community progress on emissions reductions, during which time Gig Harbor may choose to update the baseline year to reflect the post-COVID “new normal.”

The 2019 GHG inventory was prepared in accordance with ICLEI-Local Governments for Sustainability's U.S. Community Protocol (USCP), an industry standard for local community GHG inventories.¹⁴ The USCP accounts for GHG emissions sources that occur within the geographic city boundary, such as on-road transportation and on-site fuel oil combustion for heating, as well as for sources that occur outside the city boundary but from community activities, such as electricity use and aviation.

¹³ [City of Gig Harbor, Climate Action Plan, 2022](#)

¹⁴ [ICLEI, US Community Protocol](#)

ANALYSIS HIGHLIGHTS

In 2019, Gig Harbor's community emitted 82,524 MTCO₂e from transportation, buildings and energy, land use, refrigerants, solid waste, and wastewater (See [Figure 15](#)). This equates to roughly 8 MTCO₂e per capita, averaging lower than Pierce County's 12 MTCO₂e per capita rate, but on par with similarly sized jurisdictions in Washington (See [Figure 16](#)).^{15,16}

Figure 15. Gig Harbor's GHG emissions profile (2019)

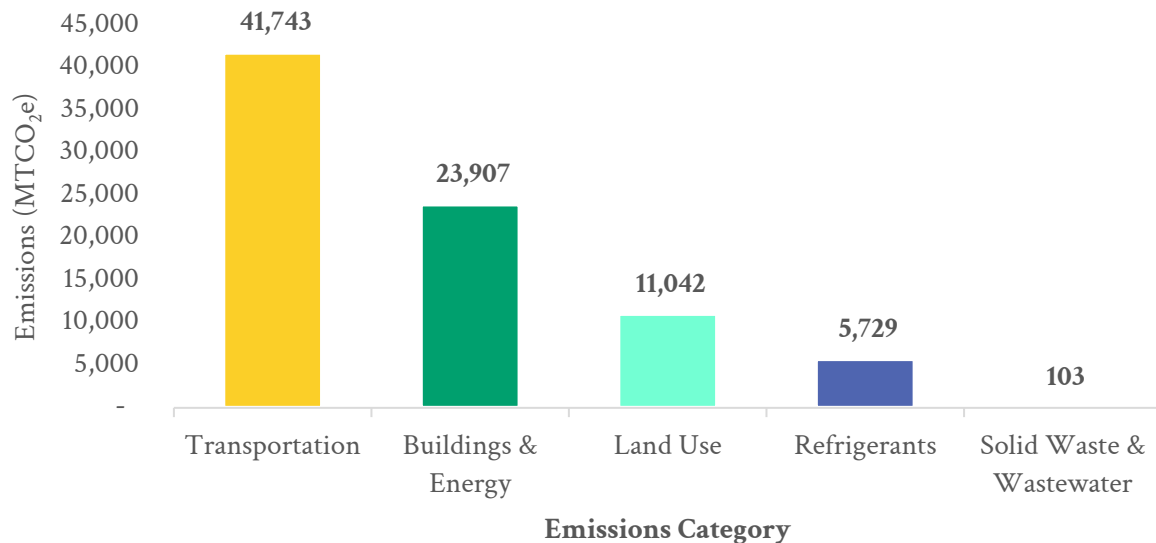
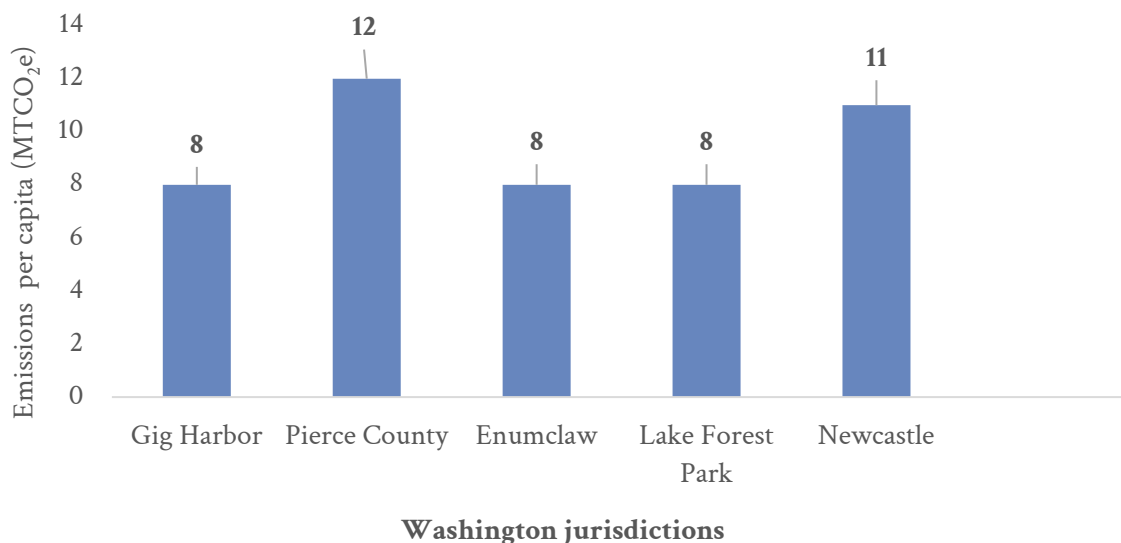


Figure 16. GHG emissions per capita (2019)



¹⁵ [Pierce County, Communitywide Geographic Greenhouse Gas Emissions, 2022](#)

¹⁶ [King County, King County Greenhouse Gas Emissions, 2021](#)

Analysis of Gig Harbor's 2019 GHG emissions revealed the following key insights:

- **Transportation** was the largest source of emissions within the community, responsible for 51% (41,743 MTCO₂e) of Gig Harbor's emissions. Within transportation, on-road sources (from passenger and freight vehicles) were the highest contributors. It is common for transportation emissions to be the top contributor, specifically when a jurisdiction's electricity provider relies on renewable sources.
- **Building energy** was the second largest source of communitywide emissions, making up 29% (23,907 MTCO₂e) of Gig Harbor's emissions profile. Within buildings and energy, natural gas consumption was the largest contributor of GHG emissions.
- **Land use** was the third largest source of communitywide emissions, contributing 13% (11,042 MTCO₂e) to Gig Harbor's emissions. This is on par with Pierce County land use emissions, but Pierce County's land use emissions trend higher than neighboring counties, like King County, due to higher rates of forest land being converted for settlement.¹⁷
- The remaining emissions stem from **refrigerant leakage** (7%, 5,729 MTCO₂e), and **solid waste and wastewater management** (0.1%, 103 MTCO₂e).

¹⁷ [King County, King County Greenhouse Gas Emissions, 2021](#)

GHG INVENTORY SUMMARY, BY SECTOR

TRANSPORTATION

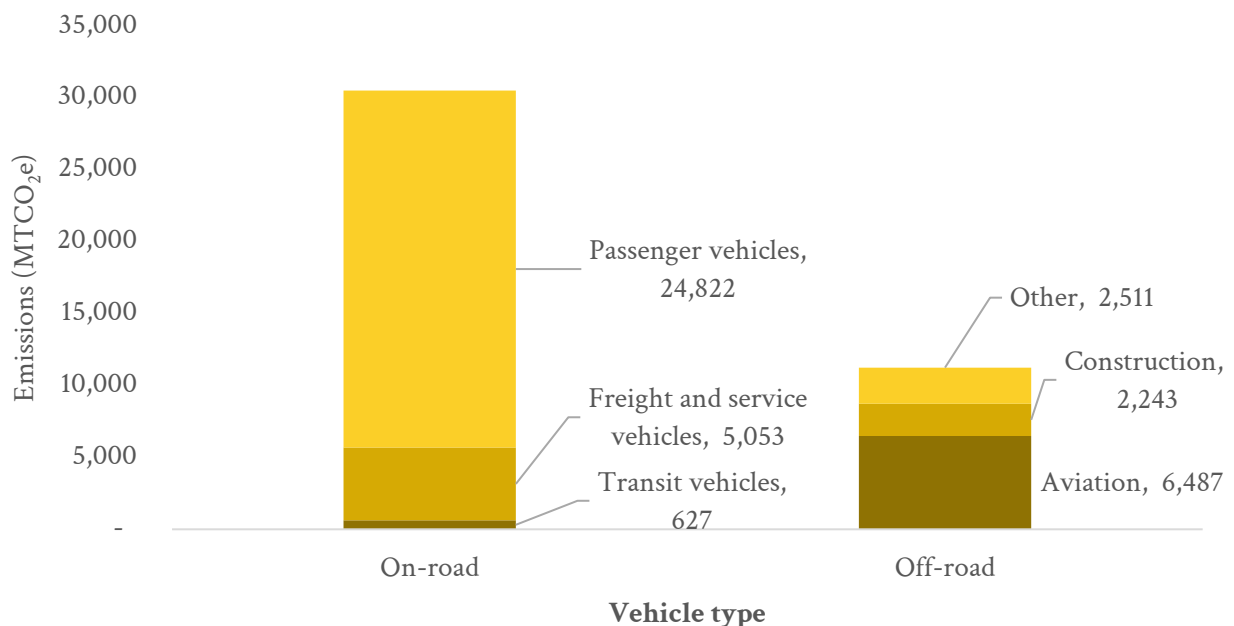
Transportation emissions stem from fuel combustion and usage to power on-road vehicles and off-road vehicles and equipment, including aviation. On- and off-road emissions were calculated using Pierce County data scaled down to represent Gig Harbor's population. Off-road emissions were calculated using the EPA's Motor Vehicle Emission Simulator (MOVES).¹⁸

- **Transportation** sources make up 51% (41,743 MTCO₂e) of Gig Harbor's community emissions profile—the largest source.

On-road vehicles contributed the most to the transportation sector's emissions. They were responsible for 73% (30,503 MTCO₂e) of transportation emissions (See

- *Figure 17*).
- **Passenger vehicles** produce the most on-road emissions, making up 81% (24,822 MTCO₂e) of on-road emissions. Passenger vehicles alone account for 30% of overall community emissions.
- **Aviation** and **construction equipment** contribute the most to off-road sources, emitting 6,487 MTCO₂e and 2,243 MTCO₂e, respectively. Aviation emissions were estimated by allocating SeaTac Airport's emissions based on regional local income.

Figure 17. Transportation GHG emissions by vehicle type (2019)



¹⁸ [US EPA, Motor Vehicle Emission Simulator \(MOVES\)](#)

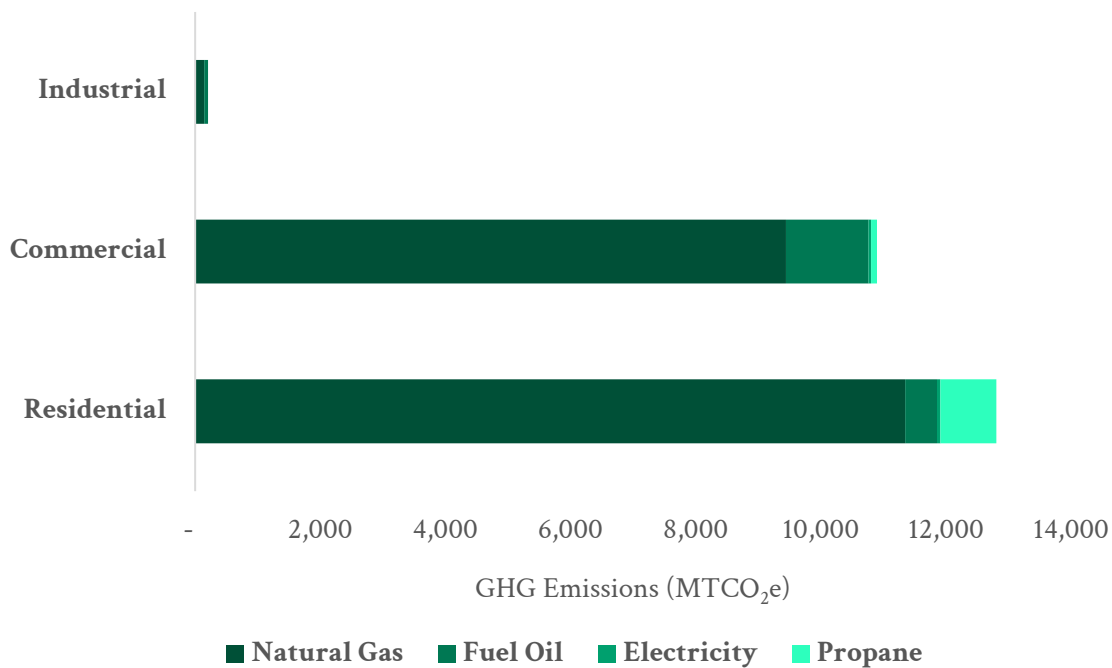
BUILDINGS & ENERGY

Building energy emissions come from the production and consumption of electricity, natural gas, propane, and fuel oil to power, heat, and cool residential, commercial, and industrial buildings. Natural gas and electricity emissions were calculated using utility-specific data. Fuel oil and propane emissions were estimated based on the U.S. Energy Information Administration (EIA) annual fuel sales dataset and home heating data from the U.S. Census.

Building energy is the second highest contributing source of GHG emissions, making up 29% (23,907 MTCO₂e) of Gig Harbor's community emissions (See

- *Figure 18*).
- The **residential** building sector produced the largest portion (54%) of building energy emissions (12,804 MTCO₂e). **Commercial** sources largely contributed the remaining 46% (11,103 MTCO₂e).

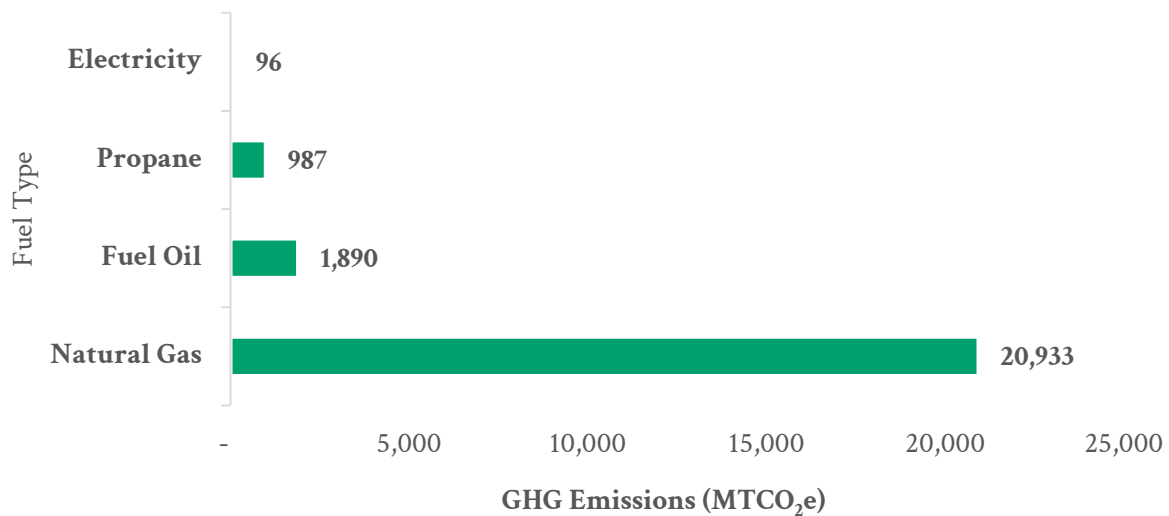
Figure 18. Building energy GHG emissions, by sector and fuel type (2019)



Natural gas consumption is responsible for most (88%) of Gig Harbor's building energy emissions (20,933 MTCO₂e) (See

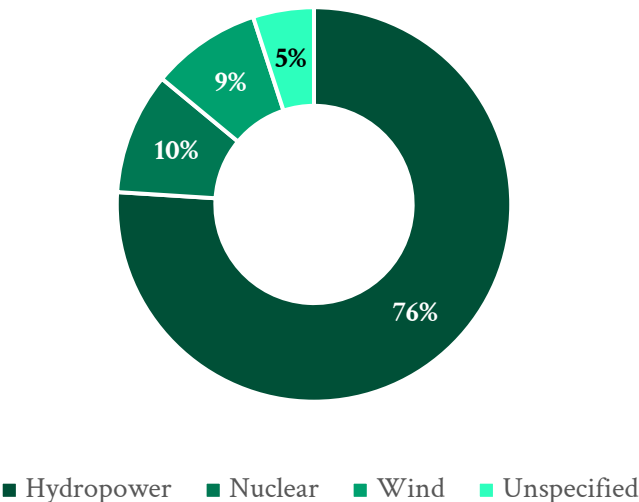
- **Figure 19).** Natural gas consumption emissions account for 25% of Gig Harbor's overall emissions.
- **Electricity** consumption contributes the lowest amount to Gig Harbor's building energy emissions because Peninsula Light Company (PLC), which supplies the jurisdiction with power, sources 95% of electricity production from carbon-free fuel. In 2019, PLC purchased power from the following sources: 76% hydropower, 10% nuclear, and 9% wind (See Figure 20).¹⁹

Figure 19. Building energy GHG emissions, by fuel type (2019)



¹⁹ [PLC, PenLight's Electricity is 95% Carbon-Free, 2021](#)

Figure 20. PLC fuel mix (2019)

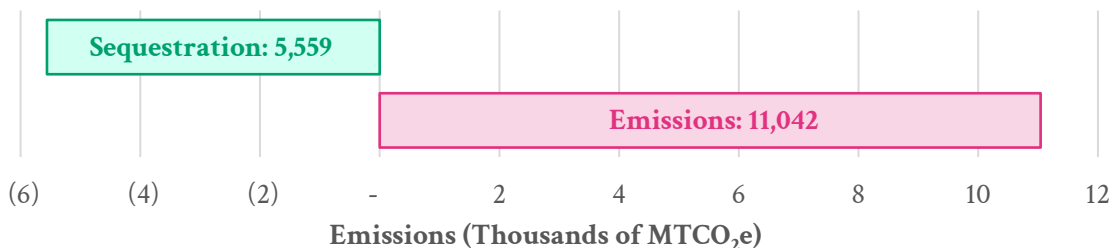


LAND USE

Land use emissions account for the carbon released when tree cover or vegetation is lost or converted to an alternative land type. Pests, fire, and other disturbances can also cause tree and vegetation loss. Alternatively, land use carbon removals, which are reported separately from the emissions, occur when additional carbon is stored in the city’s tree canopy and vegetation through annual growth and improved management. Land use emissions were calculated using the ICLEI’s Land Emissions and Removals Navigator (LEARN) tool.²⁰ The tool provides multi-year estimates (in this case, 2016-2019) that are then averaged for a per-year estimate.

- **Land use change** emissions accounted for 13% (11,042 MTCO₂e) of Gig Harbor’s emissions profile in 2019 (see Figure 7). The largest factor contributing to land use emissions was **forest converted to settlement**, contributing 67% (7,383 MTCO₂e) in 2019.
- **Carbon sequestration** from undisturbed forest, reforested areas, and maintained or gained tree canopy within Gig Harbor removed or sequestered 5,559 MTCO₂e in 2019 (See
- *Figure 21*).

Figure 21. Land use GHG emissions and removals (2019)



²⁰ [ICLEI, LEARN](#)

REFRIGERANTS

Refrigerant emissions are a fugitive source of emissions caused by the leakage of refrigerants, primarily hydrofluorocarbons (HFCs). Refrigerants are used for cooling equipment such as air conditioning and refrigeration equipment and have a high global warming potential (amount of global warming resulting from one unit of that gas). Cascadia estimated fugitive emissions occurring from refrigerants by scaling national refrigerant estimates to Gig Harbor's population.

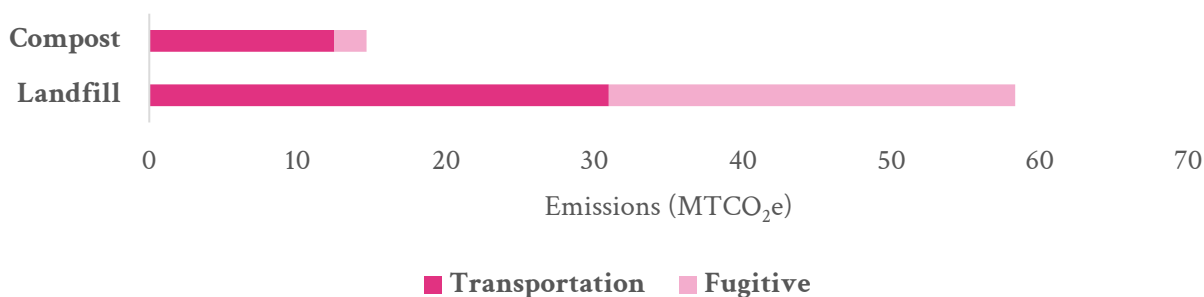
- Fugitive emissions occurring from **refrigerants** contributed 7% (5,729 MTCO₂e) to Gig Harbor's emissions profile in 2019.

SOLID WASTE & WASTEWATER

Solid waste and wastewater emissions are a fugitive source caused by the leakage of methane (CH₄) from landfill and compost operations, nitrification, denitrification, and effluent discharge from wastewater treatment. Methane leakage at landfill and compost sites occurs when waste decomposes in an anaerobic environment (without oxygen). Emissions also occur when solid waste is transported to the landfill and compost site. Cascadia calculated solid waste emissions by inputting locally specific tonnage data into the EPA's Waste Reduction Model (WARM).²¹ Wastewater emissions were calculated using locally specific data provided by Gig Harbor.

- Together, **solid waste and wastewater** emissions contributed 0.10% (103 MTCO₂e) to Gig Harbor's 2019 emissions profile.
- Solid waste** emissions make up 71% (73 MTCO₂e) of these emissions, with most emissions coming from landfill operations. **Landfill** emissions account for 80% (58 MTCO₂e) of solid waste emissions (See Figure 22).
- Transportation** to landfill and compost sites are responsible for 60% (43 MTCO₂e) of solid waste emissions. Fugitive sources are responsible for the remaining 40% (30 MTCO₂e) (See Figure 22).
- Wastewater** emissions make up the remaining 29% (30 MTCO₂e) of these emissions, with nitrification and denitrification (biological process that uses bacteria to treat wastewater) contributing most to wastewater emissions. Nitrification and denitrification account for 93% (28 MTCO₂e) of wastewater treatment emissions, and the remaining come from effluent discharge.

Figure 22. Solid waste GHG emissions (2019)



²¹ [US EPA, Waste Reduction Model \(WARM\)](#)

GHG EMISSIONS REDUCTION TARGETS

BACKGROUND & CONSIDERATIONS

The result of analysis of Gig Harbor and Pierce County's current and forecasted emissions is a suite of emissions reduction targets that the City can use to identify sector-specific opportunities to reduce emissions. The top sectors for emissions reduction impact are transportation, building energy, and land use. Based on Gig Harbor's emissions profile, Cascadia recommends that Gig Harbor adopt goals and strategies to electrify passenger and service vehicles, reduce vehicle miles traveled, electrify buildings, increase building efficiency, and reduce loss of tree cover.

Emissions reduction targets for the Gig Harbor Climate Action Plan (CAP) are based on the analysis of Pierce County's emissions and accompanying wedge model, developed for the 2022 Puget Sound Regional Emissions Analysis (PSREA). For more details on this inventory effort, please reference the complete [Pierce County PSREA Report](#).

The wedge model analyzes and forecasts emissions from Pierce County based on the expected emissions reduction from external factors (primarily state and federal climate policies), as well as the County reaching specific scenarios that will impact emissions (e.g., reducing overall building energy use or reducing transportation emissions by reducing the number of vehicle miles traveled in passenger vehicles). **These scenarios are dynamic and can be adjusted in the Excel model that accompanies this report.**

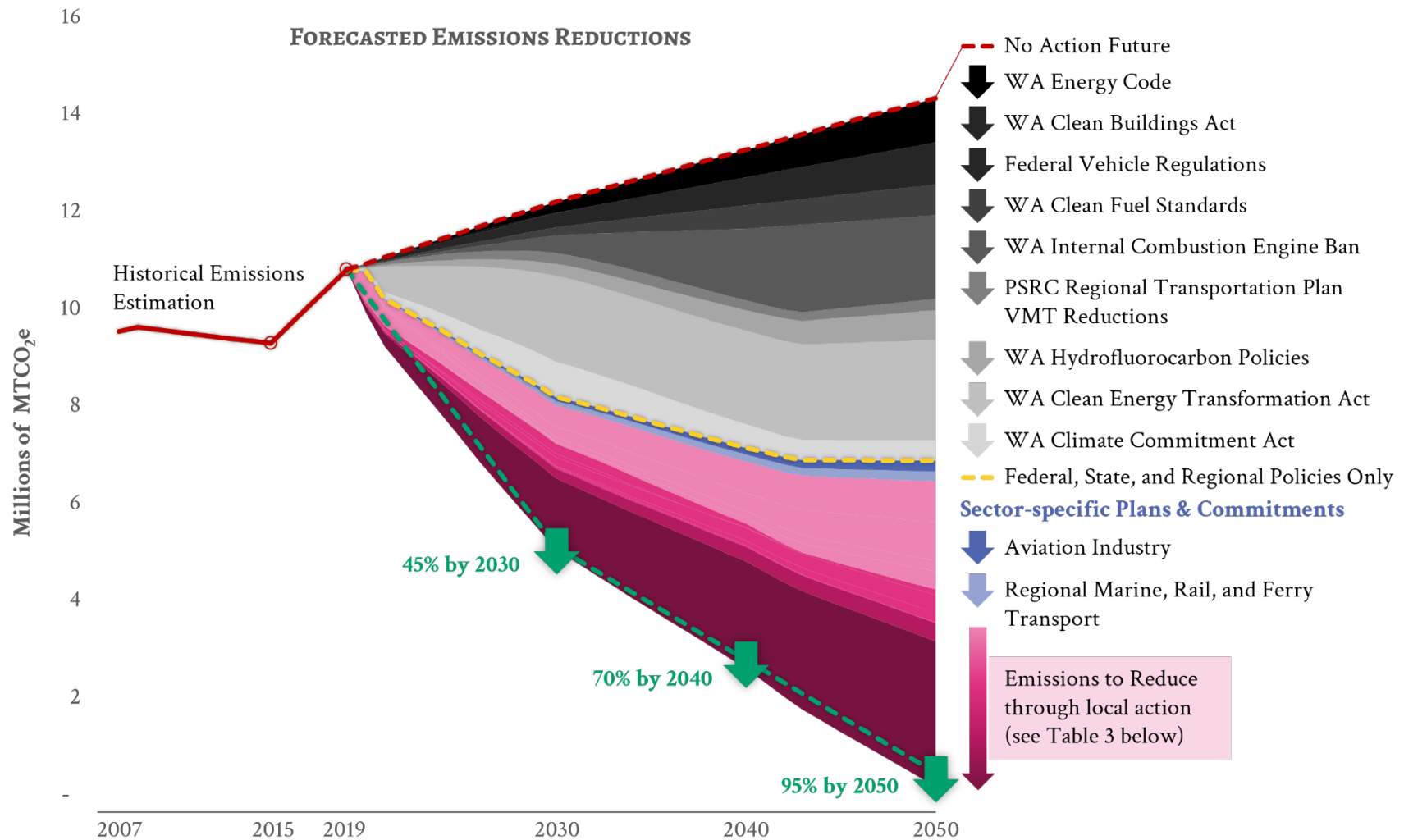
Figure 23 and Table 3 below outline one potential pathway (i.e., combination of scenarios in the model) for reducing Pierce County emissions to meet [the County's goal](#) of achieving an emissions reduction of 45% by 2030, and Washington state's target of reducing emissions by 70% by 2040, and 95% by 2050 from a 2015 baseline.²² Table 3 below provides potential sector-specific emission reduction targets that would align Gig Harbor with these overarching Washington State and Pierce County targets.

For Gig Harbor, **we used this tool as one input to inform the emissions reduction targets for the Climate Action Plan.** We also used the results from the community's own GHG inventory to adjust targets as needed based on the city's own unique emissions profile.

²² Note that Pierce County has not yet committed to reduction targets for 2040 or 2050; targets presented here are hypothetical.

EMISSIONS REDUCTION PATHWAY

Figure 25: Wedge graphic detailing a potential emissions reduction pathway for Pierce County.



PIERCE COUNTY'S MODELED REDUCTION TARGETS

Table 3. Wedge Model Target Scenario for Pierce Count

Wedge color	Target/Scenario	2030	2040	2050
	Electrify new buildings (% fossil fuel use converted to elect.)	100%	100%	100%
	Reduce energy use in existing buildings (% reduction in energy use)	25%	35%	45%
	Electrify existing buildings (% fossil fuel use converted to elect.)	20%	40%	100%
	Increase local solar (total new MW) ²³	100	200	250
	Reduce passenger vehicle miles traveled (% reduction in VMT)	10%	20%	25%
	Electrify passenger vehicles (% new vehicles sold that are EV)	65%	95%	100%
	Electrify freight/service vehicles (% new vehicles sold that are EV)	25%	75%	100%
	Decarbonize offroad equipment (% reduction in emissions)	50%	75%	95%
	Decarbonize aviation fuels (% reduction in fuel carbon intensity) ²⁴	20%	55%	95%
	Reduce air travel & increase efficiency (% reduction in aviation fuel use) ⁹	15%	20%	25%
	Divert C&D materials (% of C&D waste diverted) ²⁵	85%	85%	85%
	Divert other recyclable and compostable materials (% reduction in waste to landfill) ²⁶	50%	75%	95%
	Maintain tree cover, reducing loss (% reduction in tree loss)	50%	75%	102% ²⁷
	Protect land carbon sinks (% of current sinks protected)	100%	100%	100%

²³ Note that the amount of possible solar generation for Gig Harbor will likely be less than the amount detailed here (which covers the whole County). We can more accurately determine Gig Harbor's MW once we have completed the GHG inventory.

²⁴ Note that while Gig Harbor does not have direct control over aviation it can support legislation for sustainable aviation.

²⁵ Note that Gig Harbor is not committing to a C&D target.

²⁶ To achieve this target, the City will need to sign into a franchise agreement with a waste hauler who can provide composting services.

²⁷ To achieve this current target, the County will need to increase tree canopy coverage by 2% by 2050.

